U.S. Department of Energy

PROGRAM UPDATE

April-June 2021

State and Tribal Government Working Group Promotes Long-Term Stewardship

LM and Tribal Collaboration

Tribal Intergovernmental Relations Group Reboots

Director's Corner

"We give thanks to the Creator for these fruits of the Sea. We ask his blessings on the food that we eat and on all generations that follow us down to the Seventh Generation. May the world we leave them be a better one than was left to us." —Harriet Starleaf Gumbs, Shinnecock

This quotation is included in the 2017 edition of the *Closure for the Seventh Generation* report from the State and Tribal Government Working Group, which works with the U.S. Department of Energy (DOE) in advancing tribal and state priorities, especially pertaining to the cleanup and disposal of nuclear waste. I believe the last line is particularly relevant as an introduction to the theme of this issue of *Program Update*: tribal collaboration.

The mission of the DOE Office of Legacy Management (LM) can be summarized as trying to leave a better world than was left to us, as caretakers, and we can only do so through continuous collaboration via government-to-government consultation with our tribal partners and by working with stakeholders. Tribes are uniquely and deeply invested in the future of sites within and near tribal lands. Therefore, we need to embrace tribal experiences, knowledge, and concerns with a spirit of equal partnership and commitment to long-term stewardship that reflects tribal values. We recognize the importance of consultations and collaborations with Native American and Alaska Native governments and communities. We work closely with friends and colleagues from 16 tribal nations, as well as many Pueblos in the State and Tribal Government Working Group.

This issue is full of examples that illustrate our commitment. For example, on Amchitka Island in Alaska, Aleuts and Pribilof Islanders — Alaska Natives — participate in our five-year sampling of marine food resources around the island (page 4). Amchitka was the site of three underground nuclear tests between 1964 and 1971, and we want to ensure that Alaska Natives know that the resources they depend on are safe to eat.

LM also has a cooperative agreement with the Northern Arapaho Tribe for its support on sampling, inspections, community outreach events, and technical reviews at the Riverton, Wyoming, uranium ore-processing site. At the request of the tribe, and due to the tribe's history and knowledge of the area, LM is sponsoring a revised risk assessment with the tribe to evaluate potential pathways for exposure from remnant contamination at the site, such as the use of native plants during ceremonies (page 13). LM wants to ensure any changes in land use or tribal activities have not increased risk for nearby residents.

Of course, there is also the extensive work LM continues to pursue with the Navajo Nation and Hopi Tribe in the southwestern United States. LM provides long-term stewardship for four former mill sites located on the Navajo Nation: Shiprock, New Mexico; Tuba City, Arizona; Mexican Hat, Utah; and Monument Valley, Arizona. The Tuba City site is also in the vicinity of Hopi tribal lands. Through a cooperative agreement that stretches back more than two decades, LM coordinates closely with the Navajo Nation government agencies to inform tribal government leadership and communities about LM activities and provide opportunities for ongoing, two-way communication regarding site inspections and community outreach initiatives (page 11).

LM is firmly committed to promoting opportunities for Native American students and professionals by facilitating science, technology, engineering, and math (STEM) outreach activities on the Navajo Nation, recruiting Native American students as interns and employees, and supporting research by Native American graduate students at LM sites.

LM is honored to participate in the annual American Indian Science and Engineering Society (AISES) National Conference, a premier forum for jump-starting the careers of Indigenous STEM professionals. Please check out the story (page 10) about how important AISES has been in the career of two LM site managers, Bernadette Tsosie and Bill Frazier, from the Navajo Nation.

LM values working closely with tribal representatives who have legacy sites on their lands. A solution to any remediation or stewardship problem requires openness to local knowledge and expertise, which can inform solutions to our mutual challenges, all with the shared goal of leaving the world a better place than we found it.

Warm Regards,

Carmelo

Carmelo Melendez

Welcome to the April-June 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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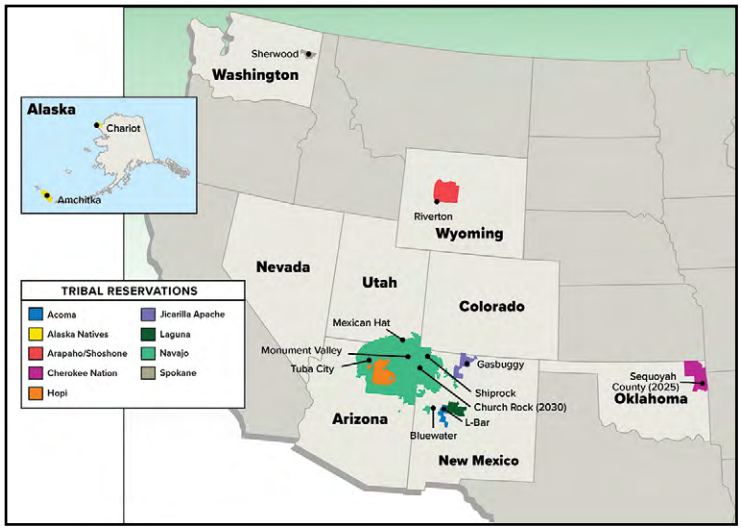
Cover: An LM contractor discusses maps relating to the Tuba City, Arizona, Disposal Site with Hopi officials.

LM and Tribal Collaboration



The U.S. Department of Energy (DOE) Office of Legacy Management (LM) works closely with Native American and Alaska Native stakeholders who are partners in our commitment to long-term stewardship. We routinely collaborate on site inspections and environmental monitoring, document review, natural resources management, community outreach, STEM education, and more.

ACOMA AND LAGUNA PUEBLOS

The Acoma and Laguna Pueblos are southeast of LM's Bluewater, New Mexico, Disposal Site in Cibola County, near the town of Grants.

Bluewater, New Mexico, Disposal Site.

Uranium ore processing at the site in the 1950s through 1970s produced radioactive tailings. Water in the tailings slurry seeped into the underlying alluvial and bedrock aquifers, contaminating the groundwater. Site reclamation began in 1991, and, by 1995, all mill tailings, contaminated soils, demolished mill structures, and contaminated vicinity property materials were encapsulated in on-site disposal areas.

Groundwater monitoring by LM demonstrates that contaminated groundwater has migrated off the Bluewater site, and that this migration occurred during past milling activities. Evaluation of groundwater data for the site and downgradient of the site indicates that no drinking water supply wells have contaminant concentrations above drinking water standards and that the site-derived contamination does not pose a current or future risk for community water systems in the Grants-Bluewater Valley. LM continues to evaluate off-site contamination to ensure safety of human health and the environment.

LM collaborates with both Pueblos, and tribal representatives of both have toured the site for an overview of the disposal cell, site hydrogeology, and groundwater contamination concerns.

ALASKA NATIVES

LM oversees two sites in Alaska: one on Amchitka Island at the western end of the Aleutian chain, the other at Chariot in northwest Alaska. The office collaborates closely with Alaska Natives to provide long-term stewardship of both sites.

