U.S. Department of Energy

PROGRAM UPDATE

January-March 2022

Melinda Downing Celebrates and Reflects on 50 Years at DOE

LM Positively Impacts Lives While Fulfilling Obligations

Recognizing Excellence: LM honors U.S. Army Corps of Engineers' Commitment to FUSRAP

DIRECTOR'S CORNER

LM Positively Impacts Lives While Fulfilling Obligations

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) goes about the business of serving the American public every day. In our view, it gives us daily purpose.

Whether it's our Defense Related Uranium Mines (DRUM) program, our work across the country to ensure disposal cells remain protective of human health and the environment, our responsibilities to protect records and former contract workers' retirement benefits, or the many other responsibilities LM has, it is all performed by many people who are providing service to the nation.

We take those duties seriously, and it is recognized that taxpayers expect a return on their investment when it comes to the dollars provided to accomplish LM's important mission. Every day we work with our partners to approach these complex issues in a thoughtful, logical, and cooperative manner.

For some of our stakeholders, however, there are positive impacts that can improve their quality of life beyond the environmental stewardship work performed by LM. These could be elementary, middle school, high school, or college students. It could be groups or individuals positively impacted by LM's work related to Environmental Justice. It could be people who find paths to jobs through career development initiatives. It could be our brothers and sisters in Tribal and Native lands.

In the 2022 Quarter 1 edition of Program Update, you'll read about some of these efforts and some of these impacts. Although this work is not directly related to protecting human health and the environment, it is central in our mission and the results speak for themselves.

There have been many examples where students involved in our internship programs or other cooperative arrangements have led those students to associated careers, whether they be within DOE, other government agencies, or the private sector.

What constitutes good government is a question that is as old as government itself. In the United States, how the Federal government should serve its citizens was first debated by the Founding Fathers and continues to this day.

In the end, the Federal government has worked for centuries – across different ideologies, philosophies, and administrations – to aim for a quality of life for the governed that is unmatched in the world, all the while playing a role on the world stage to improve the human condition across the globe.

It is our belief that we have a responsibility to take the resources afforded us to fulfill our obligations and continuously work to achieve our mission. But beyond that, our intentions are to help people along the journey in ways that might not be easily recognized – be equitable, inclusive, and caring with genuine empathy.

We will continue to perform the important work of long-term stewardship, protecting human health and the environment, and the other tenets of LM's mission. We also pledge to do our best to be technically competent and emotionally intelligent as we try to positively impact the lives of people who engage with us.

In our view, *that* is what constitutes good government, and it starts with us.

Warm Regards,

Carmelo

Carmelo Melendez

Welcome to the January-March 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@lm.doe.gov****.*

LM Goals

Goal 1
Protect human health and the environment.

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

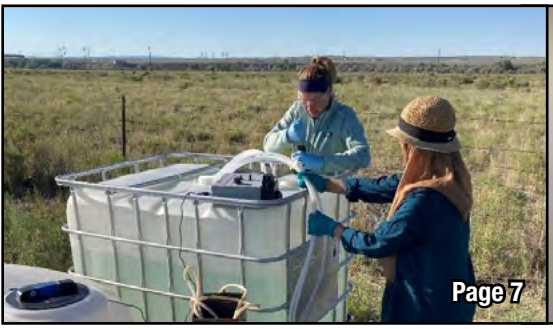
Goal 3
Safeguard former contractor workers' retirement benefits.

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.

Inside this Update: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The Grants Mining Museum in Grants, New Mexico.

Legacy Management Addresses Educational and Career Equity in Cibola County, New Mexico, by Introducing STEM with LM

GOAL 6

STEM with LM is building tomorrow's workforce and addressing equity issues in a deeply rural area

Cibola County, 78 miles west of Albuquerque, New Mexico, is one of the youngest counties in the state, having only been established in June 1981.

Cibola County's population is small and rural, numbering 27,213 residents. Of that number, approximately 37 percent are Hispanic and 39 percent identify as Native American.

Cibola County is home to three Native American tribes – the Pueblo of Acoma, the Pueblo of Laguna and the Baca/Prewitt Chapter of the Navajo. The area is home to seven elementary schools, two middle schools and two high schools. This demographic and the Office of Legacy Management's (LM) presence at Bluewater seemed the perfect combination of reasons to introduce STEM with LM to the community.

LM maintains the Bluewater Site in Cibola County north of Grants. The Bluewater Disposal Site was a uranium-ore-processing site during the 1950s. The site transitioned to DOE in 1997 and is administered under the provisions of a general Nuclear Regulatory Commission (NRC) license.

The site requires routine inspection and maintenance, groundwater monitoring, records-related activities, and stakeholder support. Those job activities became the inspiration for LM Site Manager Bernadette Tsosie to pursue the possibility of launching STEM with LM activities in Cibola County.

Tsosie envisions STEM activities being a catalyst that would connect the Bluewater Site and local students to STEM careers.

"What got me interested in reaching out to Native students was when I spoke about the Bluewater Site's geology at other STEM events. The Navajo students became very interested when they asked me if the volcanic rock samples were from Mount Taylor's monster's blood?" she said.

LM remote presentation from the Atomic Legacy Cabin at the Grand Junction, Colorado, Summer Recreation Program.

As Tsosie explained, Navajo stories describe the legend of Changing Woman, who had twin sons. When the twins tried to meet their father (sun), he placed a monster named Yeetso to oppose the twins. Yeetso, whose lair was Mount Taylor, was killing the people. According to lore, the twins killed the monster and the lava on the slopes that remains is the monster's blood.

"These kids became more interested in the geology because it was something they could relate to," Tsosie said. "My goal is to introduce geology through STEM to other students who live near the Bluewater Site helping to tie their cultural and historical ties to Bluewater."

Introducing local youth to the variety of jobs being done at Bluewater through STEM activities could help students understand the career opportunities available to them, Tsosie said.

"Due to the size of the Native American and Hispanic population in this area, it would be an excellent benefit to have these children come home to work and help encourage the next generation of students to pursue careers in STEM and at the Bluewater Site," she said.

Currently, the STEM program for Cibola County is only in the fledgling planning phases.

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The view towards Mount Taylor from Cibola County, New Mexico.

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Legacy Management Addresses Educational and Career Equity in Cibola County, New Mexico, by introducing STEM with LM

To facilitate this vision of introducing STEM, LM began partnering with the community. LM plans to offer STEM with LM curricula that is reflective of the work being done at the Bluewater Site, with an emphasis on how this work could translate into careers for students in the area.

Also, LM Public Participation Specialist Greg Kuntz began exploring a collaboration with the New Mexico Mining Museum in Grants. This partnership between LM and the museum is the basis to begin curriculum development to bring current STEM with LM programming to students while expanding more diverse, inclusive, and equitable learning opportunities for Cibola County students.

The future vision for STEM education for Cibola County students includes visiting with local curriculum development coordinators and teachers in the county, ensuring the STEM educational offerings are augmenting current curricula.

LM is mindful that unique materials may be required for development to meet specific teacher needs while also remaining true to the LM mission of equity in educational opportunities and the protection of human health and the environment.

An unexpected benefit of the COVID pandemic is STEM with LM's refinement and successful use of remote presentations. This virtual mode of learning will enhance a student's access to field experts at LM from all over the United States.

In a month's time, a student could have a remote visit with the Atomic Legacy Cabin (ALC) in Grand Junction, Colorado, and the following week the LM expert could be teaching on birding in Fernald, Ohio.

Areas of focus for STEM with LM will also include learning modules on Cibola County's basalt flows, geology, groundwater, butterfly pollinators and how these studies translate into careers in engineering, ecology, environmental science, and project management, all jobs being done at the LM Bluewater Site.

"At LM we realize equity issues require an understanding of the root causes unique to a community," Kuntz said. "STEM with LM is an excellent path to incorporating local culture, education, and career path opportunities to bridge and address the causes of equity issues for teachers, students, and industry."

Hands-on activities and site tours are also being planned for both teachers and students.

LM hopes this STEM educational opportunity will help identify and assist in eliminating barriers that may have prevented full educational success of local students.

Learn more about STEM with LM and the Bluewater, New Mexico, Site. ❖

Be **Environmentally** Conscious

LM is continually seeking opportunities to protect the environment and conserve natural resources. One simple step we can take toward improving environmental consciousness is to distribute the *Program Update* newsletter by email instead of sending a printed copy.

Please send your email address and your first and last names to LM-ProgramUpdate@lm.doe.gov so that we can update our database.

Thank you for your assistance.

Collaboration with University Students Helps with Remedial Efforts at LM Site

GOAL 1

Graduate student, Ph.D. candidate contributing to field work by collecting samples for groundwater tracing and testing at Riverton, Wyoming, Processing Site

Students from the University of Wisconsin-Milwaukee (UWM) are helping the Office of Legacy Management (LM) evaluate sources of groundwater contamination at LM's Riverton, Wyoming, Processing Site.

LM began tracer testing at the site in 2017 as part of the Applied Studies and Technology Program's (AS&T) Persistent Secondary Contaminant Source (PeSCS) Project. AS&T collaborates with graduate- and doctoral-level students who assist with field work in collecting samples, testing, and analyses.

With the help of graduate student Kendyl Hoss, and Ph.D. candidate Rakiba Sultana, UWM Geoscience Assistant Professor Charles Paradis is helping LM personnel to evaluate groundwater tracer test data from the Riverton Site. Sultana and Hoss spent more than two months in Riverton in 2021 assisting with tracer testing and sampling.

