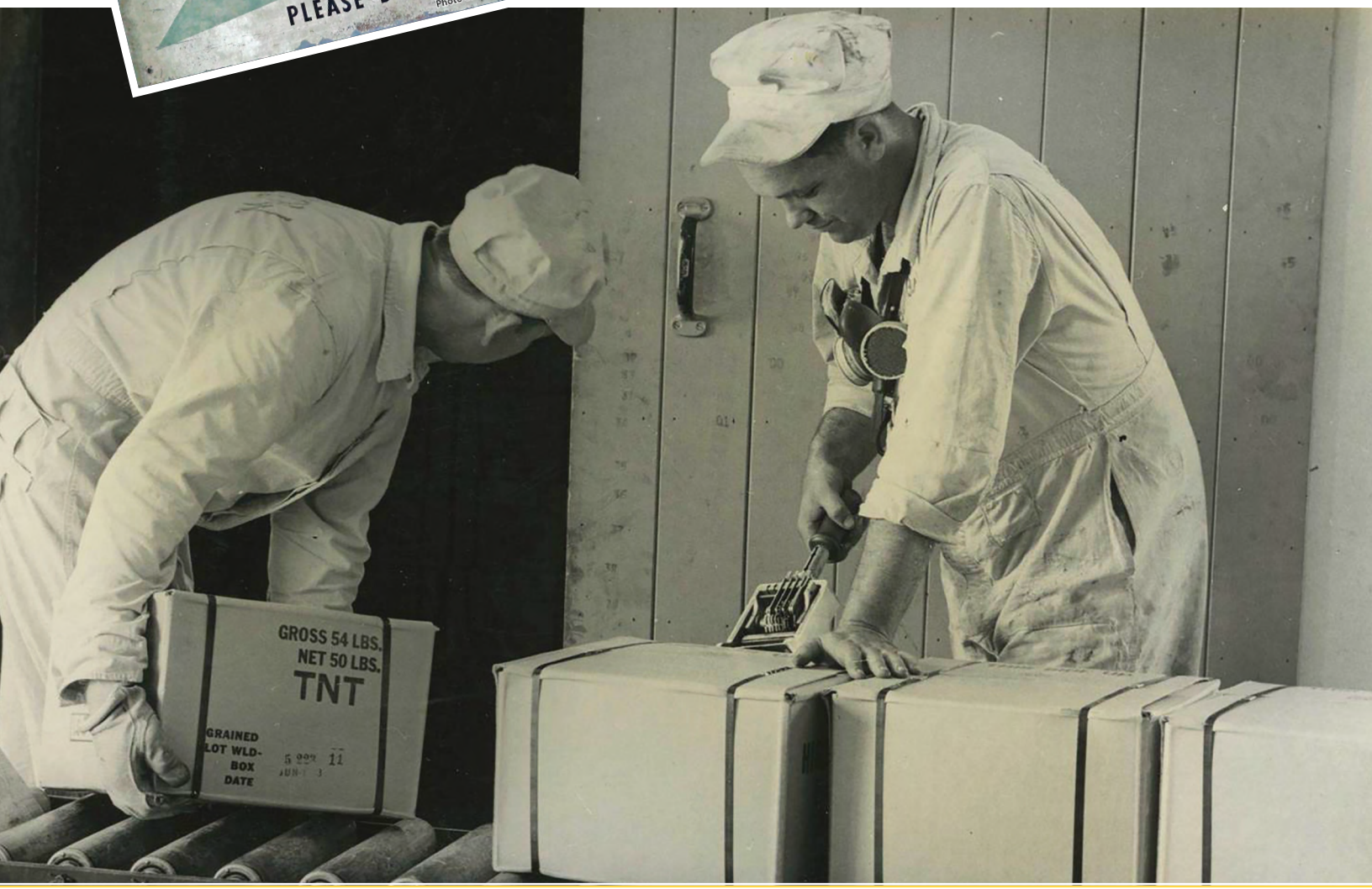
U.S. Department of Energy

PROGRAM UPDATE

July-September 2021

A LEGACY OF SERVICE



A LEGACY OF PROGRESS

TREAT Workshops Designed to Assist Teachers

A LEGACY OF RESPONSIBILITY

LM Adopting Modern Information Governance Practices

A LEGACY OF PROTECTION

Site Inspections Front Line of Defense for Protecting Public, Environment

Director's Corner

LM's history full of stepping stones for future success

Many philosophers, academics, and literary icons have tried to make the point to various audiences in a variety of forums that to not pay attention to history makes repeating mistakes more likely.

Whether it be government, business, science, economics, agriculture — you name it — there are always lessons learned for how institutions and people can improve upon performances from the past.

However, as progress is made incrementally, it is sometimes hard to see the leaps that institutions make over time. Although it is certainly true that learning from the past can help us be more effective as we navigate what's ahead, it is also important to occasionally pause and take a look at the progress that has taken place.

In this edition of Program Update, the U.S. Department of Energy (DOE) Office of Legacy Management (LM) showcases some of our work happening today. This edition also provides historical context to some of the areas that have grown rapidly throughout the history of DOE and its predecessor agencies.

DOE and LM have rich histories worth celebrating, and while we make continuous improvement a staple of our operations as we look to the future, we also want to honor the previous work that created the building blocks of our program and contributed mightily to our successes.

In this edition, there are articles related to our safety program and site inspections, our work with records management, efforts related to the Manhattan Project National Historical Park, how work continues for a grand opening of the new Weldon Spring Interpretive Center, community outreach efforts, and more.

There are also profiles of people within LM who can explain some of the progress that has occurred over time, as well as some of the important happenings taking place today.

Also featured in this edition of Program Update are articles related to Environmental Justice. Environmental Justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

This edition also contains historical elements of our programs that aim to shine a light on our forerunners and demonstrate our legacies of responsibility, cooperation, dedication, progress, education, safety, and more.

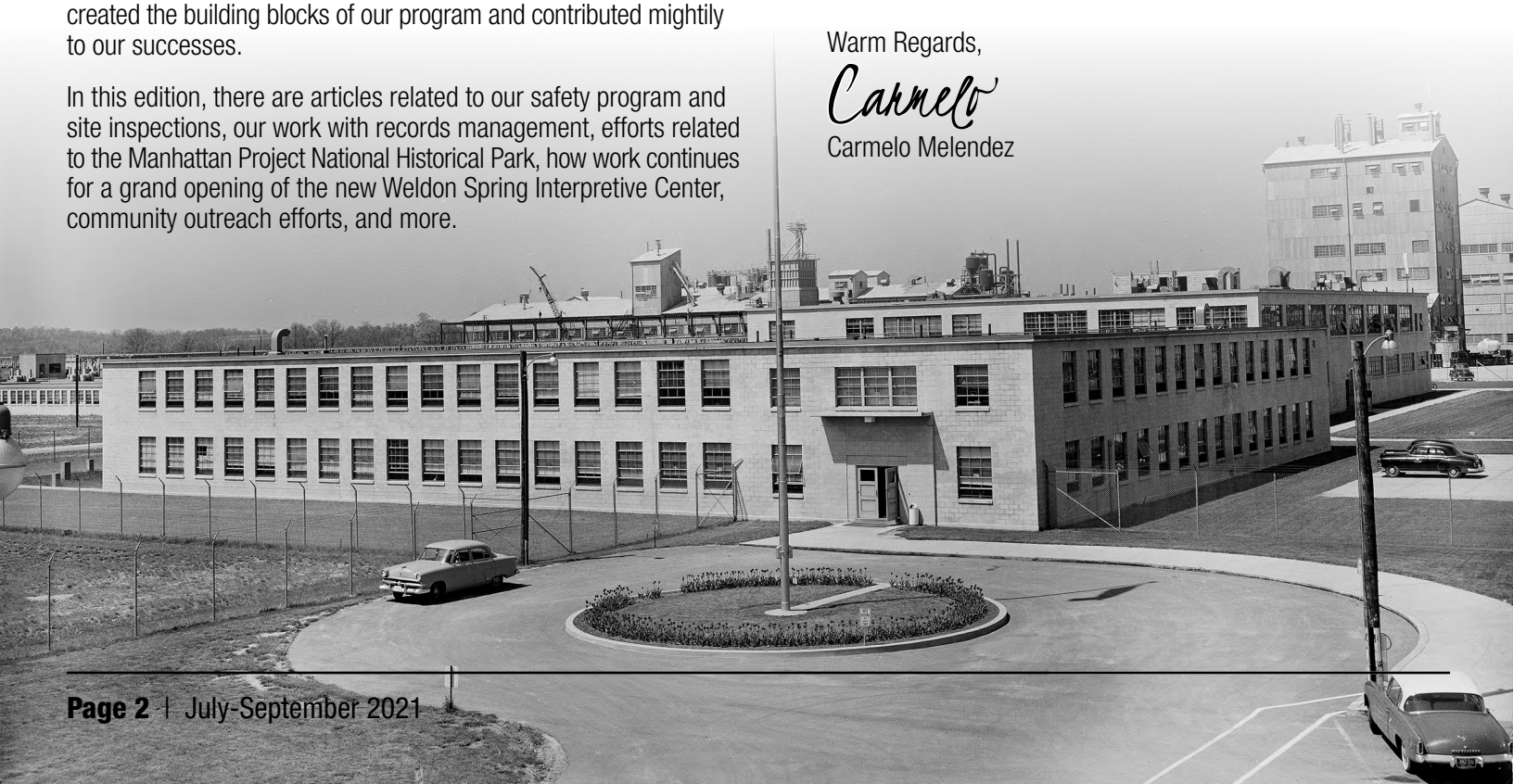
When it's all put together, it is a legacy of service. It is a legacy of service from days gone by and a legacy of service today. DOE has not performed it alone and our legacy has been shaped by partners, tribes, and stakeholders, and that will continue to be the case as we move forward.

Together, we'll look for ways to make a better tomorrow, with an appreciative eye on our yesterdays.

Warm Regards,

Carmelo

Carmelo Melendez



Welcome to the July-September 2021 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.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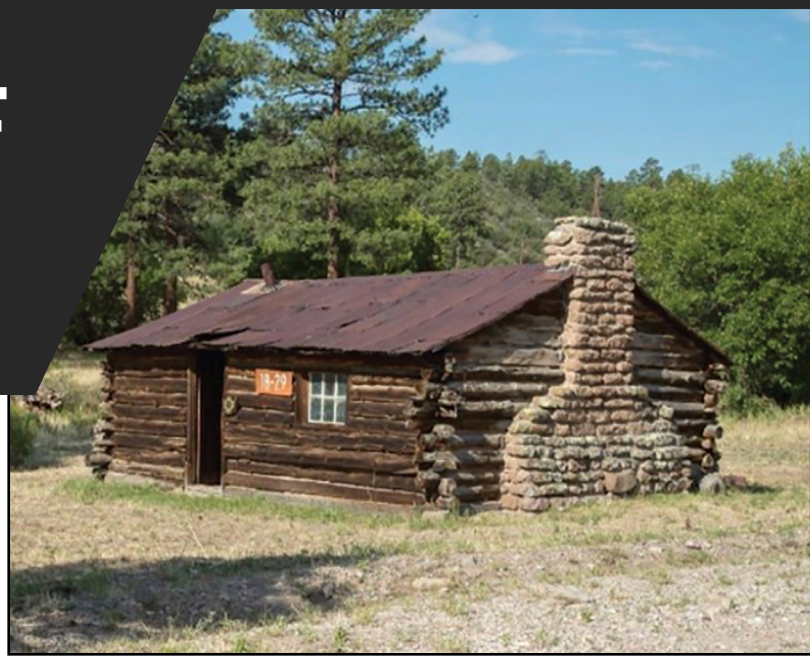
Inside this Update:

A LEGACY OF *education*



Vicki Loucks was instrumental in the preservation of Pond Cabin, which operated as an office for Emilio Segrè and his plutonium research team during World War II.