Amchitka

Currently uninhabited, Amchitka Island is an ancestral home of the Aleuts, whose nearest community today lies about 170 miles to the east on Adak Island. The Aleuts occupied Amchitka intermittently beginning about 4,000 years ago through the late 1700s. At the beginning of World War II, Amchitka contained only an abandoned Russian fishing village.

Amchitka, Alaska, Site.

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LM and Tribal Collaboration

From 1965 to 1971, the U.S. government conducted three underground nuclear tests on Amchitka. In 2001, DOE was assigned responsibility for properties related to these tests, referred to collectively as the Amchitka, Alaska, Site. The site is outside the island's designated wilderness area and is not near potential Alaska Native tribal claims.

In cooperation with the Aleutian Pribilof Islands Association (APIA), LM performs terrestrial sampling on the island and marine sampling in the ocean waters surrounding Amchitka and Adak islands. The office has worked closely with APIA since the late 1990s on data analysis, document reviews, and initiatives for communicating with the local community.

The most recent sampling events, performed in 2011 and 2016, assessed the safety of subsistence- and commercial-catch seafood. Considering a range of Aleut diets, analysis of the 2011 samples showed that concentrations of contaminants are within the U.S. Environmental Protection Agency's (EPA) acceptable risk range. The 2016 samples confirmed previous analysis. LM will continue its sampling and environmental monitoring of the Amchitka region, with the next event likely occurring in 2022.

In addition, LM participates annually in a focus session at the Alaska Forum on the Environment to discuss long-term surveillance and maintenance activities at the Amchitka site. Other participants include the APIA, Alaska Department of Environmental Conservation, U.S. Fish and Wildlife Service, and University of Alaska Fairbanks.

Chariot

LM's Chariot, Alaska, Site is in the Ogoturuk Valley in the Cape Thompson region of northwest Alaska, bounded on the southwest by the Chukchi Sea. The closest populated areas are the Inupiaq villages of Point Hope, 32 miles northwest of the site, and Kivalina, 41 miles southeast.

Chariot, Alaska, Site.

In 1962, the U.S. Geological Survey conducted a radioactive tracer experiment in test plots at the Chariot site. Soil contaminated with radioactive elements from an experimental nuclear detonation at the Nevada Test Site (now called the Nevada National Security Site) was brought to the Chariot site for use in the test plots.

In consultation with area residents and the Alaska Department of Environmental Conservation, DOE decided in 1993 that removal of all remaining radiologically contaminated material at the site was the most effective means of assuring residents that the site presented no risk to human health or the environment. The state of Alaska issued a clean-closure status of the site following the 1993 remediation and clean closure with institutional controls following a 2014 cleanup of diesel-contaminated soils from former boreholes at the site.

LM collaborates with tribal leaders for long-term management of the Chariot site. In 2017, LM staff met with Inupiaq leaders in Point Hope to provide an update on the site and discuss measures for long-term protection.

JICARILLA APACHE

LM's Gasbuggy, New Mexico, Site, located in Carson National Forest in northwestern New Mexico, borders the Jicarilla Apache Reservation.

Gasbuggy, New Mexico, Site.

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LM and Tribal Collaboration

Project Gasbuggy was part of the U.S. Atomic Energy Commission (AEC) Plowshare Program, which sought to find peaceful uses for nuclear power. In 1967, AEC detonated a nuclear device at 4,227 feet below the ground surface to fracture the rock and increase natural gas flow. Most of the radionuclides from that detonation were contained in the solidified molten rock in the cavity and no radiation was released at the surface. AEC decommissioned and demobilized the site in 1978, and the structures and equipment used for the test were decontaminated and removed. Cleanup was complete by 2004. Today, the U.S. Forest Service has returned the land to its pre-Gasbuggy uses of recreation and livestock grazing.

EPA began monitoring groundwater and surface water annually at Gasbuggy beginning in 1972. The sampling locations — located in Carson National Forest and on the Jicarilla Apache Reservation and private property — consisted of springs, ponds, surface water drainages, ranch wells, and livestock watering wells near the site. Since 2008, DOE has overseen this hydrologic monitoring. If new oil and gas wells are drilled near Gasbuggy, LM samples the gas to ensure no contaminants from the nuclear test are detected.

NAVAJO NATION AND HOPI TRIBE

LM provides long-term stewardship for four former mill sites on the Navajo Nation: Shiprock, New Mexico; Tuba City, Arizona; Mexican Hat, Utah; and Monument Valley, Arizona. The Tuba City site is also in the vicinity of Hopi tribal lands.

In 2007, Congress issued a directive for six federal agencies and various Navajo tribal agencies to create a Five-Year Plan to address uranium contamination on the Navajo Nation.

The federal agencies involved in this effort are DOE, EPA, U.S. Nuclear Regulatory Commission, U.S. Department of Health and Human Services, and the U.S. Department of the Interior. The tribal entities include the Office of the Navajo Nation President and Vice President, Navajo Nation Abandoned Mine Lands Reclamation/Uranium Mill Tailings Remedial Action (AML/UMTRA) Department, Navajo Nation Department of Health, Navajo Nation EPA, and Navajo Nation Department of Justice. As part of the collaboration, DOE works closely with the Hopi Tribe, as well.

The Navajo Nation Community Outreach Network is tasked with coordinating and supporting the multi-agency effort through community outreach, joint agency and tribal planning, and information sharing. In 2014, the Five-Year Plan was updated to build on the work completed in the first five years and to make adjustments based on information gained during this time. The 10-Year Plan was recently completed. It builds on the work of the two previous Five-Year Plans and identifies the next steps in addressing the human health and environmental risks associated with the legacy of uranium mining on the Navajo Nation.

Through a cooperative agreement, LM coordinates closely with the Navajo Nation AML/UMTRA Department and Hopi Office of Mining and Mineral Resources to inform tribal government leadership and communities about LM activities and provide opportunities for ongoing, two-way communication regarding site inspections, document review, and community outreach initiatives. LM actively seeks, considers, and responds to the views of its tribal stakeholders, ensuring they have an opportunity to provide input in LM's decision-making process.

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Left to right: Mexican Hat, Utah, Disposal Site; Shiprock, New Mexico, Disposal Site; Tuba City, Arizona, Disposal Site.

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LM and Tribal Collaboration

As part of its outreach efforts, LM attends the Navajo Nation's yearly tribal fairs and other community events to share information. LM also hosts public open houses and site tours to engage the community and strengthen tribal and federal partnerships for protecting human health and the environment.

LM is committed to supporting STEM education on tribal nations. STEM with LM brings to life the awe-inspiring and world-changing advancements and events of the nuclear age, subsequent cleanup, and ecological transformations of LM sites. Educational outreach events with local schools introduce students to topics like radon, radiation, and the legacy of uranium mining and milling. STEM with LM scientists and engineers actively engage in supporting science education at the Navajo Nation's Diné College through teaching, presenting seminars, and mentoring students in fieldwork activities. LM also participates in annual conferences of the American Indian Science and Engineering Society to inspire the next generation of STEM professionals.