The AS&T PeSCS project was initiated to better understand secondary contaminant sources that contribute to groundwater contamination. These contaminants are absorbed on soil and can delay remediation efforts and delay the natural flushing of groundwater. By studying secondary sources, LM can improve its remediation efforts at current and future sites.

"The Riverton project deals with uranium mobility, which has a direct implication in environmental protection. As I always wanted to be involved in projects related to the environment, I am very glad to be a part of it," said Sultana, whose dissertation will be focused on the mechanisms responsible for uranium mobility. "I believe this project will enable me to learn a lot about geochemistry and hydrochemistry, and the combination of these two fields is very valuable in the environmental sector."

Riverton tracer test data evaluations by Sultana, Hoss and Los Alamos National Laboratory post-doctoral fellow Dr. Martin Dangelmayr, provide the students with research topics to earn their degrees and to publish their research in peer reviewed journals. Students who have worked on this project in the past, such as UWM student Jiyan Hatami and Cullen Meurer, graduated or will graduate soon using research conducted during the project.

Kendyl Hoss and Rakiba Sultana Rakiba Sultana, students at the University of Wisconsin-Milwaukee, are shown working on tracer mixing and injection at the Riverton Site.

"These types of collaboration efforts with universities and graduate students are a win-win for everyone," said LM Riverton Site Manager Bill Frazier. "DOE benefits from the efforts, and often fresh perspective of academia, while graduates have an opportunity to participate in the important DOE LM monitoring and evaluation efforts."

Planned work for 2022 and 2023 includes completion of these tracer test data analyses and publication of the various data from the project. The PeSCS Project is expected to be completed in March 2023. ❖

Navajo Nation STEM-sation Events Impact Students Both Virtually and In Person

GOAL 6

Prior to the COVID pandemic, each year between spring and fall, the U.S. Department of Energy Office of Legacy Management (LM) participated in eight to 10 science, technology, engineering, and mathematics (STEM) events on the Navajo Nation. Despite the challenges of the pandemic, LM has continued to offer programming.

Two LM STEM-sation events were scheduled this spring. Chinle High School in Chinle, Arizona was the host for a virtual event March 23-24. On April 7, an in-person event is scheduled at Utah State University in Blanding.

During these events, LM staff and LM Strategic Partner (LMSP) contractors will travel to various communities on the Navajo Nation and demonstrate a variety of hands-on activities for students that promote STEM careers. The events are at different high schools throughout the Navajo Nation.

At the onset of the pandemic in March 2020, the STEM-sation group — which included representatives from Navajo Transitional Energy Company, Navajo Nation Abandoned Mine Lands, Arizona Public Service, BHP Billiton Petroleum, and LM — canceled all STEM-sation events for the remainder of the year. When school began in the fall, the STEM-sation planning team decided they would try something new and organize a virtual event with the staff and students of Navajo Preparatory School in Farmington, New Mexico.

On Dec. 7, LM participated alongside seven other tribal organizations, schools and businesses in a virtual STEM-sation event. The Zoom platform was set up by one of the organizations and students were divided into virtual classrooms. Each presenter had individual time slots and "breakout rooms" to dazzle the students with presentations tailored specifically for this event. LM put together a nine-minute video titled "Go With the Flow" that highlighted the significance of groundwater and how groundwater is treated and tested at the Shiprock, New Mexico, Disposal Cell.

The disposal cell is approximately 27 miles from Navajo Preparatory School, making the reference to the site and its unique geology more meaningful. Some of the students who attend Navajo Preparatory are from Shiprock and nearby communities.

During area outreach events with Shiprock community members, LM and LMSP have discovered that residents are always eager to learn more about the Shiprock cell and the long-term surveillance work that LM performs at the site. The overall goal for this virtual STEM-sation event was to provide a unique opportunity for staff to engage students and encourage them to enter STEM career fields while providing education through a demonstration of LM's post-closure work and responsibilities at a site that is geographically nearby, thus making it more meaningful.

"One of the highlights of our job at LM is interacting in person with students at STEM events. Although this event was virtual, it is the best way to reach students and share the work of LM during this time," said LM Public Participation Specialist Shawn Montgomery. "We are in the beginning stages of participating in more virtual learning opportunities and creating more educational content for STEM with LM."

The "Go With the Flow" video has been added to LM's YouTube channel and is available for future learning opportunities on the STEM with LM website at https://www.energy.gov/lm/programs/stem-lm.

LM is reaching out to Shiprock high schools and Southern Ute schools to inquire if they would like to participate in a STEM with LM Poster Challenge that includes the "Go With the Flow" video series with hope that if STEM-sation events do not resume for a while that the curriculum can be used virtually. ❖

Multi-use Window Rock Office Provides Partner Agencies Access to LM in Centralized Location

GOAL 6

Real-estate agents will tell you that location is everything: if you buy a home in the right area, your property will become more valuable. The same could be said for the U.S. Department of Energy Office of Legacy Management (LM) office in Window Rock, Arizona. Since the lease was signed in 2016, both the value and amount of LM's work on the Navajo Nation have increased.

Window Rock was selected for establishing the office because it is the capital of the Navajo Nation — a centralized location where the offices for the executive, legislative, and judicial branches of the tribal government are located.

The Window Rock Office is staffed by two full-time employees — an outreach coordinator and a public affairs specialist. The office supports multiple outreach functions on the Navajo Nation. It provides a public affairs workspace in support of LM's four former uranium-processing sites on the Navajo Nation, an information resource for federal and tribal stakeholders, and STEM outreach to high school students. The office also provides a home office for the Navajo Nation Community Outreach Network.

The Navajo Nation Community Outreach Network Office is tasked with coordinating and supporting the multi-agency effort through community outreach, joint agency/tribal planning, and information sharing. The Community Outreach Network is the result of an October 2007 congressional directive to coordinate five federal agencies to collaborate and address uranium contamination issues on Navajo Nation.

"The Window Rock Office is key for all agencies and partners, but most importantly to our Diné people, whom we work with diligently to provide information and guidance regarding past uranium sites that impact the Navajo Nation," said Kayla Bia, outreach coordinator for the Window Rock Office. "The office is fully functioning with staff who can provide enhanced services and is instrumental in providing on-site and local links within the Navajo Nation government and Federal agencies and partners involved on Navajo Nation."

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Window Rock at The Window Rock Navajo Tribal Park, Window Rock, Arizona.

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Multi-use Window Rock Office Provides Partner Agencies Access to LM in Centralized Location

From its inception, the Window Rock Office established a centralized resource for information for community members. In addition, some LM partners have home offices in other states and are welcome to work from the Window Rock Office while they are visiting officials or partnering agencies in the Navajo Nation's capital. Working alongside these agencies and community members increases LM's understanding of tribal community concerns, as well as enhances their ability to effectively engage with impacted communities.

Over the past few years, STEM outreach has experienced extensive growth, expanding to include annual middle school and high school events, as well as multiple higher education events. The Window Rock Office supports LM Director Melendez's mandate to increase STEM outreach to encourage future generations of scientists and engineers. Public affairs outreach support in relation to the four LM sites on the Navajo Nation has doubled since the addition of the Window Rock Office, as sites are remote and would otherwise require extensive travel from the next closest office in Grand Junction, Colorado. Partnering agencies can send interested parties to a centralized location for information available at the office.

Although there are challenges with working remotely, the location, in this case, has made all the difference. ❖

Outreach Coordinator Kayla Bia and Public Affairs Specialist Lillie Lane are shown outside the Window Rock Office in the capital of the Navajo Nation. DOE leased the office at No. 2 Beacon Road, Window Rock, Arizona, with the intent to demonstrate the Department's commitment to work collaboratively with tribal partners.

B & T Metals: The African American-Owned Company that Played a Key Role in the Manhattan Project

GOAL 2

In the midst of the United States' race to build the atomic bomb during World War II, an African American-owned business helped develop materials for the Manhattan Project

As the United States raced to build atomic bombs during World War II, the U.S. Army Corps of Engineers (USACE) Manhattan Engineer District, commonly known as the Manhattan Project, had acquired enough pure uranium metal by 1943 to begin mass-producing fuel for plutonium production reactors. What they did not have was the know-how to convert uranium metal billets into a form capable of fueling reactors.

USACE's prime contractor for plutonium production, E. I. du Pont de Nemours and Company (DuPont), was tasked with converting the uranium billets into reactor fuel, known as "slugs." The first and most pressing step toward making slugs was to convert the billets into rods.

DuPont turned to the Battelle Memorial Institute (BMI) in Columbus, Ohio, for its technical expertise. BMI was already under contract to the federal government's Office of Scientific Research and Development. While BMI had technical expertise, it did not have the necessary equipment.

With the clock ticking, DuPont searched for fabrication shops in the Midwest, close to BMI, that had the capability to produce large numbers of uranium rods. In February, DuPont placed Purchase Order XPG-123-1/2 with B & T Metals, which was in the Franklinton neighborhood of Columbus, less than five miles from BMI.

An African American entrepreneur, Lyman Kilgore, owned B & T Metals. Born in Hillsboro, Ohio, he had labored on an orchard before taking a job with a flooring company in Columbus. When the company faced bankruptcy, Kilgore bought it out and turned it into the highly successful B & T Metals. Kilgore's company specialized in fabricating a unique metal trim, trademarked as "Chromedge," that was used around sinks and carpet edges. Critically for the Manhattan Project, B & T Metals had an extrusion press that could be used to figure out how to extrude uranium metal billets into rods.