GOAL 6

Champion of Historic Preservation at Los Alamos National Laboratory Retires

When Vicki Loucks joined the Los Alamos National Laboratory (LANL) in 2002, she was excited about taking on a new challenge.

In the 1990s, Loucks had worked for the Pantex and Sandia Site Offices, where she managed their water quality programs and biological resources. As the Cultural and Biological Resources Program Manager at the Los Alamos Field Office, she would be responsible for running the program that managed more than 1,800 archaeological sites, 17 Manhattan Project historic properties, and nearly 400 Cold War historic buildings and structures.

Working with cultural resources — which can include historic and prehistoric sites, objects, landscapes, and structures — proved to be particularly rewarding for Loucks during her nearly 20 years at LANL before retiring earlier this year.

Loucks was the Cultural and Biological Resources Program Manager and she played an important role in the decades-long effort to establish and operate the Manhattan Project National Historical Park (MAPR). In the early 2000s, when Public Law 108-304 directed the Secretary of the Interior to conduct a feasibility study of historically significant sites associated with the Manhattan Project, to evaluate the compatibility of sites for inclusion as a unit of the National Park System (NPS), Loucks participated in public meetings and coordinated site visits for DOE and NPS representatives when decisions were being made as to which properties would be included in the park.

After the 2015 National Defense Authorization Act authorized the new park, Loucks was appointed the MAPR site representative for Los Alamos. As MAPR site representative, Loucks has been a key part of the team responsible for operating the park.

"She is knowledgeable and persistent and she is able to make things happen over the long term," said DOE's program manager for the Manhattan Project National Historical Park, Tracy Atkins. "She is always a team player and willing to partner and think creatively to make progress. Vicki's experience in cultural resource management, land transfers, and her relationships with the Pueblos in the Los Alamos area were very valuable as we began the work of setting up the Park and along the way."

Loucks has been a prominent supporter of the Candidates for Preservation Program at LANL, which is committed to coordinating with laboratory maintenance staff to ensure long-term preservation and maintenance of 17 Manhattan Project era sites and 30 Cold War era sites.

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Champion of Historic Preservation at Los Alamos National Laboratory Retires

The preservation work at V Site is a good example of the efficacy of the program. V Site is where the implosion and gun atomic weapons were tested and the location where the high-explosive components of the Trinity device were assembled. Cultural resources staff identified maintenance issues at V Site and completed an extensive restoration project in 2007 that included reconstruction of the wood-framed retaining wall that supported the earthen berm behind two buildings. Using a Save America's Treasures Grant from the National Park Service, the LANL team received an award for this preservation work.

"Two of the biggest accomplishments Vicki made happen were increasing the work to preserve the MAPR facilities at Los Alamos and actually getting public tours behind the fence at LANL," Atkins said. "The preservation work was critical to stabilizing several buildings, including the Pond Cabin, which operated as an office for Emilio Segrè and his plutonium research team during World War II, and several of the concrete bunkers where explosion testing was performed."

LANL used NPS preservation crews to work on the log cabin, which was in desperate need of repair after 104 years of existence. The NPS fixed and replaced windows, shored up rotten logs, and made other repairs while still maintaining the look of the original cabin. The work was the result of an interagency agreement that took a considerable amount of effort and has been beneficial in the years since it was established.

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Vicki Loucks, who retired earlier this year, now has more time to enjoy her dogs and other hobbies.

education

Continued from page 5

Champion of Historic Preservation at Los Alamos National Laboratory Retires

Visitors at Technical Area 18 during the first-ever public tour within laboratory boundaries of the newly established Manhattan Project National Historical Park, which operated as an office for Emilio Segrè and his plutonium research team during World War II.

In July 2018, Loucks was part of another landmark achievement when DOE, in conjunction with the NPS, conducted the first-ever public tours of the newly established Park within LANL boundaries.

"It was a big lift to have tours on a site with high security like Los Alamos," Atkins said. "When we were working on the Memorandum of Agreement between NPS and DOE, we all thought it would be at least five to 10 years for any tours to happen at LANL, but Vicki made it happen in just a couple years."

A congratulatory letter to Loucks, upon her retirement, from LM Director Carmelo Melendez, expressed gratitude for the work she had performed as a "visionary and champion" for the Park.

"While a list of your accomplishments would take more space than this letter allows, there are two accomplishments I wish to recognize; first, you played a pivotal role in protecting, preserving and restoring the historical resources at Los Alamos National Laboratory. Through your efforts, future generations will experience and recognize the contribution the laboratory and workers made in defense of freedom," the letter read. "Secondly, due in large part to your relationships with the community, laboratory leadership, and the National Park Service, many opportunities for public access to the Manhattan Project resources were identified, reinforcing the historic and enduring ties LANL has to the Los Alamos and Santa Fe communities. You have been a trusted partner. Both the Park and the community are the better for it."

So far, Loucks is enjoying her retirement.

"I finally went to Hanford and saw B-Reactor right after retiring. I attended my niece's wedding in Seattle and got to go to the Oregon Coast, which was so pretty. I'm planting trees and flowers at home and looking forward to watching everything grow," she said. "I'm also looking forward to attending church instead of just going virtually, when I feel safe in a crowded setting again. Can't wait to go to a movie again, too!"

Loucks is also looking forward to having more time to spend with her stable of dogs, mostly collies.

"I bought my first collie when I was 12 with cashed-in savings bonds," she said. "I wanted a collie because of Lassie."

Now, she has seven collies, a fox terrier, and a litter of collies on the way. The dogs participate in a variety of competitions, including nosework (where dogs find odors in different settings), barnhunt (where the dogs are timed to find rats that are in protective tubes hidden in a barn setting), and agility (which consists of an obstacle course that the handler and dog run together).

Loucks admitted she will miss the work and the people associated with it.

"I had great support from my supervisor, Darlene Rodriguez, who stood by and believed in me through my tears, anger and laughter," she said. "I will miss the team we had at Los Alamos and in DOE."

Although her work at DOE is over, Melendez indicated the impact of her work is not.

"[Loucks' efforts] will endure as part of the Manhattan Project legacy." ❖

GOAL 6

Preparations Continue for Future Unveiling of Weldon Spring Facility

Along Highway 94 near the U.S. Department of Energy (DOE) Office of Legacy Management's (LM) Weldon Spring Site in St. Charles County, Missouri, a new structure is noticeable on the landscape.

The building has a dark exterior with bronze, angular accents that give it a modern look for the modern programs and services that will take place inside.

Construction on the $7.4 million Weldon Spring Site Interpretive Center and Office Complex began in May 2019 under the guidance of the U.S. Army Corps of Engineers (USACE) St. Louis District and DOE LM. In designing the new facility, USACE and LM consulted the Guiding Principles for Sustainable Federal Buildings (Guiding Principles), the U.S. Environmental Protection Agency's (EPA) equivalent to the U.S. Green Building Councils LEED (Leadership in Energy and Environmental Design) certification. Construction on the new building concluded in the Spring of 2021.

Weldon Spring Site Manager Rebecca Roberts knows the facility will play a vital role in telling the important history of the site.

"The legacy of the Weldon Spring Site is a legacy of service. During World War II and the Cold War, members of the community played a pivotal role at the site in U.S. weapons development, in defense of our country," Roberts said. "Decades after closing, members of the community again chose to serve, taking on the challenge of cleaning up the site under the Weldon Spring Site Remedial Action Program (WSSRAP)."

The new facility features four classrooms, each of which seats 40 people. Other features include an auditorium seating 80 people, a 4,500 square foot exhibit gallery with newly fabricated exhibits, and administrative office space for employees.

In May 2021, staff moved into the new facility, an important milestone in continued preparations to get the new facility ready for service to the community. In July 2021, the main entrance and parking lot were closed until mid-August for repaving to accommodate visitors.

"Today, LM is here to serve the community that once served these past missions. In addition to ongoing long-term surveillance and maintenance technical work, LM is also positioned to be a hub for STEM education, community events, outdoor recreation, and ecological conservation," Roberts said. "The legacy of service lives on with the addition of the new building."

As a result of restrictions related to the COVID-19 pandemic, indoor areas at the Weldon Spring Site remain closed to the public. However, Weldon Spring Site Interpretive Center Manager Steven Juhlin said preparations are underway for a future grand opening event.

"The history and STEM-focused virtual programming offered by the Weldon Spring Site Interpretive Center staff have been well received by students and community members all across the state. The Interpretive Center and staff are here to inspire and serve the community," Juhlin said. "We can't wait for the day when we open the doors on the new building and welcome people inside to immerse themselves in the new exhibit hall, come listen to a presentation in our auditorium, or book a hands-on science or history program in one of our classrooms." ❖

Improvements to the parking lot at the new Weldon Spring Interpretive Center are just part of the preparations for the facility's future availability to the public.

education

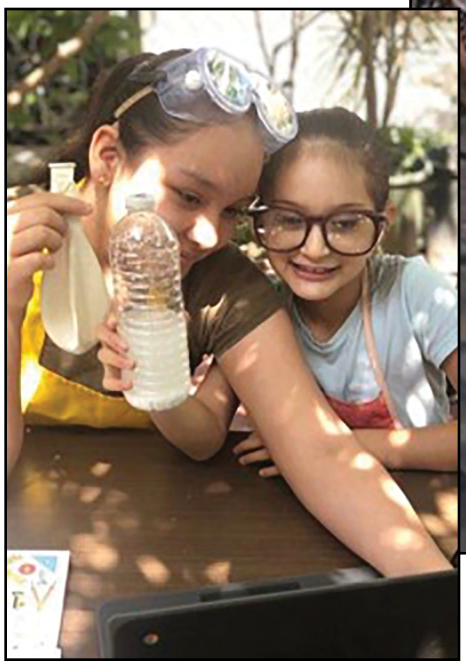
GOAL 6

STEM with LM Inspires Young Audiences, Brings Learning to Life

Children's smiles lit up a virtual classroom in South Los Angeles, California, on June 5 when a simple, at-home chemistry experiment added a fun, new dimension to their science lessons.

The demonstration was the result of a collaboration between STEM with LM, a program of the Department of Energy (DOE) Office of Legacy Management (LM), and We Are R.I.S.E. Inc., a mentorship group for young girls of color.