Monument Valley, Arizona.

NORTHERN ARAPAHO AND EASTERN SHOSHONE TRIBES

The Riverton, Wyoming, Processing Site is in Fremont County within the boundaries of the Wind River Indian Reservation (Northern Arapaho and Eastern Shoshone).

The site is the location of a former uranium and vanadium ore-processing mill that operated from 1958 to 1963. These milling operations produced radioactive tailings, along with uranium, radium, and thorium contamination in soils and construction debris. DOE completed surface remediation of the Riverton site in 1989.

Past milling operations at the Riverton site resulted in surface and groundwater contamination. A perpetual deed restriction for the former mill site property restricts well drilling and land development. DOE funded an alternate drinking water supply system in 1998 to provide potable water to residents within a specified boundary around the site. Tribal ordinances restrict well installation, prohibit surface impoundments, and authorize access to inspect and sample new wells within this boundary.

In 2017, LM finalized a cooperative agreement with the Northern Arapaho Tribe to collaborate on an environmental monitoring program at the site and facilitate outreach to area residents and other stakeholders. LM and the tribe are also undertaking an assessment of the alternate drinking water supply system as well as an independent, comprehensive risk assessment.

SPOKANE

LM's Sherwood, Washington, Disposal Site, located about 35 miles northwest of Spokane, Washington, lies within the Spokane Indian Reservation.

Milling operations began in 1978, when Western Nuclear used an acid-leach process to extract uranium from ore hauled from an open pit mine a half mile from the mill. The operations produced radioactive mill tailings. Along with contaminated mill site soils, buildings, and debris, these tailings were encapsulated in an engineered disposal cell constructed east of the former mill site.

Following completion and approval of the remediation by the Washington State Department of Health, the site was transferred to LM in 2001 for long-term surveillance and maintenance.

LM conducts annual groundwater monitoring at the site and shares results with the Spokane Tribe. No contamination has been detected in groundwater downgradient of the disposal cell. Tribal representatives collaborate with LM on annual site inspections, noxious weed control, and management of forest resources. ❖

Left to right: Riverton, Wyoming, Processing Site. Sherwood, Washington, Disposal Site.

GOAL 6

State and Tribal Government Working Group Promotes Long-Term Stewardship

STGWG members tour the decommissioned Graphite Reactor at the Oak Ridge National Laboratory in Tennessee during the 2019 spring meeting.

In 1999, the State and Tribal Government Working Group's (STGWG) report, "Closure for the Seventh Generation," urged the U.S. Department of Energy (DOE) to prioritize long-term stewardship (LTS) at sites related to the nuclear weapons complex that the Department was cleaning up. The report was a significant driver in the creation of the DOE Office of Legacy Management (LM) four years later, and it has influenced the dialogue on the future of these cleanup sites ever since.

STGWG includes representatives from states and Native American tribes that host or are affected by DOE sites or facilities associated with the production and cleanup of the nuclear weapons complex.

State representatives are appointed by and represent the governors of member states:

- California
- Idaho
- Kentucky
- Missouri
- Nevada
- New Mexico
- New York
- Ohio
- Oregon
- South Carolina
- Tennessee
- Texas
- Washington

Tribal representatives are appointed by the governing bodies of their respective tribes:

- Cochiti Pueblo
- Confederated Tribes of the Umatilla Indian Reservation
- Consolidated Group of Tribes and Organizations
- Jemez Pueblo
- Nez Perce Tribe
- San Ildefonso Pueblo
- Santa Clara Puebloe
- Santa Ynez Band of Chumash Indians
- Seneca Nation of Indians
- Shoshone-Bannock Tribes
- Wanapum
- Yakama Nation

Secretary of Energy James D. Watkins created STGWG in 1989 after governors from 10 states wrote a letter to express concerns regarding the management, cleanup, and disposal of radioactive and hazardous chemical wastes at DOE facilities. At the time, DOE was shifting its mission from nuclear weapons production to cleanup, and Watkins invited states, tribes, and national organizations to participate in a conference dealing with cleanup issues, resulting in the formation of STGWG.

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State and Tribal Government Working Group Promotes Long-Term Stewardship

Since its inception, STGWG convened meetings with DOE senior leadership and promoted information sharing among states, tribes, and DOE to foster relationships and improve communications. These ongoing interactions have resulted in an improved understanding of cleanup priorities from tribes as well as a better understanding of tribal treaty rights and federal trust responsibilities by DOE.

In years past, STGWG members have toured LM sites, including the Fernald Preserve Site in Ohio, the Weldon Spring Site in Missouri, and the Rocky Flats Site in Colorado. The tours focused on site history, operations, groundwater conditions, and performance of on-site disposal facilities. Site tours are important for sharing best practices and lessons learned and relationship building.

In recent years, STGWG has focused on three priority issue areas: LTS, natural resource damage assessment and restoration, and tribal concerns.

STGWG considers LTS a key responsibility to future generations since the cleanup decisions made today will have a lasting impact on future generations. STGWG members also recognize that cleanup does not always end with a closed site; instead, contaminants may remain in the soil, water, plants, and other natural resources. STGWG updated the 1999 "Closure for the Seventh Generation" report in 2017 to examine progress regarding LTS. The 2017 edition recognizes the ongoing work challenges and encourages DOE to "begin the process of developing LTS plans and other oversight mechanisms at operating and cleanup sites before completion of cleanup at any site area or parcel."

"STGWG's current working relationship with LM is a positive, key engagement between states, tribes, and DOE regarding DOE's commitment to fulfill its stewardship responsibilities," said Debbie Duren, STGWG state co-convener from Tennessee. "This is important for sites that transition to LM and especially important for sites with new or ongoing missions that will not fully transition to LM."

Native American tribes have a unique relationship with the federal government, including DOE.

STGWG does not substitute for government-to-government consultation. However, STGWG does provide an organized forum for tribes to share perspectives and engage with DOE to promote the understanding of tribal interests, such as cultural resources, stewardship, and enhanced governmental relations.

Engaging with and listening to tribes is key to DOE's success. This April, DOE virtually hosted a consultation session with tribal leaders in support of the the President's memorandum to conduct regular, meaningful, and robust consultation with federally recognized tribal nations. DOE is using the information gathered during the session to craft an updated implementation plan for future tribal consultation.

"We recognize the importance of consultations and collaborations with Native American and Alaska Native governments and communities," LM Director Carmelo Melendez said during the consultation session. "We work closely with friends and colleagues from 16 tribal nations, as well as many Pueblos in the State and Tribal Government Working Group."

Through STGWG, Native American tribes and states can engage directly with DOE officials on pressing issues and decision-making regarding management of LM sites.