Through the work performed at B & T Metals, the Manhattan Project gained the know-how to mass produce uranium rods. B & T Metals completed its contract with DuPont Aug. 3, 1943. In less than seven months, the shop had extruded 336,108.25 pounds of uranium billets into rods that were fabricated into slugs to fuel the X-10 Graphite Reactor in Oak Ridge, Tennessee, and a test reactor at a secret location outside of Chicago known as Site A.

Lyman Kilgore bought a failing business and turned it into the highly successful B & T Metals in Columbus, Ohio. Kilgore's company helped the U.S. Army Corps of Engineers convert uranium metal billets into rods that could fuel reactors, helping the United States build the first atom bomb. In August 1948, the Ohio State News published an account of Kilgore's life in his obituary. Photo courtesy of the Ohio History Connection.

The U.S. Department of Energy remediated the B & T Metals Site in 1996, under the Formerly Utilized Sites Remedial Action Program (FUSRAP) and later released the site for unrestricted use. In 2004, DOE assigned long-term stewardship responsibilities for the site to the Office of Legacy Management (LM). LM maintains records about the Columbus East, Ohio, Site and its cleanup to be able to respond to interested stakeholders. In 2017, the privately owned property was repurposed and now provides studio space to local artists.

After he died in the summer of 1948, The Ohio State News recognized Mr. Kilgore's tenacity in building a major industry, a feat "that many industrialists considered impossible." What the newspaper did not know at the time was that Kilgore's company had also helped the United States win its top-secret race for the atomic bomb. ❖

Mentorship for Environmental Scholars (MES) Boot Camp Site in Leesburg, Virginia, with Dr. Melinda Downing, DOE EJ Program Manager; Denise Freeman, DOE Senior Advisor; and Clarence Brown, MES Program Coordinator, along with MES student participants in 2019.

This Black History Month, Melinda Downing Celebrates and Reflects on 50 Years at DOE

GOAL 2

In 1972, Melinda Downing started her federal career at the U.S. Department of Agriculture; from there she joined the U.S. General Accounting Office, and then in 1976, continued her career at the Office of Policy at the Energy and Research Development Administration. Ambitious and diligent, Downing quickly mastered her entry-level role and began looking for higher-level job openings.

"Though I lacked certain qualifications, I knew I was ready to move up," Downing recalls.

When she informed her managers that she was considering taking another position, they moved quickly to keep her aboard, creating a new role for her and offering her a promotion. That was five decades ago. Today, she continues to work at ERDA's successor agency, the U.S. Department of Energy, where she also advocates for other women and people of color, helping to create opportunities the same way her managers did for her.

From the Voting Rights Act Amendments and the first Gulf War to the Sept. 11 terrorist attacks and the election of the first Black President, Melinda Downing has witnessed many significant moments of American history during her time at the Department of Energy. Now, as a woman of color with firsthand experience pursuing racial and environmental equity, she's marking her 50-year milestone with DOE and celebrating Black History Month at the same time.

"I've seen firsthand, both personally and professionally, how environmental and racial justice go hand-in-hand," Downing said. "This Black History Month, it's my hope that DOE can continue to set an example as a forward-thinking Department that advocates for the success of all people."

Working Together for Forward Progress

Downing believes that collaboration is key in advancing change, and she's stayed with DOE because she valued the opportunities to advance the causes she cared about while pursuing her career. But that hasn't always been the case.

Downing has faced moments of explicit and implicit gender and racial bias throughout her career. Once, while in an overseas airport with her DOE team, she was pulled aside by customs agents and interrogated about her reason for travel. As the only woman and only Black person within the traveling group, she knew she stuck out, and felt she had to explain herself unduly.

"Prejudices and biases are real, but there's always a way to combat them," Downing said. "Having a mentor you trust, sticking to your values, and seeking out new opportunities regularly is important."

From left to right, de'Lisa Carrico, Public Affairs Specialist, Office of External Affairs, Department of Energy, Savannah River Operations Office; Melinda Downing; and Dr. Kenneth Sajwan, TREAT Project Director, Savannah State University (SSU) pose at Teaching Radiation Energy and Technology (TREAT) Workshop in Savannah River in 2019.

Advancing Environmental Justice

Downing's perspective on environmental justice takes a symbiotic view. Environmental issues like contaminated water or air often disproportionately affect lower-income communities and communities of color where schools continue to be underfunded and under-resourced.

"Pursuing environmental justice also means creating equitable educational opportunities for people from historically under-resourced communities to advance and succeed both personally and professionally," she said. "They don't have the access to resources others take for granted. The wellness of these communities reflects the health of their environment."

To improve outcomes for people and families living in these communities, Downing believes that enhancing water and air quality, and expanding access to robust health and safety resources, should be top priorities.

"When people don't have to worry about the quality of the water they drink or the air they breathe, they have space to celebrate life and mark what's important to them," Downing said. "For people of color, this means they can fully partake in their own Black History Month traditions and commemorations."

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Members of the DOE team are shown at the Community Leadership Institute, Strengthening Native Communities and Creating a Legacy, in 2008 in Albuquerque, New Mexico.

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This Black History Month, Melinda Downing Celebrates and Reflects on 50 Years at DOE

Celebrating Black History Month

For Downing, Black History Month is a time to celebrate and recognize the contributions of Black Americans who laid the foundation for the freedoms Americans can enjoy today. To Downing, this means connecting with family and extended relatives to attend services and vigils, which often commemorate and celebrate Black leaders like Dr. Martin Luther King, Jr. Downing has also made it a tradition to participate in volunteer opportunities centered on serving Black communities.

"Black History Month gives Americans hope," Downing said. "It's a legacy of determination and perseverance – I'm proud of my culture, my family's unique traditions, and my own trajectory as a Black woman in a field where we're often underrepresented."

When asked about her proudest moments over the past 50 years, Downing points to one instance in particular. At a DOE offsite several years ago, Downing noticed a lack of representation among the stakeholders gathered, though the community they represented was diverse. Downing raised the issue to senior leadership, stressing the importance of creating seats at the table. She was heard, and subsequently led the initiative to collaborate with the National Conference of Black Mayors, bringing them into the fold for further conversation at the offsite.

"When you are in a position of authority, and you notice something missing from the picture – you notice homogeneity, you notice a lack of diversity – then you should speak up," Downing said. "No matter what, addressing such an issue is a win-win for everyone."

As she reflects on her tenure so far with DOE, Downing says she's proud to look back on an illustrious career, during which she's helped create an environment that fosters equitable treatment for all, at work and beyond. ❖

Downing helped gather a diverse group of community participants for TREAT workshops, like this one in 2018.

EPA Celebrates Weldon Spring Site on Beneficial Reuse in New Case Study

GOAL 4

The U.S. Environmental Protection Agency has recognized the Office of Legacy Management's (LM) Weldon Spring Site for its exemplary ecological success by using it in a recent case study

The EPA case study, *Cleanup Enables Creation of Recreation, Ecological Revitalization and Education Hub: Weldon Spring Quarry/Plant/Pits (USDOE) Superfund Site*, highlights LM's accomplishments in beneficial reuse, calling it a "reuse success story." The study also details Weldon Spring's history and cleanup as well as LM's ongoing mission to provide long-term stewardship and engagement with future generations.

"One of the major goals of the Superfund program is to return contaminated sites into productive reuse for the surrounding communities," said EPA Region 7 Administrator Jim Gulliford from the EPA study. "The Weldon Spring Interpretive Center provides historical and scientific educational opportunities about the site and its cleanup that will inform future generations about the area's unique history."

The Weldon Spring Site sits about 30 miles from St. Louis in St. Charles County, Missouri. The site was once home to the largest munitions facility in the United States and manufactured more than 750 million pounds of explosives during World War II. In 1956, the Weldon Spring Uranium Feed Plant was constructed by the Atomic Energy Commission (AEC), which produced uranium metal that was shipped to various locations to be used in fuel cycles and nuclear weapons. Today, with LM's restoration efforts, the site is a hub for recreational and educational opportunities.

In October 2020, EPA honored the site with the EPA's Federal Facility Excellence in Site Reuse Award, which highlighted LM's commitment to beneficial reuse and the triumph of transforming the Weldon Spring Site into an amenity for visitors from all over the country to enjoy.

"With the site's many ecological beauties, thriving wildlife, and several hiking and biking trails running through the property, it is hard to imagine it was once the site of significant contamination and industrial buildings from the World War II and Cold War eras," said Kris Holmes, LM public affairs specialist.

Hikers, bikers, photographers, and other guests are welcome to hike the Hamburg trail, take a self-guided tour through the nearby gardens, and take a walk through the beautiful, flourishing 150-acre Howell Prairie, which is home to hundreds of native plant species. Guests can also check out the site's new Interpretive Center (IC), which will be used for history and STEM programming once the center reopens when COVID conditions allow.

"Beneficial reuse is a cornerstone of LM's mission at each of our sites, and the Weldon Spring Site is a national example of the result of several agencies working in collaboration to contribute to the communities in which we operate," said LM Weldon Spring Site Manager Rebecca Roberts.

"What makes the Weldon Spring Site a success story is that the site went from processing uranium ore and other wartime material to supporting conservation efforts, restoring the native plant life, and offering exhibits, programs, and tours to thousands of students and community members every year, from topics that range from restoration, cleanup, and the history of Weldon Spring, to deeper environmental discussions such as pollution remediation and prevention," Holmes said.