"Even with the students' microphones muted, the looks on their faces said it all," Ebone Smith, Executive Director of R.I.S.E., said. Smith, alongside LM Site Manager Darina Castillo, ran the virtual experiment, which involved inflating a balloon using a plastic bottle and household ingredients.



STEM with LM's scientists and researchers inspire young audiences and bring learning to life. Castillo has considered the Science, Technology, Engineering, and Math (STEM) community a support system throughout her career and participating in STEM with LM is one way that she gives back.

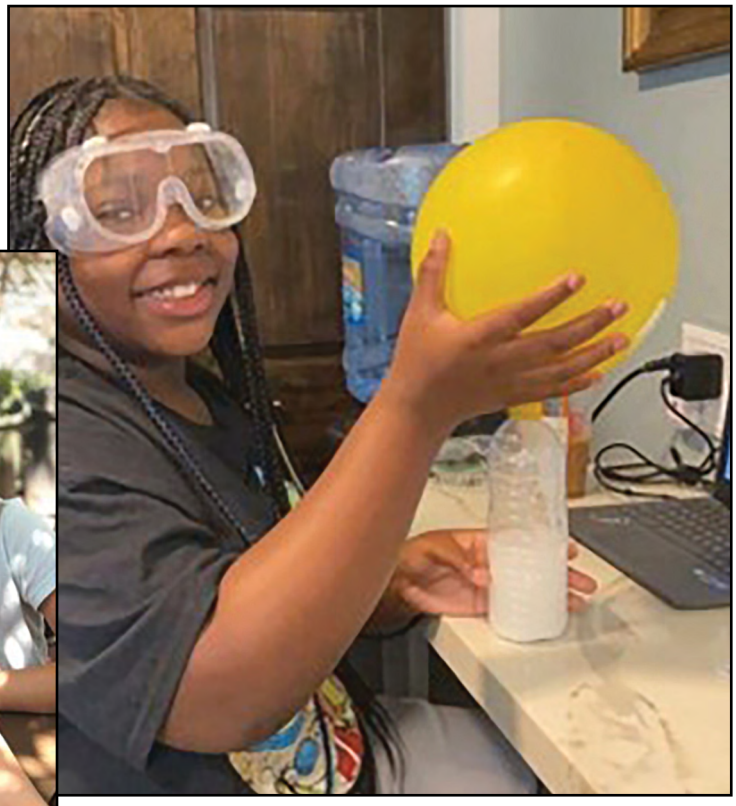
"DOE understands the importance of STEM education in fostering the next generation of professionals," Castillo said. "LM's virtual programs introduce STEM concepts that educate the workforce of the future."

Despite the challenges of remote learning, STEM with LM has leveraged online teaching during COVID-19 to work with new partners and expand its reach. The program has seen great success with virtual engagement and continues to search for new ways to grow and strengthen STEM opportunities.

"The team is very adaptable," said LM Senior Public Affairs Specialist Shawn Montgomery, the program's co-lead. "Our motto is 'Always find a way to say yes.'"

Partnering with R.I.S.E., STEM with LM said yes to a community in South Los Angeles that has a dearth of such programs for students. The team at LM was determined to give as many kids access to the lesson as possible, lowering the barrier for participation by shipping experiment materials to the students.

Students equipped with goggles, baking soda, and bottles excitedly told Smith of their plans to be scientists and engineers when they grow up.



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.

"We want to expose students, particularly girls and children of color, to different careers they might not know much about," Smith said.

Castillo noted that an increased focus on environmental justice is building momentum behind programs such as STEM with LM that provide resources and education in underserved communities. President Biden's executive order on the climate crisis solidified environmental justice as a top priority for the federal government, and STEM with LM is proud to support the effort.

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STEM with LM Inspires Young Audiences, Brings Learning to Life

New and exciting virtual programming is in the works this summer at LM's Fernald Preserve, Weldon Spring Site, and Atomic Legacy Cabin. STEM with LM plans for more collaboration with R.I.S.E. and similar partners to ensure communities across the country have access to the programs, even if they aren't physically close.

LM Site Manger Darina Castillo demonstrates a chemistry experiment in her online classroom. Castillo credits her exposure to STEM education as a reason for her professional success as a LM site manager.

"Virtual programming isn't a magic bullet," said Kevin McCarthy, STEM with LM co-lead and a Legacy Management Strategic Partner contractor. "But it is an incredible tool, and I foresee us continuing to use it even when the interpretive centers do reopen."

Lessons learned from the pandemic and the virtual learning tools it inspired will certainly continue to guide the program for years to come, according to Montgomery.

"Virtual education has allowed STEM with LM to spread its support system far and wide, and the team can't wait to see the success that evolves from it," he said. ❖

education

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.

GOAL 6

Atomic Legacy Cabin

Programming looked different at the U.S. Department of Energy Office of Legacy Management's (LM) Atomic Legacy Cabin (ALC) in Colorado this summer. The ALC formed a partnership with the City of Grand Junction Parks and Recreation, offering a variety of virtual programs to nearly 300 children ages 5 to 14.

Staff at the ALC adapted programs to immerse summer campers into science, technology, engineering, and mathematics (STEM) and history. Programs such as "Aquifer in a Cup" and "Energize the Yo-Yo" provided children with hands-on engagement as a virtual interpreter guided them through activities involving groundwater and energy.

"The ALC has offered our campers a STEM component that we would not normally have access to," said Tina Ross, recreation coordinator for City of Grand Junction Parks and Recreation. "Not only were the programs educational, but the children learned about science in a fun and exciting way that has lasted well beyond the virtual presentations."

Special appearances by LM's Weldon Spring Site in Missouri and Fernald Preserve Interpretive Center in Ohio gave children in Grand Junction the opportunity to learn about other LM sites and their natural environments, which include insects such as monarch butterflies and Brood X cicadas.

The City of Grand Junction STARS camp creates its own "Aquifer in a Cup" to learn about the importance of protecting groundwater. (Photo courtesy City of Grand Junction Parks and Recreation.)

Two MES Students Complete LM Internships

LM welcomed two summer interns with the Mentorship for Environmental Scholars (MES) Program.

Kayla Brown is a senior at Morgan State University in Baltimore, Maryland, graduating with a civil engineering degree. Brown is pursuing a career in environmental engineering. During her internship with LM, she gained experience in the environmental field as well as other areas of engineering.

Jordan Manlove is a senior at Hampton University in Hampton, Virginia, and plans to complete his degree in strategic communications. Manlove is excited to grow his skill set after learning from LM's communications professionals.

The interns completed a 10-week virtual internship, meeting several times per week via teleconference and video conference with their DOE mentors to develop summer projects. Brown worked on an earth system science project, while Manlove focused on developing a manual to help future MES interns.

The MES program is a paid summer internship that provides exposure research in the areas of environmental science, environmental justice, and environmental policy to underrepresented college students.

The MES program actively recruits qualified undergraduates from Historically Black Colleges, Tribal Colleges and Universities, Hispanic-Serving Institutions, and other minority-serving institutions for extensive training that will direct them toward gainful employment in various research and management positions within DOE.

education

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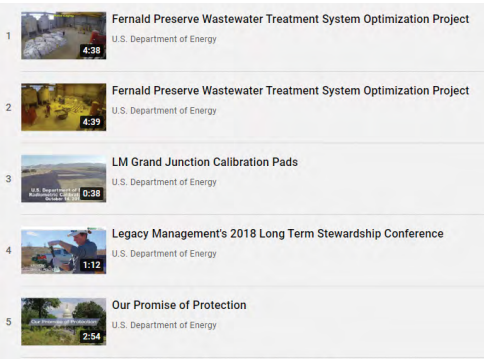


Check out LM's videos at: https://www.youtube.com/c/EnergyGov

A LEGACY OF *responsibility*

The U.S. Department of Energy Office of Legacy Management Business Center is located in Morgantown, West Virginia.

The History of the LM Business Center

The U.S. Department of Energy Office of Legacy Management Business Center (LMBC) was constructed in 2009 in Morgantown, West Virginia, and serves as a records storage warehouse and IT data center. The Records and Information group under LM's Archives and Information Management team is responsible for managing LM's vast records holdings from legacy Cold War nuclear weapons production programs as well as current business records.

The records team responds to approximately 1,800 stakeholder requests each year, including Freedom of Information Act and Privacy Act requests, litigation, documentation for Energy Employees Occupational Illness Compensation Program Act claims, and other general information.

LM maintains more than 4,000,000 electronic records and physical record indexes and finding aids in an electronic content management system. LM centralized its 70,000 physical records boxes, formerly maintained at various Federal Records Centers around the country, to their National Archives and Records Administration (NARA)-certified records storage facility at the LMBC. The 31,000-square-foot records storage facility can accommodate up to 150,000 cubic feet of records.

In keeping with the federal government's support of environmentally friendly buildings, the LMBC was awarded the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program "Gold" certification upon its construction in 2009. A NARA archivist compliance consultant and LEED consultant both provided feedback on the designs and assistance with achieving Gold certification in both Core & Shell and Commercial Interiors LEED categories.

As legacy sites continue to transfer into LM's custody, records team members have the responsibility of indexing incoming records, capturing the electronic information into the content management system, and ensuring the proper physical storage in the record storage facility for the entirety of the records lifecycle.

GOAL 2

LM Adopting Modern Information Governance Practices

Modern tools and refined processes are helping ensure the U.S. Department of Energy Office of Legacy Management (LM) continues to meet its mission to preserve, protect, and make accessible legacy records and information.

LM manages 85,000 boxes of paper and microform records in a specially constructed records storage facility at the Legacy Management Business Center in Morgantown, West Virginia. The centralized facility gives LM staff quick access when records are needed to respond to stakeholder requests.

LM has set up physical controls and policies to protect the records and ensure their retrievability, while also storing the materials at the optimal temperature and humidity. With an eye to the future, LM is researching processes to digitize paper records accurately and cost-effectively.

Simultaneously, LM is implementing information governance best practices to similarly protect records in electronic format. The first leap forward was the installation of a new electronic recordkeeping system.

"We retired an electronic records archive with limited access and installed a modern information management system," said Michael Garrett, LM records manager, who led LM's migration to Content Manager. "Instead of records clerks managing information, content is directly managed by the LM subject matter experts and their support staff."

While Content Manager allows staff to directly access needed information, the system also includes strong access controls to protect LM's electronic records with the same thoroughness applied to paper records.

Content Manager also allows LM to roll out new information management practices. The Content Manager suite includes a data analytics or crawler tool, ControlPoint, that helps locate and manage information storage across the LM network. ControlPoint can help Information Management staff review data collections to flag important records and pull them into Content Manager.

"Some of these records have retention requirements of 75 years and longer. That's a huge challenge," Garrett explained. "These records need to be stored in a secured system like Content Manager to ensure we can retrieve them just as easily in 50 years as we can today."