"LM is here for the long-term, so it's critical that we continuously engage with our stakeholders in a meaningful way," said LM Program Manager Tracy Atkins. "In STGWG, we have a valuable partner who deeply understands the need for the long-term stewardship of the land." ❖

Resources

In 2017, the STGWG Long-Term Stewardship Committee released an update to the original 1999 "Closure for the Seventh Generation" report, which is available at www.ncsl.org/Portals/1/Documents/energy/STGWG_Closure_SeventhGen_32092.pdf.

Top: STGWG representatives listen to a presentation about the history of the Weldon Spring Site. Left: STGWG members tour the Fernald Preserve On-Site Disposal Facility.

GOAL 6

LM Professionals Value Early Career Importance of American Indian Science and Engineering Society

The American Indian Science and Engineering Society (AISES) National Conference is the premier event for Indigenous STEM professionals and students from the United States and Canada. The conference focuses on educational, professional, and workforce development. Attendees include Indigenous high school and college students, educators, and professionals, as well as members of tribal nations and enterprises, universities, corporations, and government agencies.

Staff from the U.S. Department of Energy (DOE) Office of Legacy Management (LM) have been participating in the conference for many years, and they view it as an opportunity to recruit LM interns and support Native American STEM students and professionals. Most recently, LM operated a virtual career fair booth at the 2020 AISES National Conference. Originally scheduled to take place in Spokane, Washington, the conference was in a virtual format, due to the COVID-19 pandemic.

LM Site Manager Bernadette Tsosie said that the experience of attending AISES when she was an undergraduate student, studying geology at New Mexico Institute of Mining and Technology in the late 1980s, was invaluable for starting her career. Tsosie, who is Navajo, said the chance to interact with other Native professionals was inspiring and encouraging.

"At [New Mexico] Tech, there was just a handful of Native students, so a lot of times you feel so alone because you're the only minority in the class, and sometimes the only woman," Tsosie said. "But at AISES, you walk into this large venue, and there are Native professionals who you can meet and ask questions about their careers."

AISES helped jump-start Tsosie's career. She landed her first job out of school with the U.S. Environmental Protection Agency (EPA) based on an interview at AISES. She said the logistics of attending the conference — traveling by plane for the first time, negotiating a taxi ride to the hotel, handling hotel registration — were also something that many Native students were not accustomed to, and this experience also helped when she started her new job.

"I started my professional career with the EPA after graduation, and within a month of starting they booked me for travel," Tsosie said. "And I was able to do that on my own because of my experience at the conference. If I hadn't done that, I would have been overwhelmed."

LM Site Manager Bill Frazier, who is also Navajo, helped to form an AISES student chapter while he was studying civil engineering

LM Site Manager Bill Frazier interacts with a young student at the 2019 AISES National Conference.

at the University of Colorado Denver. He said AISES and similar groups are important for young Native American students and professionals trying to navigate the obstacles of starting a career.

"Sometimes when you come off the reservation, you might not identify with people from other cultures. So, having a group of people around with a similar background, even though you might not be from the same tribe, provides a community to connect with," Frazier said. "Then you see others in the group succeed and you think, 'Hey, if they can do it, I can figure this out too.'"

Frazier said he joined an AISES professional group after graduation, and that experience provided lifelong friendships and lasting impacts.

"Our group was really involved in providing mentorship for Native Americans in the professional world and for students still in school," Frazier said. "We just worked to help them along in terms of showing them the next step in their career development."

Tsosie and Frazier both pointed to the significant STEM outreach LM is doing on the Navajo Nation as important, and they both support LM's continued presence at the AISES National Conference to support students for training, development, and career growth. They said LM's engagement with students at the conference is a great way to promote DOE and LM as a great place to work, recognizing that attracting the best and the brightest to STEM careers with diverse backgrounds is critical to meeting the Department's demands for new perspectives and voices.

To learn more about the agency's STEM outreach, visit STEM Rising at www.energy.gov/STEM. ❖

Tribal Intergovernmental Relations Group Reboots

This past year, Public Affairs staff from the U.S. Department of Energy (DOE) Office of Legacy Management (LM) and the Navajo Abandoned Mine Lands Reclamation/Uranium Mill Tailings Remedial Action (AML/UMTRA) Department were looking for innovative ways to stay connected to community members and to identify projects that would benefit all entities. With new faces and new outreach needs on the Navajo Nation, LM and AML/UMTRA successfully re-engaged the Tribal Intergovernmental Relations Group (TIGR), which hasn't met since 2019.

In 2017, LM set out to build a federal and tribal collaborative outreach effort on the Navajo Nation between DOE, the AML/UMTRA Department, and the Hopi Tribe. TIGR was formed and was initially composed of an LM public participation specialist, LM site managers, LM Strategic Partner (LMSP) staff, Navajo AML/UMTRA staff, and representatives from the Hopi Tribe Department of Natural Resources.

Members of the group focused on coordinating the participation in community outreach activities, outreach materials, and STEM education opportunities. The group would often act as a sounding board for LM-developed materials and would join LM and LMSP staff at outreach events, such as Navajo Nation fairs. Around 2019, changes in leadership within LM and AML affected the consistency of regular group meetings, and the group slowly stopped meeting altogether. Since then, LM has built a stronger team and approach to outreach on the Navajo Nation, only to be slowed down by the pandemic.

"The group is necessary to discuss issues outside the scheduled quarterly and technical exchange meetings," said Norman Honie, Jr. with the Hopi Tribe Department of Natural Resources and an original group member. "Members have the opportunity to discuss topics other than scientific issues. This form of communication is very important if federal projects are to succeed in Indian Country when federal officials hear tribal stakeholders' concerns."

With the new attention, LM wanted to include additional representation to help round out the committee. LM added a member to the group from the U.S. Nuclear Regulatory Commission and requests have been made to the Navajo Nation Environmental Protection Agency and the U.S. Army Corps of Engineers.

"As we strive to continue to build a robust outreach program on the Navajo Nation and Hopi Reservation, our tribal and federal committee members bring expertise and ideas that help all of us work together cohesively to better address the outreach needs of our tribal communities," said LM Public Participation Specialist Shawn Montgomery.

The TIGR team meets virtually every month on the second Wednesday of the month.

"The group looks forward to a time, post-pandemic, when we will stand side by side in person at outreach events, where we can provide a better understanding of the roles that each agency plays regarding the four Navajo Nation sites," said Montgomery. ❖

Monument Valley, Utah.

GOAL 6

On Earth Day: An Annual Reminder of a Daily Mission

"The ultimate test of man's conscience may be his willingness to sacrifice something today for future generations whose words of thanks will not be heard," said U.S. Senator Gaylord Nelson, the founder of Earth Day, at its launch in 1970. The Wisconsin senator was appealing to the nation's sense of legacy as he endeavored to raise awareness about environmental issues.

For Shawn Montgomery, that awareness is more than a personal belief; it is a professional commitment. As the public participation specialist for the U.S. Department of Energy (DOE) Office of Legacy Management (LM), Montgomery is reminded of LM's year-round mission to protect human health and the environment each Earth Day.