Although the site remains closed because of COVID-19 restrictions, Weldon Spring IC staff have adeptly navigated the pandemic by offering virtual STEM education and home activities, and visitors are still welcome to explore the outdoor grounds of the facility. ❖

Annual Historical Summary Highlights LM's Work, Accomplishments

GOAL 2

A snapshot of the work LM completed throughout 2021 shows sustained momentum in protecting human health and the environment.

The second year of the COVID-19 pandemic presented its own unique challenges, but the U.S. Department of Energy's (DOE) Office of Legacy Management (LM) approached its vital remediation efforts with a streamlined telework posture, continued dedication to human health and the environment, and an adaptability to constantly changing conditions.

In 2021, LM's accomplishments ranged from completing in-depth reviews of the continued protectiveness of remedies in place at sites, to reducing the footprint of its office spaces, to expanding its Science, Technology, Engineering, and Math (STEM) education program, and more.

"LM is here for the long-term, and our mission of protecting human health and the environment doesn't stop for anything," said Padraic Benson, a DOE program analyst. "The start of a new year offers a perfect time to pause and reflect on all that we've accomplished during the past 12 months."

The accomplishments below are just a snapshot of the work LM completed last year. The Annual Historical Summary documents the breadth of these and many other significant activities. For a complete rundown of LM's work throughout 2021, take a look at the 2021 Annual Historical Summary.

LM's progress is best illustrated against six core goals:

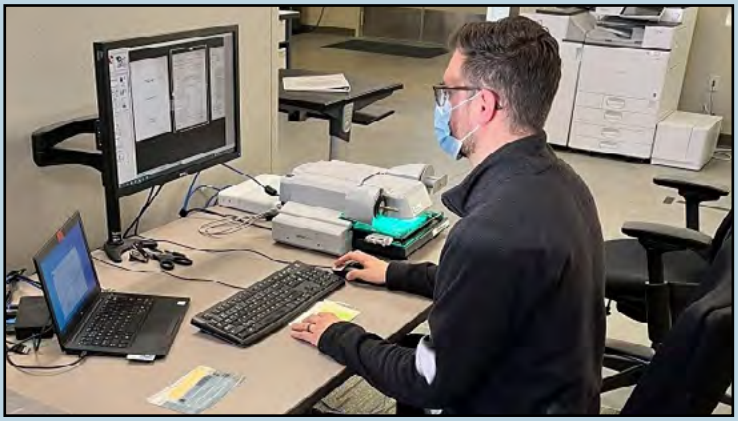
Goal 1: Protect Human Health and the Environment

- The Defense-Related Uranium Mines (DRUM) program is a partnership among DOE, federal land management agencies, state abandoned mine land programs, and tribal governments to verify, validate, and safeguard abandoned uranium mines that provided ore for the nation's nuclear weapons complex. The DRUM program completed 507 field visits and verification and validation (V&V) activities at DRUM sites this season.
- LM conducted Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Five-Year Reviews for six sites. The purpose of a Five-Year Review is to assess whether the remedies (e.g., land use restrictions, long-term groundwater monitoring, contingent remediation) continue to be effective.

In March, DRUM staff held an ecological field day at the Telluride 18 Mine in the Yellow Cat area of southwest Colorado. The field day gave newly hired ecologists the opportunity to go over information collected in the V&V process and familiarize themselves with the local flora and fauna.

Goal 2: Preserve, Protect, and Share Records and Information

- The Archives and Information Management (AIM) team continued to ensure LM records are properly maintained and protected. The AIM team dispositioned 447 boxes of physical records at the Legacy Management Business Center and 3,065 electronic records as part of LM's annual disposition exercise.



LM began digitizing collections of physical records to be stored in Content Manager for easier retrieval for stakeholder requests.

Goal 3: Safeguard Former Contractor Workers' Retirement Benefits

The Legacy Management Post-Closure Benefits Program includes the development, implementation, and oversight of the Department's policy concerning the continuation of contractor pension and medical benefits after the closure of applicable DOE sites and facilities. As of 2021, DOE provided health and life insurance for about 9,300 former DOE workers.

The primary program objective is to ensure a seamless transition of benefits administration after closure.

Goal 4: Sustainably Manage and Optimize the Use of Land and Assets

- In September, the city of Rifle began construction of a new solar array on the New Rifle, Colorado, Processing Site. LM's risk-based review of the city's plans ensured that, despite potential site disturbance, the project complies with institutional controls and does not pose a health risk to the community or the environment.
- LM implemented a phased reduction in its current occupied leased footprint, which resulted in a total reduction of 6,500 square feet at four of the LM sites.

New solar array on the New Rifle, Colorado, Processing Site.

Goal 5: Sustain Management Excellence

- In May, the EPA recognized both LM's Rocky Flats Site and Las Colonias Park with a National Federal Facility Excellence in Site Reuse Award. The award celebrates the work of federal agencies, states, tribes, local partners, and developers in restoring and reusing contaminated land at federal facilities.

Las Colonias Park in Grand Junction, Colorado.

Goal 6: Engage the Public, Governments, and Interested Parties

- LM, in cooperation with the Navajo Abandoned Mine Lands Reclamation/Uranium Mill Tailings Remedial Action (AML/UMTRA) Department, successfully re-engaged the Tribal Intergovernmental Resource Team (TIGR), which focuses on strengthening tribal relationships and STEM programming. Additionally, the organization's STEM with LM program leveraged online platforms to not only produce educational content but also develop new partnerships with school districts and nonprofit organizations. In June, STEM with LM collaborated with We Are R.I.S.E. Inc., a mentoring group for young girls of color, to provide online tutorials for at-home chemistry experiments for students based in Los Angeles. ❖

STEM with LM recently teamed up with We Are R.I.S.E. to hold a virtual science experiment for a group of young girls in South Los Angeles.

LM Director Melendez presents awards to the USACE Luckey Site and Niagara Falls Storage Site (NFSS) project teams during his visit to the USACE Buffalo District office and NFSS in November 2021. Joining Melendez are Luckey Project Manager Steve Vriesen, center; and Luckey Project Engineer Jim Stachowski.

Recognizing Excellence: LM honors U.S. Army Corps of Engineers' Commitment to FUSRAP

GOALS 1 & 5

LM Director Melendez presents awards to USACE Formerly Utilized Sites Remedial Action Program teams

This October will mark 25 years since the U.S. Army Corps of Engineers (USACE) joined the Formerly Utilized Sites Remedial Action Program (FUSRAP). The expertise and dedication that USACE has brought to the program has not gone unnoticed by the DOE Office of Legacy Management (LM).

LM Director Carmelo Melendez recently presented awards to USACE FUSRAP teams with the Pittsburgh and Buffalo districts, recognizing their professionalism and their extraordinary commitment to FUSRAP.

A predecessor of DOE, the U.S. Atomic Energy Commission (AEC) established FUSRAP in 1974 to identify, investigate, and clean up or control exposure to residual contamination at sites that had supported Manhattan Project and AEC activities. In 1997, Congress transferred administration and execution of FUSRAP cleanups to USACE. Today, under FUSRAP, USACE remediates sites and transfers them to LM for long-term stewardship.

"Our strong partnership with USACE is essential to accomplishing the FUSRAP mission of keeping communities safe," said LM FUSRAP Program Manager Cliff Carpenter. "We couldn't do our job at LM without the impressive technical know-how and project management that USACE brings to the table."

On Feb. 16, Director Melendez presented awards to the USACE Shallow Land Disposal Area (SLDA) project team, during a visit to the USACE Pittsburgh District office and SLDA. Between 1961 and 1970, SLDA in Parks Township, Pennsylvania, received radioactively contaminated wastes from a Nuclear Materials and Equipment Corporation facility in nearby Apollo, Pennsylvania. The Apollo facility fabricated nuclear fuel and conducted research for the U.S. Atomic Energy Commission as part of the nation's early atomic energy program. Director Melendez thanked the SLDA project delivery team for its commitment and commended them for ensuring the continued well-being of the community over the last 20 years.

Office of Legacy Management and U.S. Army Corps of Engineers officials attended the awards ceremony on Feb. 16 honoring USACE for its commitment to FUSRAP. From left to right are LM FUSRAP Program Manager Cliff Carpenter; USACE Pittsburgh District Program Manager Steve Fritz; USACE Environmental Branch Chief David Frothingham; LM Director Carmelo Melendez; USACE Pittsburgh District Commander Col. Adam J. Czekanski; USACE Pittsburgh District Deputy District Engineer Lenna Hawkins; USACE SLDA Project Manager Tim Herald; and LM Environmental Protection Specialist Dante Tan.

Melendez visits with USACE Buffalo District Commander Lt. Col. Eli Adams (center) and Niagara Falls Storage Site Project Manager Brent LaSpada.

Melendez presents a plaque to Tim Herald, U.S. Army Corps of Engineers' Shallow Land Disposal Area (SLDA) project manager, thanking the SLDA project delivery team for its "extraordinary commitment" to the Formerly Utilized Sites Remedial Action Program. Melendez presented the plaque during his visit to the Pittsburgh District on Feb. 16.

Last November, Director Melendez presented awards to the USACE Luckey Site and Niagara Falls Storage Site (NFSS) project teams, while visiting the USACE Buffalo District office and NFSS. From 1949 to 1958, Brush Wellman operated a beryllium plant for the AEC at the Luckey Site in Ohio. NFSS, in upstate New York, stored radioactive byproducts from uranium-ore processing for the federal government during the Manhattan Project and early Cold War. Director Melendez applauded both teams for their unwavering commitment to protecting human health and the environment and their proven technical and project delivery expertise.

"It's a privilege to get to partner with USACE," Carpenter said. "When USACE transfers a FUSRAP site over to LM, we know that it is protective of the community and the environment."