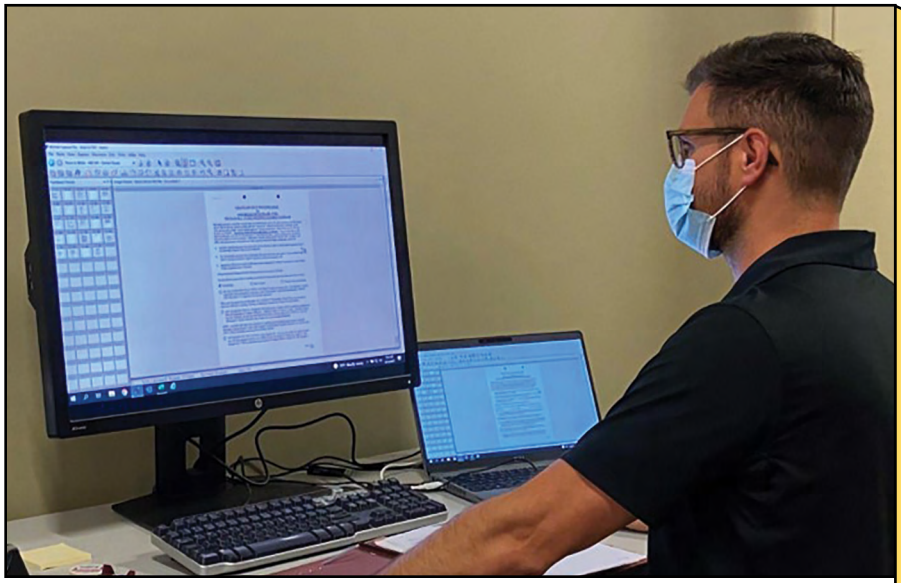
LM also has a renewed focus on Essential Records.

These include emergency response plans and other records needed during or after an emergency, explained Giancarlo Deguia, records manager, and new member of LM's Archive and Information Management team. He added that Essential Records, more broadly, include records such as deeds, contracts, and permits that show the legal and financial rights of the government or those affected by government activities.

"In the past, LM would keep Essential Records in paper format in a central filing cabinet," Deguia said. "Now with Content Manager we're mapping out a process where Essential Records can be easily flagged and be available quickly to staff across the LM enterprise."

Deguia said using Content Manager also will make it easier for LM to meet new requirements for Essential Records review and readiness.

The LM Information Management team continues to explore new tools and best practices for retaining legacy records and information securely and efficiently. ❖



Aaron Wargo, an LMSP support contractor, digitizes paper records maintained at the U.S. Department of Energy Office of Legacy Management (LM) Business Center. LM has begun digitizing collections of physical records to be stored in Content Manager for easier retrieval for stakeholder requests.

responsibility

A LEGACY OF *cooperation*

LM Shiprock Site Manager Mark Kautsky addresses Diné Uranium Remediation Advisory Commission members, and other federal and tribal agencies, during a tour of the Shiprock, New Mexico, Disposal Site.

The History of the Community Outreach Network

The Community Outreach Network is the result of an October 2007 congressional directive by the U.S. House Committee on Oversight and Government Reform requesting that five federal agencies coordinate with one another in order to address uranium-related issues within the Navajo Nation. The agencies are:

- Bureau of Indian Affairs
- U.S. Department of Energy
- U.S. Department of Health and Human Services
- U.S. Environmental Protection Agency
- U.S. Nuclear Regulatory Commission

The federal agencies, working in collaboration with the Navajo Nation and Hopi Tribe, developed the 2008-2012 Five-Year Plan, which was the first coordinated effort by the federal government to address uranium contamination in the Navajo Nation.

The plan focused on improving awareness of the scope of the problem and on prioritizing the risks. In 2014, federal agencies completed the second Five-Year Plan that builds on the work of the first and has the following major objectives:

- Clean up abandoned uranium mines, groundwater, and homes constructed with contaminated mining materials.
- Provide clean drinking water to affected communities.
- Support community outreach and information sharing.

The Community Outreach Network serves as the hub of information sharing for this overall effort. The network is composed of representatives from the five participating federal agencies, the Navajo Nation Abandoned Mine Lands Reclamation/Uranium Mill Tailings Remedial Action Department (AML/UMTRA), the Navajo Nation Environmental Protection Agency (NNEPA), the Navajo Nation Department of Health (NNDOH), the Hopi Tribe Department of Natural Resources, and other tribal programs and offices.

The network is tasked with organizing community outreach events, sharing information, coordinating conference calls, and receiving community input and feedback.

GOAL 6

DOE Remains Flexible During Changing COVID-19 Protocols

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) conducted its first in-person federal and tribal partners meeting in 18 months on July 20-21, 2021, in Farmington, New Mexico. The last in-person meeting with tribal partners was conducted in Flagstaff, Arizona, in January of 2020.

Before the COVID-19 pandemic, LM met quarterly with representatives from the Navajo Nation Abandoned Mine Lands Reclamation/Uranium Mill Tailings Remedial Action Department, Hopi Tribe Office of Mining and Mineral Resources, and the U.S. Nuclear Regulatory Commission. Other partners invited to participate included leadership from the Navajo Nation Environmental Protection Agency and the DOE National Laboratory Network.

The Navajo-Hopi-DOE Quarterly Meetings are technical in nature and focus on ongoing and future work on the four LM sites located on the Navajo Nation: Shiprock, New Mexico, Disposal Site; Tuba City, Arizona, Disposal Site; Monument Valley, Arizona, Processing Site; and Mexican Hat, Utah, Disposal Site.

Collaboration is a focal point of LM's efforts to carry out its mission to fulfill post-closure responsibilities at these legacy sites and ensure the future protection of human health and the environment.

"Our work will remain successful because of the relationship we have built with our tribal partners over the last few years," said Paul Kerl, LM's Uranium Mill Tailings Radiation Control Act and Nevada Offsites team lead, who facilitated the meeting. "Meeting in person allows us to build a stronger collaboration and provides an environment for candid, constructive conversations."

That sentiment was echoed by Abandon Land Mines UMTRA Manager Karen Bedonie.

"I look forward to continuing to work with LM to provide reclamation and monitoring activities on the Navajo Nation," she said.

LM holds cooperative agreements with the Navajo Nation and the Hopi Tribe.

Farmington, New Mexico, is located just outside the northeastern border of the Navajo Nation. Each agency presented reports and provided feedback on topics related to field work and outreach.

Work for the last year and a half has been limited to mission essential activities at the four LM sites because of COVID-19 restrictions. The group met virtually in September 2020 for a one-day meeting, but multiple attendees expressed how helpful it was to meet in person in July after a long hiatus.

The next Navajo-Hopi-DOE Quarterly Meeting will be scheduled in consultation with the Tribes and based on DOE policy and guidance provided by the U.S. Centers for Disease Control and Prevention and local and state health departments. ❖

Attendees to the quarterly presentation view a PowerPoint presented by the LM Defense-Related Uranium Mines team.

Navajo Code Talkers Day Now a State Holiday

Growing up in Navajo Nation, Bill Frazier had no idea what a Navajo Code Talker was, much less that they were hiding in plain sight.

"When I was older, they started to come out and reveal themselves in parades and other public appearances," said Frazier, a site manager for the U.S. Department of Energy (DOE) Office of Legacy Management (LM). "It was a secret for a while because [the U.S. government] thought they might use that code again."

The Navajo Code Talkers program was declassified during President Ronald Reagan's administration and a proclamation making Aug. 14 National Navajo Code Talkers Day was issued in 1984. This year marks the first time the observance is a legal state holiday in Arizona.

August 14, 2021, marks the first official National Navajo Code Talkers Day as a legal state holiday in Arizona.

Left: August 14, 2021, marks the first official National Navajo Code Talkers Day as a legal state holiday in Arizona. Right: The voice of Sam Billison was used for the talking Navajo Code Talker GI Joe action figure.

"The Navajo Code Talkers are American heroes. They assisted on every major operation involving the U.S. Marines in the Pacific theater, using their native language to come up with an unbreakable code," Arizona Gov. Doug Ducey said after signing the legislation in March. "More than 400 Code Talkers answered the call to serve our nation, and Arizona is grateful for their dedication to protecting our nation."

During World War II, the U.S. government recruited more than 400 Navajo men to serve as elite cryptographers, encoding and transmitting messages in their native tongue. Their impenetrable code was based on the complex, unwritten Navajo language that assigned words to key phrases and military tactics.

"I know the language is powerful. That's what we were told as Native people growing up," Frazier said. "I think it's a great thing. These men did a tremendous service and they made sacrifices."

The voice of Sam Billison, Congressional Medal of Honor recipient, was used for the talking Navajo Code Talker GI Joe action figure.

It wasn't until the 1990s, when the Code Talkers emerged from the shadows of history, that Frazier discovered some of them had played formative roles in his life. Among them was Billison, one of the most famous Navajo Code Talkers.

Billison was also a source for books and movies. Before all that fanfare, Frazier knew him as his middle school basketball coach at St. Michael's Indian School near Window Rock, Arizona.

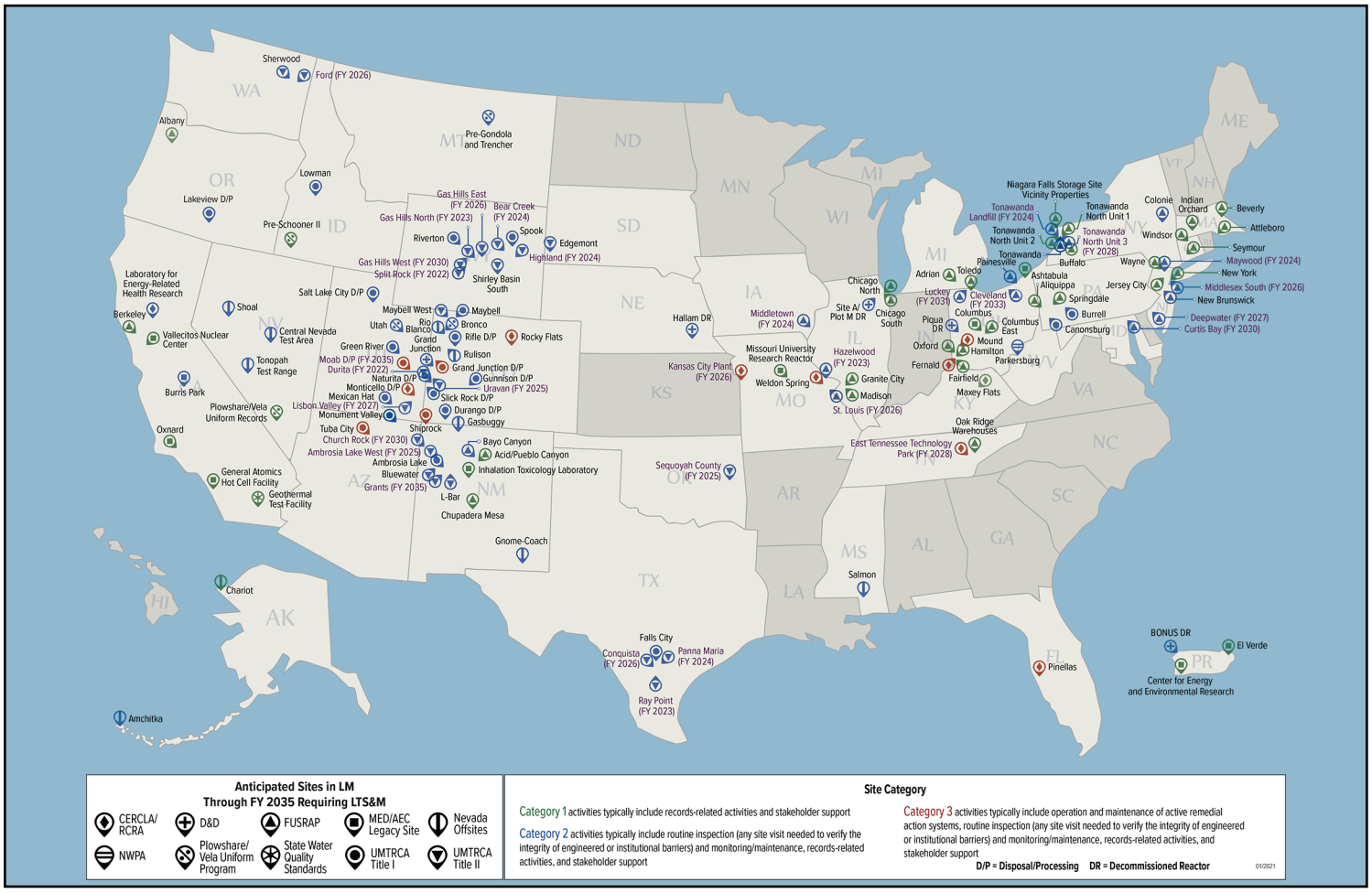
"When (the action figure) came out, it was a big deal and getting one was a big deal," Frazier said.