Above: LM's Tuba City, Arizona, Disposal Site, as seen from an aerial view, sits on part of the vast Navajo Nation and is near the Hopi Tribe. Right: Shawn Montgomery, right, at LM's Shiprock, New Mexico, Disposal Site.

"It is our responsibility to look at things in the past and ensure that they don't affect the future. That's what I love about the Office of Legacy Management," Montgomery said.

LM's legacy responsibility consists of historically significant sites around the country related to the Manhattan Project, the Cold War nuclear weapons complex, and the nation's early atomic energy program. Some of these former nuclear disposal sites are on tribal lands where Montgomery leads a team in partnering and consulting with tribal members to perform LM's mission. Montgomery regards this aspect of his role as both humbling and awe-inspiring.

"To understand the Native American perspective and their relationship with the Earth, you have to see it as all-encompassing. It is a top-down, bottom-up relationship with water, the air, the land, and the living creatures who inhabit the Earth. And humans are just a small part of that relationship," Montgomery said.

Montgomery's appreciation of that relationship has been honed over years of collaboration with tribal members at home and abroad, initially as a combat medic with the Army's 1st Infantry Division and later when he went to work for the U.S. Department of Veterans Affairs as a certified Tribal Veterans Representative. During his deployment to Iraq, he forged his first friendships with Native Americans. As Montgomery learned about his friends' beliefs and their connection with the Earth, he began to understand how part of that sacred bond was service to country.

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On Earth Day: An Annual Reminder of a Daily Mission

"One of the things we talked about a lot was how vastly different the way Natives look at the Earth from the non-Native perspective. How Mother Earth is the Creator," Montgomery said. "It's a foundational life trait that was just not bred into some of us."

Those conversations, he said, improved his understanding of different Native American cultures and inspired him to support underserved tribal communities. In 2019, Montgomery was appointed public participation specialist with LM, a job he believes he was meant to do.

"Being the face of a federal organization comes with a massive responsibility, not only to our country, but especially to the Navajo Nation and the many other tribal lands and communities we have promised to serve," Montgomery said.

One of those communities is in Tuba City, Arizona, 85 miles northeast of Flagstaff. LM's Tuba City site is on the Navajo Nation and near the Hopi Tribe, where nearby radioactive mill tailings, caused by the processing of uranium ore in the mid-20th century, contaminated groundwater in a concentrated area. Bernadette Tsosie, the LM Tuba City site manager, who is Navajo herself, is encouraged that indigenous expertise is being sought for site management.

"I've worked with tribes my entire career as a federal employee, and I've seen the difference it makes when tribal governments are engaged, as we're implementing some of these ideas or remedies at the project level," Tsosie said.

Through quarterly meetings, outreach events, and ongoing conversations with federal and tribal partners, Montgomery and his team are making sure Native recommendations are heard by DOE.

Specifically, he and his team welcome the traditional ecological knowledge of the Navajo Nation and Hopi Tribe, expertise the tribes have gleaned during hundreds of years of direct contact with the environment. The intent, he said, is to balance the technical nature of LM's work with the wisdom of tribal beliefs.

Bill Frazier, an LM employee and a member of the Navajo Nation, recognizes that these deeply ingrained beliefs are difficult to explain. He references the Navajo word, hózhó, as an example. Loosely defined as walking with nature, it embodies the idea of striving for balance and harmony together with beauty and order, the essence of Navajo philosophy.

"Being a Native American and working for the Office of Legacy Management, where we have the responsibility of environmental stewardship, is restoring that balance with nature," Frazier said.

Frazier said the effort to bridge that cultural gap is worthwhile. In fact, he was involved in those efforts at LM's Riverton, Wyoming, Processing Site, located on the Wind River Reservation. LM conducted a supplemental risk assessment there to determine whether current site conditions were protective of human health for traditional Arapaho uses of plants, animals, and objects.

"Nothing is mentioned in the existing risk assessment that addresses the cultural uses of plants and animals in the area of the site," Frazier said. "The study's results showed the remedies are protective, thus preserving the Northern Arapaho's traditional ecological resources within the site's boundaries."

"The application of tribal ecological knowledge is one of those things we constantly strive for in our organization," Montgomery said. "We had a scholar from the Hopi Tribe scheduled to train non-Native LM team members on cultural awareness before COVID."

Jennifer Grossheim Harris, Public Affairs lead for Navajo Nation sites with the LM Strategic Partner, said the team continues to prioritize the cultural context vital to overseeing a site, while simultaneously respecting and honoring the people who live near it.

"They are connected to the land that we as westerners look at very, very differently. We own land. Our tribal partners consider themselves part of the land," Harris said.

Montgomery said these differences offer LM a unique learning opportunity.

"When I was going through my tribal veterans training, I learned American Indians and Alaska Natives serve in the armed forces at five times the national average. If you drill down on that, per capita, they are the most committed nationality to serve our country," Montgomery said. "I've learned so much from our tribal partners, and it's my job to ensure I continue this mindset, because they've had a lifetime to gather and understand their relationship with Mother Earth, but I feel like I am just getting started." ❖

GOAL 6

"The Network" Builds a Community for Outreach on the Navajo Nation

Cooperating Agencies of the Navajo Nation Five-Year Plan Community Outreach Network

Addressing the Impacts of Uranium Contamination on the Navajo Nation

The Navajo Nation is the largest Native American reservation in the United States, comprising around 27,000 square miles across Arizona, southeastern Utah, and northwestern New Mexico. During the 1950s and the rush to build nuclear weapons in the U.S., there were nearly 4 million tons of uranium ore extracted from the Navajo Nation under leases with the tribal government. When the mining stopped around 1986, more than 500 mine sites had been abandoned.

While reclamation and remediation began at some of the mine sites, many went untouched, with limited outreach and interaction from the federal government to the residents in and around the communities where the open mine sites remained.

In 2007, the U.S. House Committee on Oversight and Government Reform requested that federal agencies write a plan to coordinate in addressing uranium-related issues within the Navajo Nation. The original agencies were the U.S. Environmental Protection Agency, Bureau of Indian Affairs, U.S. Nuclear Regulatory Commission, U.S. Department of Energy (DOE), Indian Health Service, and Agency for Toxic Substances and Disease Registry, in consultation with the Navajo Nation and Hopi Tribe.

The original document was called the Five-Year Plan. The plan outlined the initial collaborative work among the agencies from 2008-2014, and the second Five-Year Plan highlighted the accomplishments from the previous plan and built on additional initiatives from 2014 to 2018. In 2021, the 10-Year Plan was finalized, aiming to advance and expand the work of the previous Five-Year Plans.

A focal point of all the plans has been to support community outreach and information sharing among federal agencies and, more importantly, to community members.

In 2016, the DOE Office of Legacy Management (LM) helped form the Community Outreach Network, which was tasked with the coordination and synchronization of the multi-agency effort through community outreach, joint agency and tribal planning, and information sharing. The participating members of the group are referred to as "the network."