As of today, USACE has cleaned up and transferred nine FUSRAP sites to LM and is managing the remediation of 22 active FUSRAP sites. LM is currently responsible for the long-term stewardship of 34 completed FUSRAP sites spread over nine states. ❖

LM wins DOE's GreenSpace Award for Purchasing Environmentally Preferable Products

GOAL 4

The Office of Legacy Management was honored for greening the newly built Weldon Spring Interpretive Center by purchasing more sustainable equipment, materials, and products in that space

The Office of Legacy Management's (LM) Weldon Spring Site, Missouri, is the recipient of the U.S. Department of Energy's GreenSpace Award for fiscal year 2021.

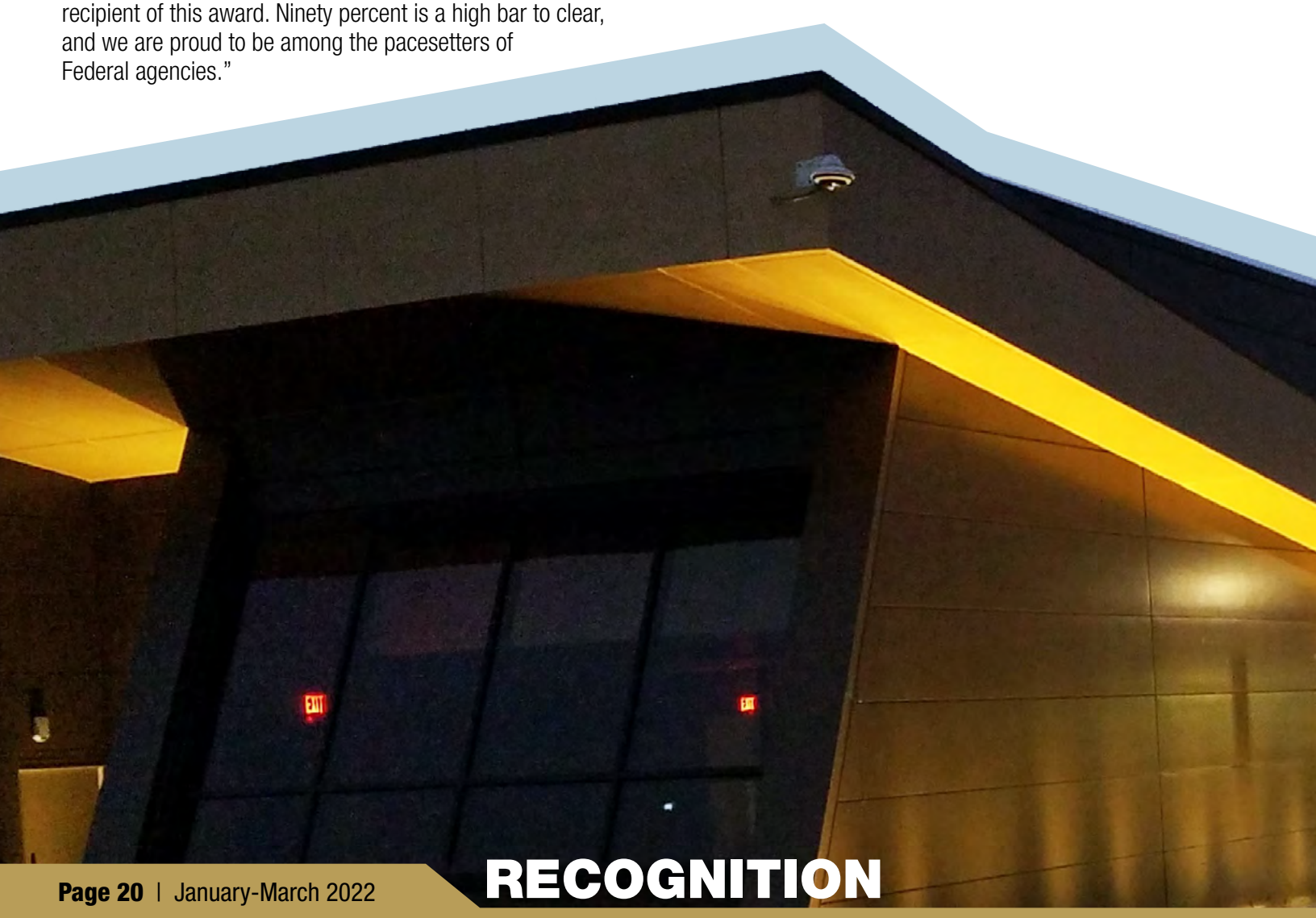
LM was honored for greening the newly built Weldon Spring Interpretive Center by purchasing more sustainable equipment, materials, and products in that space. The Silver level GreenSpace Award was in recognition of LM meeting a 90 percent threshold of environmentally preferable product purchases at the new interpretive center at the Weldon Spring Site.

The GreenSpace Award was launched this year, and LM was the first recipient. The award was in the Auditorium/Conference Space category.

"This award demonstrates that LM is committed to DOE's principles of sustainable acquisition," said E2SH&Q Team Lead Tracy Ribeiro. "We are truly honored to be the first recipient of this award. Ninety percent is a high bar to clear, and we are proud to be among the pacesetters of Federal agencies."

Federal policy requires all agencies to purchase environmentally preferable products and services that use less energy and water, reduce or eliminate waste at the source, promote the use of nontoxic or less toxic substances, implement conservation techniques, and reuse materials rather than put them into the waste stream. The benefits of sustainable acquisition include:

- Improvement of employee health and performance.
- Reduction of emissions of greenhouse gases and other pollutants.
- Conservation of resources.
- Reduced maintenance costs.
- Reduced waste-management costs.
- Support of green building requirements.



To achieve these benefits, the Federal government has established requirements for the preferential purchase of products (often referred to as designated products) that are:

- Energy efficient – ENERGY STAR certified or meet Federal Energy Management Program (FEMP) energy efficiency and low standby power requirements.
- Fuel efficient – SmartWay certified transport partners.
- Water efficient – WaterSense labeled.
- Made from biobased content – BioPreferred designated.
- Made from recycled content – Comprehensive Procurement Guideline designated.
- Non-ozone depleting – Significant New Alternatives Policy (SNAP) alternative.

DOE sites receive recognition for purchasing programs that obtain sustainable products, save energy, conserve water, and reduce negative health and environmental impacts under the GreenBuy Award Program. The GreenSpace Award, a component of the GreenBuy Award Program, recognizes achieving goals for multiple products within a single space or function. For the Weldon Spring Interpretive Center, products were purchased for the auditorium and two conference rooms within the following categories that met GreenBuy criteria: furniture, LED lighting, carpeting, acoustic ceiling tile, and electronic equipment/computers and displays.

The sustainability goals are based on evaluations of environmental performance standards, ecolabels, and input from DOE sites as well as external organizations. The goals often go beyond the Federal requirements, but do not preclude responsibility for meeting the Federal sustainable acquisition requirements.

The awards become progressively more challenging over time, encouraging participants to transition to more and more sustainable products. LM's participation in this program leverages the Federal government's purchasing dollars to achieve mission goals while improving the marketplace for greener products and reducing the environmental impact of DOE's operations. LM and its contractors are asked to do their part to help LM achieve future recognition for purchasing sustainable products. Personnel from procurement, environmental compliance, and sustainability team members are available to assist if needed.

LM and support contractor staff who contributed to the purchasing, information gathering, and review of the award nomination were Sara Atkins, Teri Kisner, Bob Ransbottom, Tracy Ribeiro, Rebecca Roberts, Lisa Saurborn, Randy Thompson, and Kate Whysner. ❖

Newly built Weldon Spring Interpretive Center.

LM Launches Campaign to Address Abandoned Uranium Mines on Tribal Lands

GOALS 1 & 2

LM Defense-Related Uranium Mine program to survey hundreds of abandoned mines on tribal lands

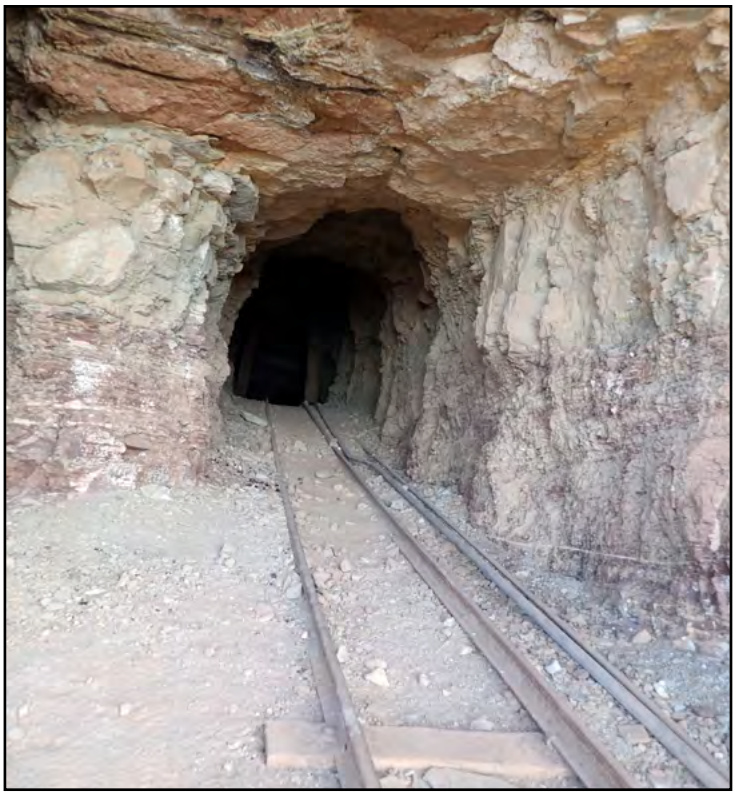
A powerful partnership among the U.S. Department of Energy's Office of Legacy Management (LM), tribal governments and other agencies is focused on safety at former uranium mining sites, to guide the way to the future protection of human health and the environment across the west.