Several years later, Frazier donated his Navajo Code Talker G.I. Joe action figure to the Atomic Legacy Cabin in Grand Junction, Colorado, where LM's mission to preserve, protect, and make legacy records and information accessible is on full display.

He becomes emotional as he recalls the moment he held the coveted action figure (now a collector's item) as an adult, pulled the string, and heard his late mentor's voice.

"My coach had been gone for a few years and it was so great to hear his voice again. It was like it was just yesterday," Frazier said. "All these memories came flooding back. He came alive in that moment." ❖

Anticipated LM Sites Through Fiscal Year 2030



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A LEGACY OF *progress*

Citizens in Warren County, North Carolina, protest siting of a hazardous waste landfill in their community. (Photo: Ricky Stilley)

The History of Environmental Justice

The legal basis for incorporating environmental justice in DOE operations is Presidential Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*.

Signed by President William J. Clinton on Feb. 11, 1994, Executive Order 12898 states, among other things, that "each federal agency shall develop an agency-wide environmental justice strategy that identifies and addresses disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

This Executive Order tasked each federal agency to make achieving environmental justice part of its mission. The agencies were directed to do so by identifying and addressing, as appropriate, the disproportionate high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income, and American Indian and Alaskan Native communities. The Executive Order also required the agencies to prepare a strategy for integrating environmental justice into all of their activities.

In response to EO 12898, DOE prepared and issued its first EJ Strategy in 1995. Since that time, DOE has conducted a number of actions to implement the EJ program. The DOE Office of Legacy Management (LM) has leadership responsibilities for the Department's EJ program. In 2008, DOE issued its second EJ Strategy and the Environmental Justice Five-Year Implementation Plan.

To reinforce DOE's commitment to EJ, on Aug. 4, 2011, the Department joined 16 other executive branch agencies in signing a Memorandum of Understanding on Environmental Justice (MOU). This MOU is an important step in furthering the Administration's commitment to ensuring healthy communities for all Americans. The MOU advances federal agency responsibilities under EO 12898. Specific new areas of focus include considering the climate change adaptation impacts on EJ and strengthening EJ efforts under the National Environmental Policy Act (NEPA) and Title VI of the Civil Rights Act of 1964.

More than 20 years after the signing of EO 12898, the Department remains committed to the principles of EJ and continues to build upon the legacy of EO 12898. In 2017, the Department published its third EJ Strategy. This Strategy seeks to demonstrate the Department's commitment and further efforts to comply with EO 12898.

GOAL 6

TREAT Workshops Designed to Assist Teachers

A workshop designed to educate teachers so they can pass along key information to students in hopes of bolstering interest in engineering and nuclear fields was conducted at the University of South Carolina-Aiken from July 7-9.

The TREAT (Teaching Radiation, Energy and Technology) workshops are a partnership between the U.S. Department of Energy (DOE) Savannah River Site (SRS) in Aiken, South Carolina, and Savannah State University (SSU) in Savannah, Georgia.

The overall goal of the workshops is to educate kindergarten through 12th grade teachers, students, and members of the community who live near the SRS about radiation, sources of radiation, radioactive waste management, the effects of radiation on environmental health, and the negative human health impacts of environmental radiation exposures.

Teachers also hope students will take the radiation message back to their communities. In addition, the workshops provide an opportunity to capitalize on building stronger networks with neighboring stakeholders, as well as those downstream from the SRS.

This year's workshop was conducted in a hands-on, interactive format. The workshop is a unique opportunity for DOE to partner with the local community and work collaboratively. DOE Environmental Justice Program Manager Melinda Downing provided opening remarks virtually.

Local speakers included Dr. Kenneth Sajwan, project director for SSU; Dr. Daniel Heimmermann, chancellor, University of South Carolina; Thomas Johnson, deputy manager, SRS; Rick Osbon, mayor of Aiken; Lessie Price, Aiken city councilwoman; and Rev. Brendolyn Jenkins Boseman, executive director, The Imani Group Inc.

The workshop agenda included presentations from DOE employees, federal partners, and community members. Attendees included more than 30 teachers, students, and community representatives.

Interns attend a workshop at the Teaching Radiation, Energy and Technology presentation from July 7-9, 2021, at the University of South Carolina-Aiken. The TREAT workshops are designed to educate teachers so they can provide essential information to their students with hopes of fostering career opportunities in engineering and nuclear fields.

GOAL 6

Workshops Explore Methods for Environmental Justice

National Environmental Justice Conference Inc. conducted events in June and July as part of its series of virtual workshops and training programs.

The June workshop focused on the National Environmental Policy Act (NEPA) and the July event centered on Disaster Citizen Science.

Visualizing Equity Through the National Environmental Policy Act (NEPA)

This session occurred on June 21, 2021, and panelists discussed NEPA and Environmental Justice in a Pandemic/Climate Change/ Racial Inequality Society.

Topics included:

- Setting the Stage: The Relationship of NEPA and Environmental Justice through Executive Orders.
- Diagnosing Basic Needs and Safety: Nature of Environmental, Health and Economic Equity Challenges Facing Underserved Communities.
- Problem Solving: How NEPA Can Address Equity in Underserved Communities.

Panelists included Denise C. Freeman, senior adviser to the deputy director for Energy Justice, Office of Economic Impact and Diversity, U.S. Department of Energy; B. Suzhi Ruhl, senior research scientist, Yale School of Public Health; and Carolyn L. Nelson, civil engineer and senior project development/environmental specialist for the Federal Highway Administration.

At the conclusion of the workshop, attendees made a request that conference organizers consider holding sessions throughout the year.

Achieving Environmental Justice Through Disaster Citizen Science

This session occurred on July 29, 2021, and focused on Disaster Citizen Science to support community preparedness.

The panel introduced attendees to the growing field of disaster citizen science and the toolkit designed to provide guidance on using citizen science strategies to support community preparedness, response, and recovery.

"Disaster citizen science, also known by other names such as community science or street science, is the use of scientific principles or methods by nonprofessional scientists to address issues related to disasters or community hazards."

Communities of color and lower-income communities are often at the frontline of disaster events. These communities tend to be more exposed to disaster harms or more susceptible to disaster effects. At the same time, despite their vulnerabilities, these same communities are often at the forefront of grassroots solutions.

There are many potential benefits of citizen science for environmental justice communities, including improving disaster preparedness and meaningful community empowerment. Many communities have been instrumental in leading citizen or community science efforts.

More than 200 participants attended this interactive session that provided a resource of tools and information that can be replicated throughout environmental justice communities.

Panelists included Ramya Chari, The RAND Corporation of Boston; Sharon Siddiqi, RAND Corporation, Washington, D.C.; and David and Sharon Gauthe, formerly of Bayou Interfaith Shared Community Organizing, Houma, Louisiana. ❖

To view the virtual workshops visit https://thenejc.org/program/presentations-2/.

Allen University Environmental Justice Institute 2021

Marion County Community Outreach Attendees.

The Allen University Environmental Justice Institute (AUEJI) is composed of nine different modules taught over nine weekend sessions on the university's campus. AUEJI is a community-sustainable resource center for rural and economically challenged minorities and low-income populations around the Savannah River Site (SRS) in Aiken, South Carolina, as well as other communities in South Carolina.

DOE and Allen University established AUEJI in October 2015. AUEJI works with environmental-justice communities to promote youth development, and also to attract and mentor students toward the STEM discipline and build a sustainable pipeline for training, education, and employment. These objectives are accomplished through a three-phase intervention: engagement, education, and empowerment.

On June 18-19, 2021, AUEJI conducted a community outreach to Marion, South Carolina. The outreach, "Building a Healthy Community Together," was conducted for community residents and leaders to discuss environmental and health issues facing Marion County. Community members were invited to participate on a panel to discuss issues and concerns and how AUEJI can help resolve environmental-justice (EJ) issues.

Goals of the AUEJI Community Outreach include:

- Increasing awareness on EJ issues.
- Listening to community leaders and recognizing EJ issues in their area.
- Suggesting possible practicable solutions.

Topics covered during the two-day event included information related to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), mental health, COVID-19 and health services in Marion County, advocacy for residents of Marion County, economic services, and adult literacy.

AUEJI also brought all three Community Outreach communities (Andrews, Pamplico and Marion) together in September 2021 for an AUEJI follow-up meeting to discuss the next steps toward resolutions of environmental issues within the communities.

A fourth community outreach was conducted in Trio, South Carolina, on Aug. 27-28, 2021. Collaborative arrangements were made with local health agencies to have COVID-19 testing and vaccinations performed.

Four of the five new high school graduates in Marion, South Carolina, committed to coming to Allen

On July 15, 2021, AUEJI representatives revisited Marion County, South Carolina, to interact with high school students to engage in university education paths.

2021 Youth Environmental Impact (YEI) Extravaganza

The YEI Extravaganza was July 30-31, 2021, in North Orangeburg, South Carolina. The objectives of the youth conference were:

- To create awareness of mental health issues in youths.
- To educate parents on the signs of deteriorating mental health.
- To provide information on mental-health support groups to both students and parents. ❖

Progress

A LEGACY OF *safety*

GOAL 1

LM Safety and Health Manager – Safety-Conscious Workforce is the Foundation

The Office of Legacy Management's (LM) mission is to fulfill the U.S. Department of Energy's (DOE) post-closure responsibilities and ensure future protection of human health and the environment.