LM also hired a network coordinator to identify, attend, and represent the network at various tribal events where helpful information and resources are shared to community members about the federal agencies' collaborative efforts and services. The coordinator also organizes a monthly conference call among the network to share agency outreach updates.

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"The Network" Builds a Community for Outreach on the Navajo Nation

Over the years, the network membership has grown and outreach efforts have expanded. Prior to the COVID-19 pandemic, the Community Outreach Network coordinator, along with network members, provided information to community members at annual Navajo Nation fairs, the Monument Valley Marathon, and small community events, such as Cameron Days just outside of Cameron, Arizona. The network has also created and presented an information program titled Uranium 101, which is shared by invitation from Navajo Nation Chapter Houses to their membership and covers topics like the effects of uranium exposure on humans and livestock.

Jamie Rayman, a health educator and community involvement specialist for the Agency for Toxic Substances and Disease Registry, served as the chair of the Uranium 101 workshop on behalf of the network. Rayman points to the Uranium 101 public education workshops occurring twice in 2019 on the Navajo Nation, as a significant network accomplishment.

> *"Our goal is to share information about contamination, exposure, and prevention directly with Chapter residents. We committed to delivering the pilot workshop in Navajo Chapter Houses in both English and Navajo languages. We also worked hard to ensure the content was presented in plain language and to invite Navajo families from within the Chapter to participate.*
>
> *We had great participation from multiple federal and Navajo agencies and from the communities themselves. Agencies delivered the workshop, responded to community questions, and interacted with Navajo families at booths before and after the presentation. Navajo community members had an opportunity to build their knowledge of uranium, share local information, and get responses to a variety of questions and concerns all in one place."*
>
> *–Jamie Rayman*

Rayman and other network members had planned to deliver more Uranium 101 workshops before the pandemic halted all travel.

As work begins under the 10-Year Plan, the Community Outreach Network will continue to collaborate to increase outreach efforts in order to reach more community members that are interested in learning more about uranium-related issues on the Navajo Nation. ❖

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.

GOALS 1 & 4

LM Helps Nature Heal Itself: Bioremediation Is a Game Changer

The scientists and engineers at the U.S. Department of Energy (DOE) Office of Legacy Management (LM) are environmental professionals who see site closure as a measure of success because it means "mission accomplished." Case in point: hydrogeologist Julian Caballero, the Legacy Management Strategic Partner (LMSP) site lead for the Pinellas County, Florida, Site.

"I think my crew and I have done a lot of good for the environment over the years," Caballero said. "But when we were able to reach closure of a significantly impacted portion of the Pinellas site, that felt like the biggest victory yet."

The portion of land Caballero is referring to was formerly a plant constructed by General Electric in 1956 to manufacture components for the nation's nuclear weapons program. General Electric buried disposal drums containing waste resins and solvents, resulting in soil and groundwater contamination, in an area known as the 4.5 Acre Site.

"It's a very difficult area because the source of the contamination is underneath the buildings and cannot be dug up like at the other LM sites," said LM Pinellas Site Manager Andy Keim.

When a persistent area of concentrated contamination was cleaned up in 2019, it marked an unconditional closure — a first for LM. An unconditional closure order declares that DOE no longer has any responsibilities for a site and gives the landowner full and unrestricted use of the property. This was a historic milestone for LM, but the real achievement, according to Caballero, was the innovation behind the successful cleanup.

Scientists at LM sites around the country often determine their remediation, or cleanup, strategies based on a site's geography, size, and level of detectable contaminants. In recent years, these scientists have made enormous progress by identifying innovative methods to remediate environments contaminated by volatile organic compounds (VOCs), which are chemical byproducts associated with building materials, factory supplies, and cleaning or disinfecting products.

Bioremediation does not depend on complicated technology but rather relies on nature. This innovative remediation strategy uses microbes to clean up contaminated soil and groundwater. Microbes are tiny, microscopic organisms, such as bacteria, that thrive in naturally occurring environments. Bioremediation has been in practice for decades but was a technique just recently piloted by the LM teams at the Pinellas site as well as the Mound, Ohio, Site in Miamisburg, where VOCs originating from a solid waste landfill have impacted groundwater.

At both Pinellas and Mound, LM needed to shrink contaminant plumes and intercept any VOCs. It was a challenging task, according to Kristen Holmes, LM's Education, Communication, History, and Outreach team lead. Traditional groundwater

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LM's Mound, Ohio, Site was the site of the first U.S. Atomic Energy Commission laboratory.

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LM Helps Nature Heal Itself: Bioremediation Is a Game Changer

Above: An alligator swims around LM's Pinellas site. Right: The Young-Rainey Science Technology and Research Center at LM's Pinellas site sits atop a shallow aquifer. LM used a nature-based strategy to shrink the contaminant pool left by a former nuclear weapons program.

remediation processes, such as pump and treat, can take decades to remove the VOCs. "It's a long, expensive process that inevitably becomes less effective over time, as contaminant concentrations decrease," Holmes said.

LM considered that bioremediation could support the sites' ecosystems while providing a nature-based solution.

"Bioremediation is essentially the idea that certain microbes are more likely to decompose certain contaminants. So first you have to test and make sure you have the ones that could eat your contaminant," said LMSP hydrogeologist Becky Cato.

Both teams started bioremediation through enhanced environmental attenuation, a technique that uses human intervention to hasten natural environmental breakdown processes. LM identified native microbes — or "bugs" — living at each site to organically break down VOCs. They realized if they could accelerate the bugs' biodegradation process and ensure more bugs would proliferate at the site, it would eliminate the need for pump and treat or other more invasive methods.

At the Mound site, Cato and her team injected emulsified soybean oil into the ground to create treatment zones. From there, the bugs fed on the oil, proliferated quickly, and simultaneously broke down the contaminants. Then the team conducted a four-year study to determine if the method would be sustainable in the long term.

Once the bioinjections were completed, the results from the study indicated that the treatment zones remained established and appeared to be self-sustaining.

"This project laid the groundwork for DOE to pursue a more economical and potentially faster way to reach cleanup goals for the groundwater in this area," said Melissa Lutz, LMSP site lead for the Mound site.

Based on the early success, DOE has formally started the process to permanently adopt bioremediation at Mound.

The Pinellas site team's research had similar findings, demonstrating that enhanced environmental attenuation works even within highly impacted, contaminated sites.

"DOE has used enhanced in situ bioremediation to cost effectively address remaining contaminant mass by accelerating the naturally occurring biodegradation process," Keim said.

"It's truly a very simple science and an ideal way to address volatile substances," Cato said. "In my 15 years as a hydrogeologist, the success at the Mound site certainly ranks as one of my proudest accomplishments." ❖

Former Colorado Uranium Mill Site Transformed into Solar Power Farm

In the heart of western Colorado's oil and gas fields, the city of Rifle, Colorado, has also become a leader in municipal solar power production.

Construction will begin in June 2021 on a new 2-megawatt (MW) solar array on a former uranium-processing site. The new array will join two existing arrays (totaling 3.7 MW), which were constructed at the site between 2008 and 2010 to power the city's wastewater treatment plant and other municipal facilities, while also providing energy to residential subscribers.