The (LM) Defense-Related Uranium Mine (DRUM) program has identified approximately 360 mines on the Navajo Nation and other tribal lands. DRUM is a partnership between DOE, federal land management agencies, state abandoned mine lands (AML) programs, and tribal governments to assess the potential risks of mines that provided uranium ore to the U.S. Atomic Energy Commission (AEC) for defense-related activities.

LM has already identified the tribal lands where defense-related uranium mines are found. The vast majority — 96 percent — are on the Navajo Nation. The remaining fourteen mines are located on the lands of the Hualapai Tribe, the Pueblo of Laguna, the Pueblo of Zuni, the Spokane Tribe of Indians, the Tohono O'odham Nation, and the Ute Indian Tribe. DRUM will collaborate with tribal agencies to ensure their data objectives and DRUM procedures align as much as possible, and DRUM will share subsequent reports, data, and preliminary risk screenings with the tribal governments to help them make decisions about how to address mines that pose the greatest risks. "Our collaboration with the tribes is one of most important goals to the success of the work being done within the DRUM program," notes Brent Lewis, LM DRUM Program Technical Lead and Project Manager.

DRUM does not have the authority to perform Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) activities but has the objective to assist in aligning its protocol to facilitate the identification of mines that could possibly warrant further CERCLA studies.

Anticipated to begin in FY 2023, DRUM's fieldwork on tribal lands will focus on identifying abandoned uranium mines and the risks they pose, so tribes can prioritize safeguarding projects. DRUM is also coordinating with the U. S. Environmental Protection Agency (EPA), which is currently working with the Navajo Nation, the Pueblo of Laguna, and Spokane Tribe of Indians to remediate uranium mines on their lands in accordance with CERCLA, commonly known as Superfund. DRUM will not duplicate EPA's efforts on sites undergoing the CERCLA process or participate in remediation of any mines.



Adit with Mine Cart Railway Ram 1 Mine Near Moab, UT.

The road to DRUM assessing mines on tribal lands began in August 2014, when DOE submitted the Defense-Related Uranium Mines Report to Congress. The report estimated 4,225 mines provided uranium ore to the U.S. government between 1947 and 1970 for defense- related purposes. It concluded that some of the mines might pose a risk to human health and the environment, but the scale of the problem remained unknown.

LM created DRUM to evaluate the abandoned uranium mines and fill in the knowledge gaps. DRUM looks at the potential risks to humans and the environment, with an emphasis on physical safety hazards. DRUM conducts verification and validation (V&V) screening activities on individual mines. DRUM does not have authority under CERCLA to conduct remediation, so the emphasis is on identifying physical safety hazards, providing risk-screening information to our partners, and working with our partners to safeguard hazards.

Mine carts on Railway Bonanza Mine near Gateway, CO.

DRUM developed three campaigns to evaluate mines on public lands (Campaign 1), tribal lands (Campaign 2), and private lands (Campaign 3). V&V activities for Campaign 1 began in 2017.

Campaign 1 is estimated to include 2,362 mines. To date, 1,791 mines, or 76 percent, have V&V activities completed with most of these occurring in Colorado, Utah, and New Mexico.

DRUM Campaign 1 on Public Lands		
Fiscal Year	**V&Vs Completed**	**Comments**
2017	58	Began V&V activities in July 2017
2018	349	Employed four field teams
2019	345	Added fifth field team in July 2019
2020	403	Impacted by COVID-19 starting March 2020
2021	541	Continued impact from COVID-19
2022	95	Accomplished as of December 10, 2021

As of December, fewer than 600 mines remain in Campaign 1. Work will continue in areas of higher mine density in Colorado, Utah, and expand into South Dakota in FY 2022 and FY 2023. In FY 2023, V&V activities will be expanded to integrate field work on some tribal lands and include the more dispersed Campaign 1 mines in other states. Completion of Campaign 1 is scheduled for FY 2024. During this final year of Campaign 1, the synchronized scheduling and V&V efforts of Campaign 2 will greatly increase.

Collaborating with other federal and state abandoned mine agencies allowed the DRUM program to stand up quickly, while fine tuning methods and reporting products and capturing the needs of DRUM partner agencies. The DRUM program gained valuable experience from Campaign 1 that will be applied in working on tribal lands during Campaign 2.

Campaign 3 is estimated to involve approximately 670 mines on private property. As with previous campaigns, Campaign 3 will begin before Campaign 2 is completed. Campaign 3 is scheduled to start in FY 2024 and be completed in FY 2026. To learn more about the DRUM program, please visit https://www.energy.gov/lm/defense-related-uranium-mines-program. ❖

LM Gets Community Involved During Shiprock Baseline Aerial Survey

GOAL 1 & 2

Public outreach included in effort to monitor conditions at disposal site in northwestern New Mexico

In January, the Office of Legacy Management (LM) conducted baseline aerial surveys to collect photogrammetry, lidar, and thermal data at the Shiprock, New Mexico, Disposal Site in a routine inspection for future monitoring of site conditions. Although the disposal site is in good condition, LM's approach toward prudent site management is to establish an accurate baseline against which to monitor conditions as they change.

Shiprock is a Title I site under the Uranium Mill Tailings Radiation Controls Act (UMTRCA), which Congress established in 1978 to protect the public and environment from leftover contamination from former uranium-milling sites. Many of these sites, including the Shiprock Site, were licensed to the U.S. Department of Energy (DOE) for cleanup, long-term stewardship, and routine maintenance.

A drone takes flight to begin the baseline aerial survey at Shiprock, New Mexico.

Aerial surveys such as the one at Shiprock are conducted with drones, during daylight hours, to collect aerial imagery and topographic elevation data to provide LM with a high level of accurate data on the surface conditions.

"Drones are typically used because they are timesaving and provide more accurate, high-quality 3D spatial data that provides for in-depth reporting of the area," said LM Program Aviation Manager Deborah Steckley.

While these surveys are conducted at 25 different UMTRCA Title I and Title II sites, the Shiprock survey offered a unique experience to members of the community.

"We were able to build an outreach campaign specific to the Shiprock community and our partners, which gave us the opportunity to not only address any concerns but also spread the word about why aerial surveys of the area are important," said LM UMTRCA Program Manager Mark Kautsky. "This ensures that community members are aware of what's going on and gives them an opportunity to be engaged in our stewardship projects."

LM UMTRCA Program Manager Mark Kautsky provides information on the aerial survey at a public affairs kiosk in Nizhoni Park, New Mexico.

Since September, LM has been conducting outreach to engage the public, utilizing everything from local radio announcements on Navajo-language stations to providing updates to local government, businesses, and Navajo emergency services in the area. LM and Legacy Management Support (LMS) Public Affairs staff went door to door to hand out flyers that gave a brief overview of the project, with answers to questions people may have. These flyers were also distributed to homeowners who live near the disposal site, and in high-traffic areas such as grocery stores, post offices, and restaurants.

LM also informed the Shiprock Chapter House, Navajo Nation law enforcement, and coordinated outreach activities with the Navajo Nation Abandoned Mine Lands Department (AML). A video of Kautsky explaining the project and giving important background information on the survey was created to help visually demonstrate the project, and was shared with tribal partners. AML shared the video on its Facebook page to reach an even wider audience.

To spread the word of the project even further, LM staffed a public affairs kiosk at a local park where members of the community could address any questions or concerns directly with the aviation team.

"It's imperative to involve the community in something like this and being able to interact with them and answer important questions," Kautsky said. "We had several interested members, and even some interest from a local school. I look forward to being able to do more outreach projects like this in the future."

Amid Ongoing Pandemic, LM Supports Remediation Projects Abroad

GOAL 6

One of the Office of Legacy Management's (LM) core commitments is to protect human health and the environment. LM not only supports remediation missions across the United States but across the world. LM collaborates with professionals and international groups to support long-term stewardship, particularly of uranium mining and milling sites in places such as Eastern Europe, Central Asia, and closer to home, in Canada.

In addition to participating in workshops and giving presentations, LM has welcomed visitors from other countries who come to see LM sites. LM has successfully assisted with various remediation efforts and consistently searches for new ways to help communities across the globe.

"It is not a one-way street, either," said David Shafer, LM's technical director for Long Term Stewardship. "For example, many countries were addressing hazards at abandoned uranium mines well before LM began its Defense-Related Uranium Mine program. The success of other countries helped us develop our program."

Since 2010, LM has actively engaged in groups such as the International Atomic Energy Agency (IAEA), an intergovernmental agency within the United Nations that focuses on global nuclear cooperation. LM is providing technical support to the IAEA to address uranium sites in Central Asian republics that were part of the former Soviet Union through the IAEA Coordination Group on Uranium Legacy Sites (CGULS).

LM will also be contributing to a new IAEA "safety guide" on post-closure management of remediated sites as part of the Forum on Regulatory Supervision of Legacy Sites (RSLS). LM began participating in RSLS in 2010 to support remediation of contaminated sites, many of which operated during the Cold War, but were abandoned afterward. The IAEA as well as the Nuclear Energy Agency (NEA) are also increasingly recognizing the importance of stakeholder involvement in decisions on cleanup of these sites. LM is sharing what it has learned on effective stakeholder engagement.