"We're also responsible for ensuring safe and healthy work conditions for all LM employees, contractors, sub-contractors, and visitors, including regulators, at our legacy sites, offices and other work areas," said LM Safety and Health Program Manager Brian Stewart.

Stewart, who has been with LM a little more than two years, oversees a program that consists of himself and 23 Legacy Management Strategic Partner (LMSP) safety professionals and radiation control technicians.

"I have a degree in health and safety," Stewart said, "but I know people who got into the profession through field experience or a related science degree who then morphed into health and safety over their careers."

Stewart says he believes a safety-conscious work force is the foundation of a safe work environment, but a well thought-out and complete Job Safety Analysis (JSA) is the most important individual element for safely performing a job or project.

"Safety plans have their place, but they are not job specific," he said. "As my former boss used to say, 'If we plan the work and work the plan,' we will be fine."

Stewart says it is important to get the safety team involved in a job as soon as possible. It is much easier to get involved in a job when it is being planned.

LM and LMSP employees find themselves in a variety of workplaces across the country — in the field, the office, and because of COVID-19 impacts, in the home office.

"Every project has totally different safety challenges," Stewart said. "We may be dealing with a construction safety issue at one project and, although rare, a (radiation) issue on the next. That is why the JSA is so important. We need to look at all the potential safety issues for each project, including working from home."

Stewart says the most common field safety challenges are nature and driving to and from the work site. Most of LM's field work is outdoors and his team puts a lot of miles on the road. Things such as heat stress, insects, snakes, slips, trips, and falls, can all be issues when working in the field.

"Ticks! There are a lot of ticks in the field and those little buggers can lead to serious problems if they are ignored," he said. "Plus, our field teams find challenging terrain at every field site we encounter."

While animals, insects, plants, and rugged terrain are all hazards that must be identified and controlled, simply driving to the work site may be the most hazardous work task, based on national accident and injury rates, Stewart says. This year through June, LM workers have driven 258,081 work-related miles without a traffic injury.

Although radioactivity hazards are often associated with DOE sites, LM workers face very few. LM's sites have all been cleaned up to a level that is protective of human health and the environment, and sites with potential radiological exposure scenarios are identified and controls are in place to limit chances of exposure. When potential radioactivity exposures are identified, trained radiation technicians follow procedures developed specifically to reduce risk for the technicians and other workers to below regulatory limits.

Once job planning is complete and the JSA in place, the work begins. Every morning before starting work, the project team

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LM Safety and Health Manager – Safety-Conscious Workforce is the Foundation

holds safety briefings to go over the JSA and other safety topics related to the day's work. Recently Stewart and LMSP safety lead Darrin Dobbins have started reimplementing joint LM/LMSP project safety oversight that has been paused for the past year because of COVID-19 restrictions. In addition, larger projects have a full-time safety professional assigned.

The pandemic also changed the workplace for many LM/LMSP employees. Offices have been closed or operating under restricted occupancy. During a normal year, slips, trips, and falls are the biggest safety risks in an office environment, Stewart says. But with the majority of office workers working remotely from home, the main source of risk has changed. Although those hazards still present a risk at home, Stewart thinks that ergonomics is becoming an issue.

"No one wants to go out and spend the money to have the perfect ergonomic setup in whatever space they have set up as a home office, especially when working at home could be a temporary condition," Stewart said. "But it is an important enough issue that in most cases the LMSP contract allows purchasing ergonomic equipment for those working remotely from home."

Stewart says he thinks LM and LMSP are doing a good job of creating a safety conscious workplace for employees. But he cautions that everyone needs to make sure they don't let their guard down on COVID-19.

"We aren't out of the woods yet," he said. "In fact, we went back a little further into the woods by requiring masks in the offices again." ❖

safety

GOAL 1

Site Inspections Front Line of Defense for Protecting Public, Environment

Managing former uranium mill sites and their associated radioactive waste and mill tailing disposal cells is an important aspect of the U.S. Department of Energy (DOE) Office of Legacy Management's (LM) mission.

Site inspections are critical aspects of that management.

LM maintains the sites and ensures disposal cells and any residual contamination left in the soil and water don't present a threat to the public and environment under the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978 Title I and Title II programs.

LM manages 21 Title I and six Title II sites, and 24 Title II sites and one Title I site are scheduled to transition to LM by 2050. The difference between the two programs is that LM took over the Nuclear Regulatory Commission (NRC) licenses of 22 inactive and abandoned ore processing sites under Title I for management and remediation when the act passed. Remediation included creating 19 disposal cells, including some away from the original mill sites, to hold contaminated materials. Some sites have groundwater compliance strategies to address contaminated groundwater.

Sites addressed by Title II were active when the act passed in 1978. These sites were commercially owned and regulated under an NRC agreement state license. To shut down and give up the NRC license, the owner conducts NRC-approved radioactive waste reclamation for uranium ore processing operations.

The site owner also ensures full funding for inspections and, if necessary, ongoing monitoring or maintenance. LM develops the site-specific, long-term surveillance plan and accepts title to the site for long-term custody and care after approving the licensee's site remediation.

Although there are some differences in the maintenance requirements among the different sites, one common regulatory requirement is conducting annual site inspections.

"Regulations require at least an annual site inspection for every UMTRCA site," said Alison Kuhlman, former contractor site lead for the Ambrosia Lake, New Mexico, Disposal Site, and the Bluewater, New Mexico, Disposal Site. "Sometimes we'll find something that we'll want to keep an eye on with follow-up inspections."

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The Ambrosia Lake, New Mexico, Disposal Site is marked by radiation and no trespassing warning signs and a stone monument providing site information.

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Site Inspections Front Line of Defense for Protecting Public, Environment

A view of the northeast portion of the Ambrosia Lake, New Mexico, Disposal Site with the disposal cell in the background.

Kuhlman, now works with LM as a site manager on the Resource Conservation and Recovery Act/Comprehensive Environmental Response, Compensation, and Liability Act/Formerly Utilized Sites Remedial Action Program team. She believes the most important reason LM conducts annual inspections is to ensure LM is maintaining site integrity, checking for erosion and depressions on cell covers, and verifying that there is no evidence of public intrusion on the sites.

"There's no better way to protect the public and environment than having boots on the ground to make sure that everything is performing as designed," she said.

Kuhlman has experienced the varying circumstances that can be encountered at different LM sites. The Ambrosia Lake site is relatively small, about 300 acres, and the disposal cell is performing well with minor erosion and no real threats. She says it takes about three hours for her inspection team to check the cell and site perimeter.

On the other hand, the Bluewater site is more than 3,000 acres, has three disposal cells, one with some significant depressions, and five additional disposal areas that are inspected. She also checks right-of-ways, roadways, and other items that need follow-up from the site inspection checklist that is updated annually.

She says that because of the remote locations and rugged terrain, at least two people need to be on the inspection team and four members is the norm, depending on the site's size. Bluewater usually takes three teams to complete the annual inspection.

Site inspectors have backgrounds in engineering or geology, she says, so they can identify any potential issues. In addition, each inspector must take a two-hour inspection training course and field training shadowing an experienced site inspector.

"These site inspections are not only a good tool to make sure disposal cells and monitoring equipment are working as they should, they are a great tool for passing on institutional knowledge while training new people," Kuhlman said.

She said many of these sites are 40 to 50 years old and they're beginning to see the signs of aging disposal cells. This makes it even more important to develop additional tools, like aerial Light Detection and Ranging (LiDAR) surveys and other new technology.

Kuhlman said the U.S. Army Corps of Engineers conducted an aerial survey of the Bluewater site earlier this year and expects to complete analyzing the data next year.

"Although we look forward to aerial surveys and other new technology, we can't forget that in-person site inspections really work," she said. "We found significant erosion issues at the Mexican Hat, Utah, Disposal Site during an annual site inspection and were able to get a jump on designing repairs." ❖

safety

A LEGACY OF *dedication*

Chequita Johnson has been a staple of the LM mission since its inception in 2003. Her work in security, training, and workforce development has been integral in LM's continuity of operations.

GOAL 4

A Front Row Seat to History

For those familiar with the U.S. Department of Energy (DOE) Office of Legacy Management's (LM) post-closure responsibilities at former nuclear sites across the country, the image of scientists working in the field to gather data, conduct surveillance, and monitor sites is what immediately springs to mind.

But behind the scenes is LM Program Analyst Chequita Johnson, who specializes in support functions such as security, training, and workforce development, which are other dimensions of LM's mission that are vitally important to the office's overall success.

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A Front Row Seat to History

"LM is a unique place because of all the different opportunities and diverse people you get to work with. The dynamic nature of LM sites, along with shifting political winds, make the operational management mission critical," Johnson said. "The support team plays an indispensable role in getting everything done. The processes and procedures we implement allow LM to function safely and seamlessly."

Padraic Benson, a program analyst for LM, said he benefited from Johnson's in-depth understanding of the organization.

"Chequita's depth of knowledge comes from being on the ground floor of LM operations at its inception in 2003," Benson said. "As part of the first LM team ever assembled, she has had a front row seat to history."

Johnson said LM's work has its challenges, but the organization has continued to grow.

"We have had to navigate a lot of our own challenges, from adjusting to new leadership and various Presidential administrations, to keeping up with an evolving digital landscape," Johnson said. "Even though our work isn't always visible, it is a critical component of the organization."

That work includes operational matters that run the gamut from practicing critical cyber security and emergency protocols to the creation of COVID-19 work policies that enabled the office to pivot to a fully remote environment.

"Chequita helps LM employees perform their day-to-day business, whether it involves getting training, arranging international travel, or planning for the continuity of operations in the event of a catastrophe," Benson said. "Without the behind the scenes work of Chequita and her teammates, LM couldn't effectively perform its mission of protecting human health and the environment."

Johnson plays an integral role in keeping LM safe and secure. Some of her proudest accomplishments include putting several office security policies now in place across the organization. Johnson said writing official policies for a federal office demanded thorough research and meticulous writing skills.

"When it comes to security, I've become something of a subject matter expert," she said. "But I never thought I'd be able to write policy. For me, that's a big accomplishment."

As she reflects on her career, Johnson marvels at how LM has grown and evolved. She said she has, too.

"I credit my peers and managers over the years for inspiring me to broaden my horizons. Throughout my tenure, the most effective leaders were those who engaged with employees, understood their goals, and furthered their professional development," she said. "Such managerial support inspired me to go back to school and get my Masters of Science in Business Administration with a specialization in Homeland Security Management."

Johnson said her love for learning has driven her to search for new opportunities to share LM's mission and her team's role within LM.

"I'm proud of the work we do to enable safe approaches to protecting human health and the environment," she said. "My team's role is more than just red tape. It is the blueprint for LM's success." ❖

> **"Chequita's depth of knowledge comes from being on the ground floor of LM operations at its inception in 2003. As part of the first LM team ever assembled, she has had a front row seat to history."**
>
> *Padraic Benson*
> *LM Program Analyst*

dedication

GOAL 4

Ed Cotter: On Hometown History, a Career, and Retirement

Ed Cotter retired in August after more than four decades of work with the U.S. Department of Energy (DOE) Office of Legacy Management (LM).