City officials expect construction on the new solar array will wrap up by September 2021.

"The city of Rifle has made solar energy a priority since 2008, when the city installed the existing solar facility on the site to power the adjacent Rifle Wastewater Facility," said Patrick Waller, the planning director for the city of Rifle. "We're glad that we've been able to work with the DOE [U.S. Department of Energy] and the CDPHE [Colorado Department of Public Health and Environment] to continue to use the site for productive uses, like solar, that benefit the citizens of Rifle."

The New Rifle mill, which was owned and operated by Union Carbide Corporation, processed uranium for the U.S. Atomic Energy Commission from 1958 to 1970. The mill continued producing vanadium concentrates for the commercial market until 1984. Milling operations resulted in site contamination with radioactive tailings and groundwater contamination from arsenic, molybdenum, nitrate, selenium, uranium, and vanadium.

The state of Colorado purchased the 137-acre site, while DOE performed the cleanup of surface and groundwater contamination under the Uranium Mill Tailings Radiation Control Act of 1978. DOE completed encapsulation of radioactive materials in disposal cells in October 1996, while treatment of groundwater contamination continues through use of passive remediation. While the state of Colorado transferred ownership of the site to the city of Rifle in 2004, the DOE Office of Legacy Management (LM) maintains institutional controls and monitors the site to prevent disturbance of any contaminants that may remain underground. Institutional controls are typically legal controls, such as easements, restrictive covenants, and zoning ordinances, that help minimize the potential for human exposure to contamination. The materials handling plan for the site requires the city to monitor the excavated material for potential radiological contamination and either return the material to the area from which it came or dispose of the material at a licensed disposal facility, such as the Grand Junction, Colorado, Disposal Site.

"We just want to ensure the construction process follows the materials handling plan," said LM Site Manager Mark Kautsky, "and if contaminated materials are unearthed during construction, they are handled properly and safely."

The city of Rifle began construction of a new wastewater reclamation facility on the site in 2008, including installation of a 1.72-MW solar-powered system, which provides about 60 percent of the power needed to operate the facility. On a nearby site, another solar-powered system provides 100 percent of the power needed to pump drinking water from the Colorado River for residents, making that pumping facility "net-zero." A net-zero facility is one that generates as much power as it uses, greatly reduces operational costs, and is environmentally friendly.

While LM does not own the site and is not providing funding for the project, LM's risk-based review of the city's plans ensures that the project complies with institutional controls and does not pose a health risk to the community or the environment based on potential disturbance of the site.

Kautsky said he is excited to see the site come full circle, from uranium production, through cleanup, to renewable energy production.

"We are excited about how the city of Rifle is using the property, because it aligns with our broader mission of supporting energy production," Kautsky said. "And to take an old uranium-processing site, on which contaminants were remediated, and turn that into a solar farm, which generates power for the city — that's a huge win for the community." ❖

The city of Rifle, Colorado, is using a series of solar panel arrays constructed on a former uranium processing mill to power city facilities as well as provide energy for many of the city's 9,650 residents. (Credit: Patrick Waller, planning director for the city of Rifle.)

GOAL 4

Reclamation Plan for Uranium Leases Moves Forward

Gold Eagle Mining, Inc., a Colorado company, is revising its reclamation plans for mines on lease tracts managed by the U.S. Department of Energy (DOE) Office of Legacy Management (LM) Uranium Leasing Program (ULP).

ULP administers 31 lease tracts, all located within the Uravan Mineral Belt in southwestern Colorado. LM administrative duties include ongoing monitoring and oversight of leaseholder activities as well as annual inspections to identify and correct safety hazards or environmental compliance issues.

Gold Eagle Mining signed three 10-year uranium mining leases with ULP in January 2020. The company has held leases with ULP since 1998. Three of its mines are on a ULP lease tract near the Dolores River at Slick Rock. A fourth overlooks the Paradox Valley in Montrose County. The mines have been out of operation since the early 1980s.

C-JD-5 headframe near Naturita, Colorado.

A 2008 Colorado state law requires mining companies to meet rigorous environmental regulations, including development of a reclamation plan, to retain uranium mining permits in good standing. LM provided Gold Eagle Mining the requirements for the leases, and the company has agreed to perform the proposed reclamation activities to keep its current leases.

According to the Code of Colorado Regulations, reclamation is defined as, "the employment, during and after a mining operation, of procedures reasonably designed to minimize as much as practicable the disruption from the mining operation and to provide for the establishment of plant cover, stabilization of soil, the protection of water resources, or other measures appropriate to the subsequent beneficial use of such affected lands."

To meet the state's requirements and the requirements of the Stipulated Agreement with the Colorado Division of Reclamation, Mining and Safety, Gold Eagle Mining submitted reclamation plans to DOE for review in June 2014. Review of these plans stalled until the U.S. District Court for the District of Colorado lifted the injunction. In 2020, DOE began review of those plans and is working with Gold Eagle Mining to revise the plans to better reflect current site conditions. Once the plans are approved by DOE, the company will resubmit its revised plan to the state of Colorado for approval of activity on its permit.

"LM is committed to ensuring proper reclamation and mitigation of these mines and to protecting human health and the environment, while partnering with companies like Gold Eagle Mining," said Ed Cotter, the ULP lead with the LM Strategic Partner.

Gold Eagle Mining does not have current plans to begin mining. However, the company does want to retain the right to begin mining operations should it become financially feasible. A consistent price above $450 per ton of ore is considered financially feasible for a company to begin mining operations for uranium. Uranium has not consistently traded at that amount in several years.

"Should Gold Eagle decide to resume mining again, they will need to prepare exploration and mining plans and site-specific environmental impact evaluations that DOE must approve before any mining can be initiated. In addition, specific mitigation plans will also need to be developed before mining can resume," said Cotter. ❖

GOAL 4

Rocky Flats Site and Las Colonias Park Win EPA Site Reuse Awards

Top: The 5,200-acre Rocky Flats National Wildlife Refuge restores and preserves native ecosystems while providing habitat for migratory and resident wildlife, as well as recreational opportunities for surrounding communities. The refuge was recognized by the EPA with a National Federal Facility Excellence in Site Reuse Award, which highlights restoration and reuse of contaminated lands at federal facilities. Right: The 5,000-capacity amphitheater is part of Las Colonias Park in Grand Junction, Colorado. The park was recognized by the EPA with a National Federal Facility Excellence in Site Reuse Award, which highlights restoration and reuse of contaminated lands at federal facilities.

The U.S. Environmental Protection Agency (EPA) recognized two U.S. Department of Energy (DOE) Office of Legacy Management (LM) sites in Colorado as models for beneficial reuse of contaminated land.

EPA recognized LM's Rocky Flats Site, Colorado, and Las Colonias Park in Grand Junction, Colorado, with National Federal Facility Excellence in Site Reuse Awards. The awards, announced on May 13, highlight the significant accomplishments of federal agencies, states, tribes, local partners, and developers in restoring and reusing contaminated land at federal facilities.