Shafer added, "There are obviously cultural differences in how people interact in different countries but providing for stakeholder input and acceptance before cleanup of a site begins is increasingly important around the world."

To support many of its international activities, LM and Legacy Management Strategic Partners (LMSP) have traveled to other countries and hosted personnel from these various organizations in Grand Junction, Colorado. The proximity of many LM sites to Grand Junction makes it a central point from which visitors can see the types of activities that LM performs at its sites.

Although COVID-19 delayed some of LM's international work, the IAEA as well as the Nuclear Energy Agency have continued to interact on virtual platforms to continue their collaborative efforts.

Looking ahead in 2022, LM's International Program will participate in various meetings, webinars, and continue its collaboration and mutually beneficial exchanges with international organizations. LM and LMS are hoping to host Japan's Nuclear Damage Liability Facilitation Fund (NDF) delegation's visit to Rocky Flats Site in Colorado. The Japan NDF is interested in how DOE, regulators, and stakeholders agreed on an "end state" for Rocky Flats. Although significant progress has been made, agreeing on an end state could help to complete remediation of some areas around the Fukushima Daiichi Nuclear Power Plant following the accident there in 2011. The IAEA has also asked LM to host a workshop and site visits from representatives of Kyrgyzstan, Tajikistan, and Uzbekistan, now independent countries but formerly part of the Soviet Union.

While contingent upon COVID-19 developments, these visits will be used to discuss how decisions on site remediation were made, what is required to ensure that the sites continue to protect public health and safety today, and even how sites have been put into beneficial reuse. ❖

Grand Junction, Colorado, is in proximity to many Office of Legacy Management (LM) sites, which makes it a central point from which visitors can see LM's various activities. In this photo from August 2012, LM welcomes a delegation from the International Atomic Energy Agency (IAEA) at the Grand Junction office.

Bill Frazier, an LM site manager and civil engineer, speaks to students at Pomona Elementary School in Grand Junction on Jan. 19. Photo courtesy of Rachelle Horner/Mesa County Valley School District 51.

LM Staff Engages With Students at STEM Events in Grand Junction

GOAL 6

Fifth-graders learn about passive, mechanical and kinetic energy, and why art is important to careers in scientific fields

U.S. Department of Energy (DOE) Office of Legacy Management (LM) staff supported outreach for the Atomic Legacy Cabin (ALC) at two STEM events in January for Pomona Elementary School in Grand Junction, Colorado.

On Jan. 19, LM Site Manager Bill Frazier spoke with fifth-grade problem-based learning students about how he has used art in his career as an engineer, said School District 51 STEM coordinator Rachelle Horner.

The students are presenting an argument that art should stay in STEAM (science, technology, engineering, art and math) because of the importance of art to all careers.

"Our goal from this presentation was to help students think outside the box about how art, creativity and design are important elements for success in many career paths, not just to become an 'artist,' " Horner said.

"Bill was able to show the students photos of past projects, and explain to them how, as an engineer, he had to make decisions that employed sound engineering practices but balanced the artistic or aesthetic goals of the project that were also valuable and made the environment he was improving a pleasant place to be," she said.

Frazier's presentation helped students broaden their understanding of a variety of career paths in engineering and construction, and explained how rounding out their skill sets to include art and design can help take an engineer's work to a new level, Horner said.

At the second event on Jan. 25, LM Site Manager Kate Whysner taught students about yo-yo energy at Pomona's Science Night at Eureka! Math and Science Center in Grand Junction. Whysner explained potential and kinetic energy, and the conversion of mechanical to electrical energy. She challenged the students to guess how many hours of yo-yoing it would take to charge a light bulb or a cellphone.

"A simple game like a yo-yo can be even more fun when you think about all of the forces and types of energy that are involved," Whysner said.

Her visit with Pomona students was her first STEM with LM event, and she's excited to volunteer for more.

"To watch a student have an "Aha!" moment when they get to apply a concept they learned at school to something they experience in the real world is so rewarding," she said.

Pomona Principal Bil Pfaffendorf said he was happy students got to participate in Whysner's activity, which he hopes encourages them to consider possible careers in STEM fields.

"This is really important because kids, especially our girls, were able to see a professional female role model," he said. "One thing that we ensure at Pomona is that we become scientists, not just 'do science,' and that boys and girls are both hard workers, knowledgeable, and are great partners."

Whysner's yo-yo lesson was particularly enjoyable, Pfaffendorf said, because the fifth-graders are really into yo-yo tricks this year. He said he overheard students talking about the "forces" they learned about at science night. The kids made all kinds of real-world connections, he said.

"It was pretty cool to hear those side conversations on the playground or classrooms," he said. "Kate did a fantastic job of letting kids wonder, be curious, and let them struggle when she asked them questions."

Pfaffendorf said it's very important to have students engage with professionals who work in STEM-related fields.

"This is one reason we moved to a STEAM school using problem-based learning as a platform," he said. "Kids get to see, listen and work with professionals from our community or around the world. All the adults that we have engaged with have been beyond professional."

LM Site Manager Kate Whysner gives a presentation at Pomona Elementary School's Science Night at Eureka! McConnell Science Museum in Grand Junction on Jan. 25.

Preservation and Perseverance: LM's David Von Behren Believes in Both

GOAL 5

New ECHO team leader has spent his career at the crossroads of public health and public relations

David Von Behren came to the Department of Energy (DOE) Legacy Management (LM) just two months ago as the Education, Communication, History, and Outreach (ECHO) supervisor — but the office's public health mission has been a guiding principle throughout his 30-year career.

"The clause in our mission statement, 'to ensure the future protection of human health and the environment,' really caught my attention," Von Behren said. "I've worked at the intersection of public health and public relations for my entire career, but the backdrop of historical context and site responsibility made for a unique opportunity."

Von Behren's career path has had a consistent theme: the health of underserved communities. During the early days of the COVID-19 pandemic, Von Behren was stationed in Colorado as a communications officer for the U.S. Department of Agriculture's Food and Nutrition Service.

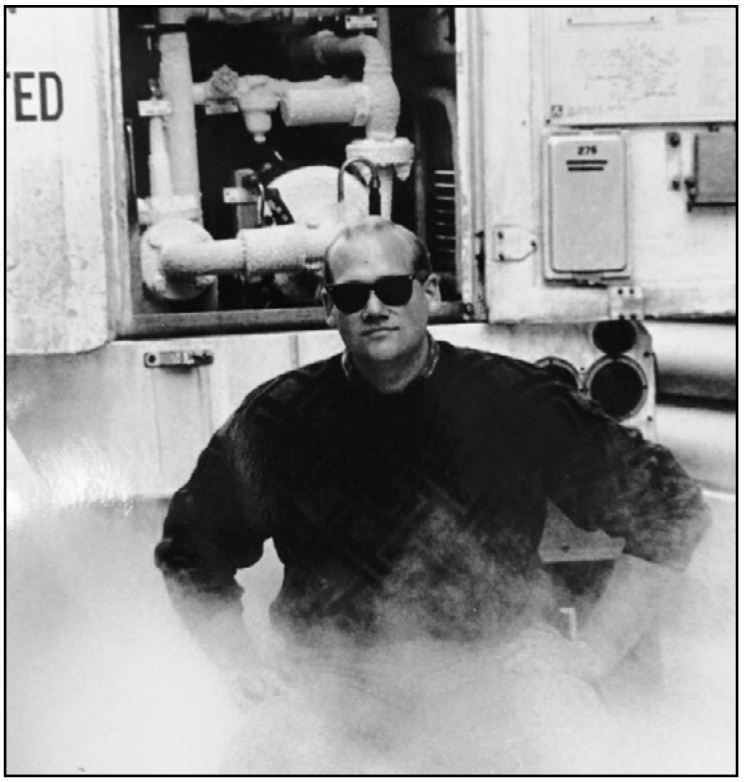
"The region where I served with the Food and Nutrition Service is home to many Native, urban, and rural communities with hunger challenges – and many of them are located in areas known as food deserts. When the pandemic hit, local food banks were overwhelmed and nationwide supply shortages exacerbated the lack of access to resources," said Von Behren. "Then, schools went virtual, and their meal programs shut down." His organization partnered with an airline food company to mobilize more than 12,000 meals in a week for a food bank in St. Louis, and the Food and Nutrition Service supported an infrastructure to continue fighting hunger for other families as the virus spread and lockdowns continued.

Von Behren credits the strength of his relationships within the Native American community in helping bridge the accessibility gap safely and efficiently. As he gears up to lead the ECHO team into the new year, he sees such connections as responsible for driving the continued success of LM's mission.

Von Behren became interested in the legacy of World War II at a young age. An avid reader, he especially remembers delving into the works of historians Stephen E. Ambrose and Thomas Bradley, whose father was one of the Marines who raised the flag at Iwo Jima. Von Behren, too, felt the call to serve his country, but he also wished to relay the impact of American history on the world today through storytelling.

After high school, Von Behren enlisted in the United States Marine Corps, but injuries early in his career resulted in stints at the hospital. Sidelined from duty, Von Behren was inspired by the medical professionals who surrounded him. As he underwent rehabilitation and treatment programs, he discovered new interests in the world of health and wellness – and he decided to bridge those worlds with his love for storytelling. He turned to journalism. As a reporter and later as a public relations professional, public health became his area of expertise.