Cotter's story begins in the town of Norwood, located in the deeply rural area of southwestern Colorado. The area was bustling with industry when Cotter graduated from Norwood High School and headed to Colorado School of Mines to earn his bachelor's degree in mineral engineering and mathematics.

Cotter began his career with DOE and the Uranium Leasing Program (ULP) in March 1977 as a mining engineer contractor with Bendix Field Engineering Corporation. Bendix's mining division, at that time, employed eight full-time staff.

"The early part of my career was absolutely incredible," Cotter said. In addition to his work in ULP, Cotter surveyed in the exploratory boreholes drilled at numerous project sites in the western U.S., under the National Uranium Resource Evaluation program.

Due to the collapse of uranium mining, Cotter's career changed directions in 1984 when he became a surveyor, focusing primarily on sites regulated by the Uranium Mill Tailings Radiation Control Act. This change led to Cotter working in a variety of capacities — primarily, as a surveyor or a project and team lead at numerous locations, including sites in Green River and Monticello, Utah; Belfield and Bowman, North Dakota; Kansas City, Missouri; and Denver, Colorado.

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LM's Jay Glasscock honors Ed Cotter, who retired in August, with a U.S. flag that flew over the Capitol.

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Ed Cotter: On Hometown History, a Career, and Retirement

In the mid-1980s, Cotter became a part of the DOE environmental survey field team, carrying out investigations at the national laboratories and other DOE facilities. Cotter was part of the investigative team from the Idaho National Engineering Lab (INEL). He participated in the INEL investigations at several legacy sites, including the Hanford, Washington, site. At Hanford, Cotter and other team members had the highest security clearance and were allowed access to most areas.

"I remember the Hanford staff being slightly miffed that we had a higher clearance than the permanent staff," Cotter said.

Later, DOE requested Cotter's assistance on the INEL team in conducting an environmental characterization at the Rocky Flats Site near Denver, Colorado.

From 1988 to 1991, DOE contracted Cotter to investigate environmental conditions at three military bases, one of which was Hickam Air Force Base on the island of O'ahu, Hawaii. In Hawaii, he identified underground storage tanks that contained heating oil and kerosene used during WWII for base housing. Cotter remembers seeing homes and other base facilities with visible shrapnel damage, the result of the attack on Pearl Harbor. Cotter indicated that these visual images gave him a connection with history.

In 1992, Cotter was tasked with managing ULP, because he was the only staff member left on the contract with knowledge of the uranium program.

"There was little uranium mining being done from 1984 into the 1990s," he said.

While there was plenty of policy and paperwork to be done into the mid-2000s, Cotter said he did have some interesting and rewarding field exploration experiences to balance out the time he spent in the office. This included leading a field reconnaissance team out to every lease tract to find and delineate the mining-related features left behind by the U.S. Atomic Energy Commission's original Mineral Leasing Program.

Also, Cotter was instrumental in preservation efforts of one of the area's historically significant sites, Calamity Camp, located on Calamity Mesa above the town of Gateway, Colorado.

A lawsuit filed in 2008 by four environmental organizations temporarily halted ULP. Cotter said, due to the lawsuit, "I lived litigation for the next decade." That litigation process came to an end in 2019, when the federal court dissolved the injunction, which allowed new uranium leases to be renewed again.

Despite the litigation and program pause, Cotter always had field work to perform and annual mine site inspections to complete.

One of those inspections included the Burro Mines Complex in San Miguel County, Colorado, where he experienced some extreme weather conditions. Cotter witnessed two of the three flash floods that hit the area between 2007 and 2014.

In 2007, a storm hit the Burro Mines Complex, washing away four inches of pavement that floated into the adjacent river. Then, during a lunch break in 2014, a 30-minute storm produced a downpour of rain and quarter-sized hail, which created an extreme wall of water that washed sediment into the river adjacent to the Burro Mines Complex, the Dolores River.

Cotter knew something had to be done to protect the river from future storms and prepared a white paper for DOE on possible remedies. One of these remedies was implemented, and Cotter worked through one last environmental assessment to address the flash flooding issue. After many federal, state, and local collaborations, the Burro Mines Complex reclamation work began in June 2021.

Much has changed in the remote part of Colorado where Cotter grew up. One thing that hasn't changed, however, is his love for the area. A brief conversation with Cotter will not only reveal his huge breath of knowledge about uranium mining, but also a deeply rooted love for the community, its people, and the natural beauty of the area.

When asked how Cotter plans to spend his time in retirement, he replied, "I plan to spend my time driving my Jeep in the back country and having picnics in beautiful places with my wife, Kathy.

"I have had a fabulous career with the various DOE contractors," Cotter said in his closing thoughts. "I've gotten to do a wide variety of things, and I've gotten to go to many places that no other job would have allowed me to do. At times, it was the best job ever." ❖

dedication

GOAL 4

No 'Planet B': At LM, the Mission is Personal

For Jeffrey Murl, nature has always provided a source of escape and reflection. From roaming the woods and farmlands of Kentucky as a child to falling in love with Hawaii's surf and mountains as a young man, his love for the environment has steered the course of his personal and professional life.

Now, those two paths have converged.

"There is a kind of Zen, a peaceful calm I get from disconnecting and being alone with nature," Murl said, a Project Controls Analyst with the Department of Energy (DOE) Office of Legacy Management (LM) who works to preserve the environment for future generations.

"Being in Hawaii for 13 years really opened my eyes — I spent so much time around water, which made me realize how precious our resources are," he said. "There's only so much fresh water on the islands of Hawaii, and contamination and waste are global issues, too. If our actions as humans taint the supply, there's no backup. We don't have a 'Planet B.'"

Before arriving at LM in 2016, Murl served in the Navy, where he studied, operated, and maintained nuclear reactors on submarines. After completing his Master's-level study of groundwater contamination, he became an environmental consultant.

Murl was drawn to LM upon learning of its duty to provide what he calls "a final resting place" for war-era materials. He knew that at LM, he could draw from his experience to make a difference.

"With so much uncertainty regarding climate change, a post-pandemic culture, the fear of the unknown — we need to have a plan in place," Murl said. "Protecting natural resources is our obligation, and it is the first step toward a healthy future for people and the planet."

Murl joined LM as a site manager, with responsibilities for numerous sites across the country, from the Laboratory for Energy-related Health Research Site in Davis, California, to another site in Hallam, Nebraska, to many Formerly Utilized Sites Remedial Action Program completed sites.

Murl's on-site work has focused on decades-old remediation projects. Collecting samples, studying data, and interacting with local stakeholders, which has taken endurance and patience.

"The issues LM handles onsite are rarely quick fixes. Contamination doesn't just go away," Murl said. "People often assume environmental work in the field is always a high-speed, highly visible ordeal. It's true that we act with immediacy, but it takes a lot of patience and strategy to achieve results."

LM's progress depends on the diverse skills of its staff, and Murl's prior experience of scientific assessment and intervention now serves him in a new capacity within the organization. His role has evolved from site manager to a position on LM's Financial, Audits, and Contracts (FACS) team where he now oversees audits and contracts on the business side of LM's operations.

"It's a pleasure working with Jeff Murl," said Ingrid Colbert, the FACS Team Supervisor. "He brings great technical and field insights over to the business operations side of LM, and the FACS team really appreciates his scientific perspective as it relates to financial matters. LM is 'one LM, one mission'— we work together across the country to bring positive results."

Although he's no longer in the field, Murl considers his team's role vital to powering the on-site work. Every day, he listens to the voices of experts and stakeholders across the country, evaluates their recommendations, and priorities and crafts plans that will help shape the nature and scope of LM's efforts. As it turns out, saving the planet requires a lot of paperwork.

Murl's pivot from the field to the realm of finance is a testament to the multi-dimensional nature of LM's mission. He says a shared sense of responsibility connects everyone throughout the organization.

No matter their area of expertise or level of visibility, LM's employees across the country work in tandem. Each is instrumental in stewarding the health and longevity of the environment – today and in the long term. At LM, Murl exemplifies that the mission is personal. ❖

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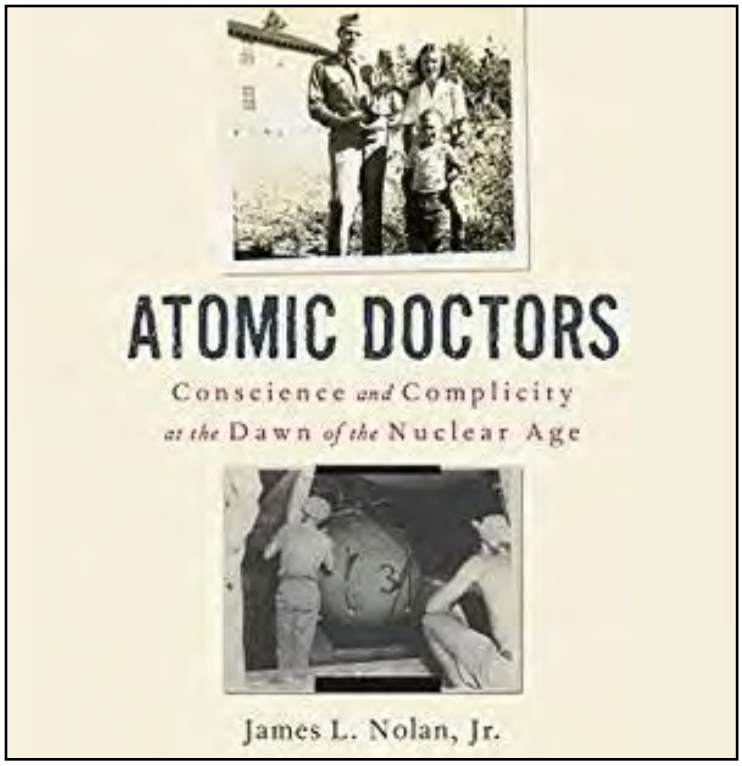
No 'Planet B':
At LM, the Mission is Personal

In Colorado's Arapaho and Roosevelt National Forests, Murl took underground discharge sampling of a nearby stream as part of a study performed in partnership with the U.S. Forest Service and U.S. Geological Survey.

dedication

‘Atomic Doctors’ Highlights Role of Physicians During Manhattan Project, Early Cold War



This article is written by Dr. Eric Boyle, a historian with the DOE Office of Legacy Management. Boyle supports DOE employees and is a subject matter expert on the history of DOE. He also works on historic preservation efforts at DOE sites across the country, helps manage a substantial archive of DOE records, provides historical services, and gives advice to DOE and anyone interested in the history of DOE and its predecessor agencies.

As scientists ramped up their plans to conduct the first test of an atomic bomb in the New Mexico desert, planned for mid-July 1945, a small cadre of physicians rushed to complete a report on the possible health effects of the blast.

Captain James F. Nolan, MD, had been put in charge of health and safety monitoring at the so-called Trinity test, and on the morning of June 17, 1945, he boarded a plane in Albuquerque, New Mexico, so he could personally deliver the report to General Leslie Groves, the military head of the Manhattan Project, stationed in Oak Ridge, Tennessee.