Von Behren proved to be a prolific journalist with an appetite for health science research and development. His coverage spanned everything from new scientific findings and emerging data to domestic hunger prevention campaigns. His public health beat led him to communities across North America, including work with numerous Native American tribes.



Von Behren reporting at the University of Arizona for the Arizona Daily Wildcat in 1988.

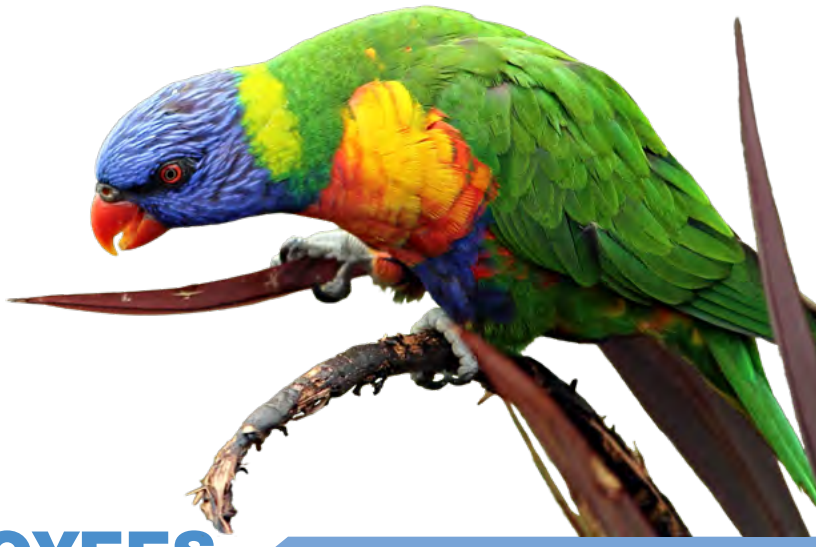
Von Behren poses with lorikeets at a nature preserve in Picacho Peak, Arizona.

"Public health is a broad term; it covers all cultures and all communities," Von Behren said. "I've had the honor of speaking with researchers, officials, and representatives of sovereign nations to amplify their experiences and narratives. Behind each effort to protect and preserve health is a story. Throughout my career, I've come to understand that no one will tell your story correctly if you don't."

For Von Behren and the rest of the ECHO team, protecting the environment and preserving history are simultaneous efforts. "Keeping the public abreast of monitoring and remediation, coordinating new educational initiatives, conducting community outreach, and communicating with other offices across DOE takes a dedicated and flexible approach," said Von Behren.

As public-facing storytellers, he and his team constantly strive to improve communication with community members to further the office's mission, whether that's collaborating with Native American communities, engaging young people to use science in creative ways, supporting public health, or helping the public understand the significance of LM's sites in United States history.

"LM is small, but mighty," Von Behren said. "We're fortunate to have such rich diversity of community involvement efforts." ❖



Tiffany Drake is LM's Newest Advocate for Equity in STEM Education

GOAL 5

From a small town in Pennsylvania to a career in engineering, Drake sees access to early STEM education as crucial

Tiffany Drake, a new site manager at the U.S. Department of Energy (DOE) Office of Legacy Management (LM), is passionate about science, technology, engineering, and math (STEM) outreach in the rural Missouri community where she lives. She shared her passion with high-school students last fall during a career day at a local school and is meeting with local superintendents to learn more about how to provide STEM resources developed by LM.

Drake is a strong advocate for access to STEM education in part because she knows how critical it is to build the workforce of tomorrow and in part because she knows how challenging access can be for students in under-resourced communities.

While attending the University of Pittsburgh for her undergraduate work in chemical engineering, Drake became aware that her grade-school studies in a rural school district did not provide her with the same preparation as her peers who attended larger or better-funded schools. She sensed her limited access to early STEM education was a barrier she had to overcome in pursuit of her career goals.

Drake is by no means alone in her observation of inequitable access to STEM education among schools across the country. On Oct. 14, the White House Office of Science and Technology Policy (OSTP) launched "The Time is Now: Advancing Equity in Science and Technology Ideation Challenge."

The challenge issued to the American public is to answer the central question, "How can we guarantee all Americans can fully participate in, and contribute to, science and technology?" According to the OSTP, by almost every measure, the U.S. science, technology, engineering, and mathematics ecosystem is inequitable. While progress is being made to remove barriers to STEM education, more remains to be done. Learn more about OSTP's initiative and the national call to action.

In addition to advocating for equitable access to STEM education on a national scale, Drake is also an advocate for increased representation of minority groups in the field. A large part of pursuing any career path is being able to envision oneself in the field. More simply put, representation leads to inspiration. Drake wants young students to find inspiration in the variety of paths they can take in STEM – a variety that requires a diversity of backgrounds and talents.

As an example, when Drake was younger, she always loved science but was less drawn to math.

"People think to go into engineering, math has to be your favorite thing, but it definitely wasn't for me," she said. "Chemistry and physics were the subjects I loved, but I wanted practical uses for the things I was learning. I wanted to be out doing things with the science I learned, which is why engineering appealed to me."

Before coming to LM, Drake worked in technical sales for the welding industry, and then food production. She most recently spent 16 years, the bulk of her career, as an environmental engineer for the state of Missouri. Her progression to her current role with Legacy Management was anything but linear, but the preparation she had with her bachelor's degree in chemical engineering and later an M.B.A. equipped her with the opportunity to use her talents within various STEM fields in roles she never even knew existed.

"I think it is challenging for students as they learn about different subjects to see how they can combine all of that separate information to lead them to a potential career," Drake said. "My goal is to get into those rooms and show them early on that there are so many opportunities that LM and DOE have to explore their interests beyond the jobs they are familiar with."

Learn more about STEM with LM and the various ways to become an advocate for equitable STEM education, whether using a STEM resource produced by LM interpreters or signing up for a chat with an expert.

"By sharing STEM with LM and my own journey, I hope to show them how many more options there are for their future," Drake said. "I feel very fortunate to be part of an agency that recognizes the critical need for this type of outreach to areas of the country that are often overlooked." ❖

New Employee Bios

GOAL 5

Gordon E. Clark Jr.

Gordon Clark was raised in Hampden, Massachusetts. He graduated from Springfield College in Springfield, Massachusetts, in 1982 with a Bachelor of Science degree in environmental sciences and in 1990 earned a Bachelor of Science degree in civil engineering from the University of Lowell in Lowell, Massachusetts. He earned a Master of Science degree in environmental engineering from Pennsylvania State University in 1998.

Clark currently serves as the supervisor for the Uranium Mine Team and is responsible for the verification, field surveying, risk assessment and physical safeguarding of Defense-Related Uranium Mines. His prior positions include real policy analyst for the DOE; director of Real Estate, Naval Facilities Engineering Command (NAVFACENGCOM); director of Shore Infrastructure Planning, NAVFACENGCOM; and product line leader for Contingency Engineering, NAVFACENGCOM. He was commissioned at the U.S. Navy Officer Candidate School in Newport, Rhode Island, in 1990. His military tours include: Asset Management Branch Head, commander, Navy Installations Command, Washington, D.C.; Public Works Branch Head, commander, Navy Installations Command, Washington, D.C.; Facilities Engineer and Acquisition department head, Marine Corps Base, Quantico, Virginia; Transportation and Communications program manager, Project and Contracting Office, Baghdad, Iraq; Flag Housing officer, Naval District Washington, Washington, D.C.; contingency engineer, CINCUSNAVEUR, London; OIC Detachment Haiti, assistant operations officer, OIC Detail Iwakuni, headquarters company commander, material liaison officer and embarkation officer, NMCB-74, in Gulfport, Mississippi; assistant public works officer and assistant resident officer in charge of construction, Naval Station Everett in Everett, Washington. Clark's prior military experience included six years in the Massachusetts Army National Guard as an infantry squad leader.

Clark's military decorations include Defense Meritorious Service Medal, three Meritorious Service Medals, three Navy Commendation Medals, Navy and Marine Corps Achievement Medal, Army Achievement Medal and other service awards. He is a registered professional engineer in the state of Washington, is qualified as a Seabee combat warfare officer, and is a member of the Acquisition Professional Community.

Clark is married to the former Sandra Elizabeth Ross Gardner. They have four children.

Beth Coleman

Beth Coleman has joined the Archives and Information Management Team (LM-11) as an information technology specialist. Prior to her move to LM, she spent the past 11 years as a DOE-LM contractor managing the IT Governance team. She graduated from West Liberty University in West Virginia with a bachelor's degree in business administration, minoring in computer information systems. She followed in the footsteps of her grandfathers and started her career in the military. (Go Navy!) Outside of work, she enjoys spending time with her family and doting on her three grandkids (soon to be four).

Allison Kenney

Allison Kenney has joined the Office of Legacy Management's Archives and Information Management Team as an information technology specialist. She earned a Bachelor of Arts degree in anthropology from the University of Colorado and subsequently worked as a librarian for contractors for the U.S. Environmental Protection Agency and U.S. Department of Energy for several years. She then earned a Bachelor of Science degree in computer science from Mesa State College (now Colorado Mesa University), and more recently, a Master of Science degree in cybersecurity from Utica College (now Utica University) in Utica, New York. She has worked for more than 20 years in IT as a network administrator, network manager, and cybersecurity analyst for contractors on DOE Uranium Mill Tailings Remedial Action projects and with LM. She spent the first 18 years of life as an Air Force dependent, moving nine times, attending eight different schools, and living in three countries. All that travel left her with a permanent case of wanderlust and in her free time, she continues to grow her list of places and countries she has visited.

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