After a flight delay, a missed connection, and a long train ride, Nolan finally arrived at the Oak Ridge Site at 6:30 the next morning. Groves made Nolan sit outside his office while he discussed the highly sensitive report with his aides. The report spelled out the monitoring and evacuation plans for the Trinity test and expressed concerns about potential radioactive fallout from the blast. It included plans for responding to possible dangers not only to the personnel involved in the test, but also to residents in nearby towns, and outlined how the proper authorities would be notified if radiological dangers were identified.

Four hours later, Groves called Nolan into his office and rhetorically asked him, “What are you, some kind of Hearst propagandist?” The reference to William Randolph Hearst, who was known for his sensationalist journalism, indicated his displeasure with Nolan’s recommendations and warnings.

In the book *Atomic Doctors: Conscience and Complicity at the Dawn of the Nuclear Age* (Harvard University Press, 2020), James L. Nolan, Jr., provides new insight into this episode and many others during the Manhattan Project and early Cold War eras. Nolan, who is Washington Gladden 1859 Professor of Sociology at Williams College, and also Dr. Nolan’s grandson, suggests that Groves’s response to the Nolan report reflected his “single-minded preoccupation with security and secrecy,” which is a major theme of the book.

Dr. Nolan “found Groves uninterested in the doctors’ concerns and his response indicative not only of the general’s ‘rifle-barrel’ focus on security, but also his lack of regard for medical doctors more generally.”

The primary actors in this episode, and others in *Atomic Doctors*, were part of three unique professional communities within the Manhattan Project, which Nolan identifies at the outset of the book. Each had its own distinct, and sometimes conflicting, vocational characteristics, which explains the tension between Nolan and Groves. The *academics* (primarily physicists) were focused on answering scientific questions and overcoming technological hurdles necessary to build an atomic bomb, and they were accustomed to an open exchange of ideas.

The *military*, by contrast, was singularly focused on developing a bomb for combat purposes, and emphasized secrecy, security, and a strict hierarchy of authority. The *medical doctors,* meanwhile, “were marginally part of both communities but not fully members of either.” While Nolan suggests, “at least in theory, they were principally focused on matters of health and safety, on preserving and protecting life,” it was also true that “this was not a priority for either the military or the scientific community, and the doctors sometimes had difficulty getting members of these other groups to take their concerns seriously, particularly as they related to the dangers of nuclear radiation.”

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'Atomic Doctors' Highlights Role of Physicians During Manhattan Project, Early Cold War

Atomic Doctors foregrounds the tensions among and within these three communities by focusing on four "critical moments" in which the Manhattan Project doctors were involved—a series of accidents involving plutonium research at Los Alamos, the Trinity test, the postwar investigative work in Hiroshima and Nagasaki, and the postwar nuclear tests in the Marshall Islands. Nolan argues that a general pattern can be seen in each of these episodes: "With what little knowledge the doctors did have about the dangers of radiation, they offered warnings. These warnings were often ignored, dismissed or misrepresented. When some of the outcomes of their warnings were subsequently realized, doctors were put in a position of having to cover for the military, often out of concerns about litigation and public relations."

Nolan frames the general pattern seen in each of the four critical moments cited with a compelling discussion of the Manhattan Project as an archetype for thinking about the development and application of new and emerging technologies. Drawing from the philosopher Albert Borgmann, Nolan notes that on the one hand, there is an instrumentalist view of technology (the most commonly held perspective on the role of technology in modern society), which holds that technology is "neither good nor bad… It depends on us and our values whether it is used well or ill."

An alternative way of making sense of technology as a cultural force is provided by the determinist view of technology, which maintains that "technology, once set in motion, becomes self-augmenting and difficult to resist," and comes in optimistic and pessimistic forms. Optimistic determinists view technological advancements as inevitable, "see technological progress as, in the main, for the good," and believe that any negative outcomes can be resolved with a so-called technological fix. Pessimistic determinists understand technology as "an encompassing and irresistible force," however they have a darker view of technology's potential as "a culturally and environmentally destructive force."

Nolan, while not overtly a determinist, is sympathetic to the critique of instrumentalism as naïve and misguided. He draws from the work of philosophers, physicists, historians and technological innovators in concluding that scientists and technologists, including those who worked on the Manhattan Project, got swept up in the moment. To paraphrase Bill Joy, cofounder of Sun Microsystems, they got caught up in the rapture of discovery and innovation, and, in the process, failed to understand the consequences of their inventions.

For Nolan, this is important to understand because the Manhattan Project doctors were also sometimes guilty of this tendency. The author shows how the military approached health effects of radiation as a public relations problem, and this meant doctors who knew better often toed the line for fear of upsetting their superiors. "When accidents did occur," writes Nolan, "the doctors were used to procure scientific data and then became complicit in hiding evidence, motivated, once again, out of fear of litigation." *Atomic Doctors* suggests the complicity of atomic doctors is only one example of the many legacies of the Manhattan Project that are still being wrestled with today.

Atomic Doctors will be of interest to readers who want to learn more about the history of the Los Alamos site of the Manhattan Project National Historical Park, especially the role that doctors played at the site, and the plutonium research that was conducted in historic structures like the Slotin Building. Additionally, the book provides valuable historical background on the longstanding efforts to protect human health and the environment and understand the effects of radiation exposure. Lastly, *Atomic Doctors* is a must-read for anyone interested in understanding the history of nuclear research, weapons development and testing, which happened at many of the sites that LM manages today. ❖

Leslie Groves, center, and Robert Oppenheimer, leaning on one knee, are pictured at the Trinity Site on September 9, 1945. In the book 'Atomic Doctors' this photo is described as a "public relations stunt" designed to counter medical professionals' concerns about the effects of radiation after an atomic bomb explosion.

dedication

New Employee Bios

Tiffany Drake

Tiffany Drake has joined the U.S. Department of Energy Office of Legacy Management (LM) as a site manager. She is located out of the Weldon Spring Site, working on the LM-22 Resource Conservation and Recovery Act/Comprehensive Environmental Response, Compensation, and Liability Act/Formerly Utilized Sites Remedial Action Program team. Prior to joining LM, Drake worked for the Missouri Department of Natural Resources for 16 years as an environmental engineer and later a unit chief in the Air Pollution Control Program and the Federal Facilities Section of the Environmental Remediation Program.

During her time as a unit chief in Federal Facilities, she supervised a team of six environment engineers and specialists who performed oversight of radiologically impacted sites across Missouri. She led the state team that worked with federal and private entities to successfully complete the early transfer of a federally owned site to a private developer and directed a multi-agency team that provided radiation training and equipment to local first responders.

Drake was also a state representative on the State and Tribal Government Working Group and the Midwestern Radioactive Materials Transportation Committee. Prior to entering state employment, Drake worked in private industry in the food production and welding industries. She has an MBA from the University of Missouri – Columbia, her Bachelor of Science is in Chemical Engineering from the University of Pittsburgh, and she is a licensed Professional Engineer in Environmental Engineering in the State of Missouri. A transplant from southwestern Pennsylvania, she still cheers for her black and yellow Pittsburgh teams and has successfully taught her daughter to do the same.

Meghann Hurt

Meghann Hurt has joined the Uranium Mill Tailings Radiation Control Act and Nevada Offsites/ Plowshare/Vela Uniform teams as a site manager. Hurt was born in Pittsburg, Kansas, and grew up in the Central Valley of California. She graduated from the University of California, Santa Cruz with a Bachelor of Science in Earth Sciences with an emphasis in Environmental Geology.

Hurt previously worked as a contractor (project manager and technical subject matter expert in soil and soil gas sampling) with the U.S. Department of Energy's Fossil Energy program at the Naval Petroleum Reserve No. 1 site, located in Bakersfield, California. Prior to that, she worked as a staff geologist managing and conducting well installations and groundwater assessments related to Underground Storage Tank leaks and/or removals under a ConocoPhillips contract in the greater Bay Area in Northern California. She recently relocated to Palisade, Colorado, with her husband and son. In her free time, you can likely find her with a book, a puzzle, or picking up "pretty" rocks.

Nicole Keller

Nicole Keller has joined the U.S. Department of Energy Office of Legacy Management (LM) Uranium Mill Tailings Radiation Control Act (UMTRCA) team as a site manager. Prior to joining LM, Keller was a site lead for the LM Strategic Partner, supporting UMTRCA sites in Wyoming. Keller started her career as a process engineer in the semiconductor industry working on high-rate pattern electroplating applications and manufacturing of high aspect ratio circuit boards. She developed semiconductor process and equipment from bench to pilot to full scale implementation worldwide. But interest in environmental technology peaked through experience gained in pursuit of her

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New Employee Bios

Bachelor of Science in chemical engineering from the University of Wyoming lead her to work on sustainable development issues. Keller served as an environmental engineer for Utah Department of Environmental Quality (UDEQ) and Colorado Department of Public Health and Environment (CDPHE). She later managed $10 million in capital improvement and hazard mitigation projects funded by the Federal Emergency Management Agency (FEMA) to assist Boulder County with recovery from the 2013 Colorado Front Range Flood. Keller has found professional-personal synergy in Grand Junction, Colorado where she spends her free time mountain biking, hiking, and skiing.

Alison Kuhlman

Alison Kuhlman has joined the Resource Conservation and Recovery Act/Comprehensive Environmental Response, Compensation, and Liability Act/Formerly Utilized Sites Remedial Action Program team as a site manager. Kuhlman is originally from the Denver, Colorado, area and graduated from the Colorado School of Mines with a degree in environmental engineering.

Kuhlman began her career in drinking water, working initially for Denver Water and later for the Colorado Department of Public Health and Environment developing regulation and leading compliance and enforcement.

Upon moving to Grand Junction, Colorado, Kuhlman joined the U.S. Department of Energy Office of Legacy Management (LM) mission with the LM contractor where she worked for the last eight years, most recently as a site lead for Uranium Mill Tailings Radiation Control Act Title II Sites. Kuhlman enjoys time with her husband and sons, spending time outdoors, baking, and traveling.

Melissa Lutz

Melissa Lutz has joined the U.S. Department of Energy (DOE) Office of Legacy Management (LM) Resource Conservation and Recovery Act/Comprehensive Environmental Response, Compensation, and Liability Act/Formerly Utilized Sites Remedial Action Program team as a site manager. She was born in Chicago, Illinois, and has lived all over the United States, moving 10 times by the time she started high school because of her dad's job.

Lutz graduated from the University of Illinois with a Bachelor of Science in ecology. She started her career as a contractor with the DOE Office of Environmental Management on the Weldon Spring Site Remedial Action Project in Missouri, transitioning later as a contractor to LM. Time as a contractor provided her opportunities to increase her knowledge and gain a wealth of experience in the areas of environmental protection, safety and health, site operations, and project and site management.

She and her husband live on 22 acres and have two grown sons. When not working, she enjoys gardening, hiking with their two dogs, and traveling. ❖

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