LM's Rocky Flats Site won in the Superfund National Priorities List (NPL) category, and Las Colonias Park won in the non-NPL category.

"We are humbled to be recognized by the EPA with these esteemed awards. Our remediation efforts were a catalyst, but it also took vision and commitment from the community to turn these properties into valuable resources," LM Director Carmelo Melendez said. "These sites demonstrate the importance of DOE's work and how cooperation and communication with state, local, and tribal communities can generate opportunities for smart reuse."

The Rocky Flats Site was originally a nuclear weapons production facility during the Cold War. After nuclear weapons production ended, DOE completed an accelerated 10-year, $7 billion cleanup of chemical and radiological contamination.

In 2001, Congress passed the Rocky Flats National Wildlife Refuge Act of 2001, creating the 5,200-acre federally protected refuge that is managed by the U.S. Fish and Wildlife Service. The refuge now restores and preserves native ecosystems, while providing habitat for migratory and resident wildlife, and recreational opportunities for surrounding communities.

"We are proud of our work that created a safer environment and helped shape this valuable resource," said Andy Keim, LM's site manager for Rocky Flats.

Las Colonias Park, located along the Colorado River and part of Grand Junction's city park network, is a former uranium-processing facility that was transformed into a multi-use park, which includes a 15-acre business zone, 5,000-seat amphitheater, riverfront park, boat ramp, trails, and an arboretum.

The park provides a destination for walking and biking along the river and has become a catalyst for redevelopment in the surrounding area. Retail and restaurant development are underway.

"Las Colonias Park is a wonderful example of revitalization that supports the city's urban and recreational development through cooperation with the local stakeholders and the private sector to benefit the local community," said Joyce Chavez, LM's Reuse Asset manager.

Besides the two LM sites, EPA also recognized a business and technology park in Rome, New York, that was a former Air Force Base and a multi-use park in Key West, Florida, that was a former Naval Air Station. ❖

GOAL 4

Reclamation of the Burro Mines Complex Ready to Begin in Southwest Colorado

Uranium mining in southwest Colorado is as much a part of the region's history as the iconic Dolores River. The U.S. Department of Energy (DOE) Office of Legacy Management (LM) is working toward protecting the Dolores River by addressing sedimentation issues stemming from the historic Burro Mines Complex in San Miguel County, Colorado.

The Burro Mines Complex includes three separate and distinct uranium mine sites: the Burro Tunnel Mine, the Burro No. 3 Mine, and the Burro No. 5 Mine. The Burro Tunnel Mine site is located along the east side of County Road S8, which is adjacent to the Dolores River.

The U.S. Bureau of Land Management (BLM) and the Colorado Division of Reclamation, Mining and Safety (DRMS) consider the sites as legacy, or "pre-law," mines, because they operated prior to the present era of permitting by the Colorado DRMS. As such, there are no requirements for reclamation, and the mines could remain in their current condition. Nevertheless, to protect the Dolores River from further sediment, LM intends to begin work on a reclamation at the mine complex later this year.

"LM's goal with this project is to protect the Dolores River from further sediment load running off from legacy waste rock at the Burro Mines Complex," said Deborah Barr, program manager for the LM Uranium Leasing Program. "The health of this river corridor impacts the habitat for wildlife and recreational usage. LM is working hard to accomplish these goals while preserving the unique mining heritage of this area."

The project is the culmination of several years of planning. In 2019, LM began drafting an Environmental Assessment (EA) for the project in accordance with the National Environmental Policy Act (NEPA). As part of the EA process, LM made the draft EA available for public review and comment last summer. Based on the EA findings, this reclamation project does not constitute a major federal action significantly affecting the quality of human health and the environment within the context of NEPA. LM is expected to sign a Finding of No Significant Impact at the end of March 2021.

Collaboration has been a key element of the reclamation project. LM has engaged with BLM, Colorado DRMS, the Colorado State Historic Preservation Office (SHPO), the San Miguel County Planning Department, and the public to better understand any potential impacts of the project on the environment and community.

For instance, ongoing collaboration with Colorado SHPO resulted in significant changes to the engineering design in order to protect the historical integrity of the mine complex. Working closely with Colorado SHPO, LM revised the engineering design to better preserve the area's unique mining heritage, while still protecting the Dolores River.

The Burro Mines Complex is on land that LM manages as part of ULP, which includes 31 lease tracts within the Uravan Mineral Belt of southwestern Colorado. The Burro Mines Complex is within DOE lease tract C-SR-13. ❖

The Burro Mines Complex in San Miguel County, Colorado.

GOALS 1 & 6

Partnering to Protect Human Health and the Environment

Partnerships and collaboration are key components of success for the U.S. Department of Energy (DOE) Office of Legacy Management (LM). LM is especially proud of its collaborative work with the U.S. Army Corps of Engineers (USACE). LM and USACE work closely on several projects, but the largest projects underway address challenges at the Bluewater and L-Bar disposal sites in New Mexico.

LM and the USACE Albuquerque District office will be working together to address erosion issues at the L-Bar site, repair subsidence and depressions on top of the main tailings disposal cell and construct a new spillway at the Bluewater site, and repair erosion issues impacting access roads at both sites.

To ensure teams from both organizations share a clear and common understanding of the scope of the work, leadership from both LM and USACE recently toured both sites together. LM Deputy Director of Field Operations David Shafer, Team Lead Paul Kerl, and LM site managers were joined by the USACE Albuquerque District Commander Lieutenant Colonel Patrick Stevens and supporting project teams from both organizations for informational tours of both sites.

Shafer said: "Projects such as these are often hard to clearly understand until you can see it with your own two eyes. The tours with the USACE team provided a great opportunity to not only discuss and understand the projects at Bluewater and L-Bar, but also highlighted the value of the partnership between LM and USACE."

On March 16, L-Bar Site Manager Bill Frazier led the group to several locations across the former uranium-processing site, providing a historical overview and facilitating discussions about the plans to address several erosional features that USACE will lead the efforts to remedy. The teams then met at the Bluewater site on March 18 for a tour led by Site Manager Bernadette Tsosie. The primary focus of the work at Bluewater will be to address depressions on the top of the cell, which result in ponding during major precipitation events. After providing an update about the history, remediation, and current status of the site, Tsosie led the team on top of the 354-acre main tailings disposal cell. Although dry during the visit, the teams could see where water had previously accumulated in the depressions, which are up to four feet deep in some areas. The group then discussed plans to resolve the ponding.

"This is the kind of stuff I love — interagency partnerships that can work on a project with a lasting impact," Lt. Col. Stevens said. "We're excited to be working with LM and appreciate the opportunity to be involved."

The upcoming planning, investigation, design, and construction work at the L-Bar and Bluewater sites will span multiple years, and the opportunity for leadership from both organizations to walk the sites together and understand the scope of the projects has laid the foundation for a successful collaboration.

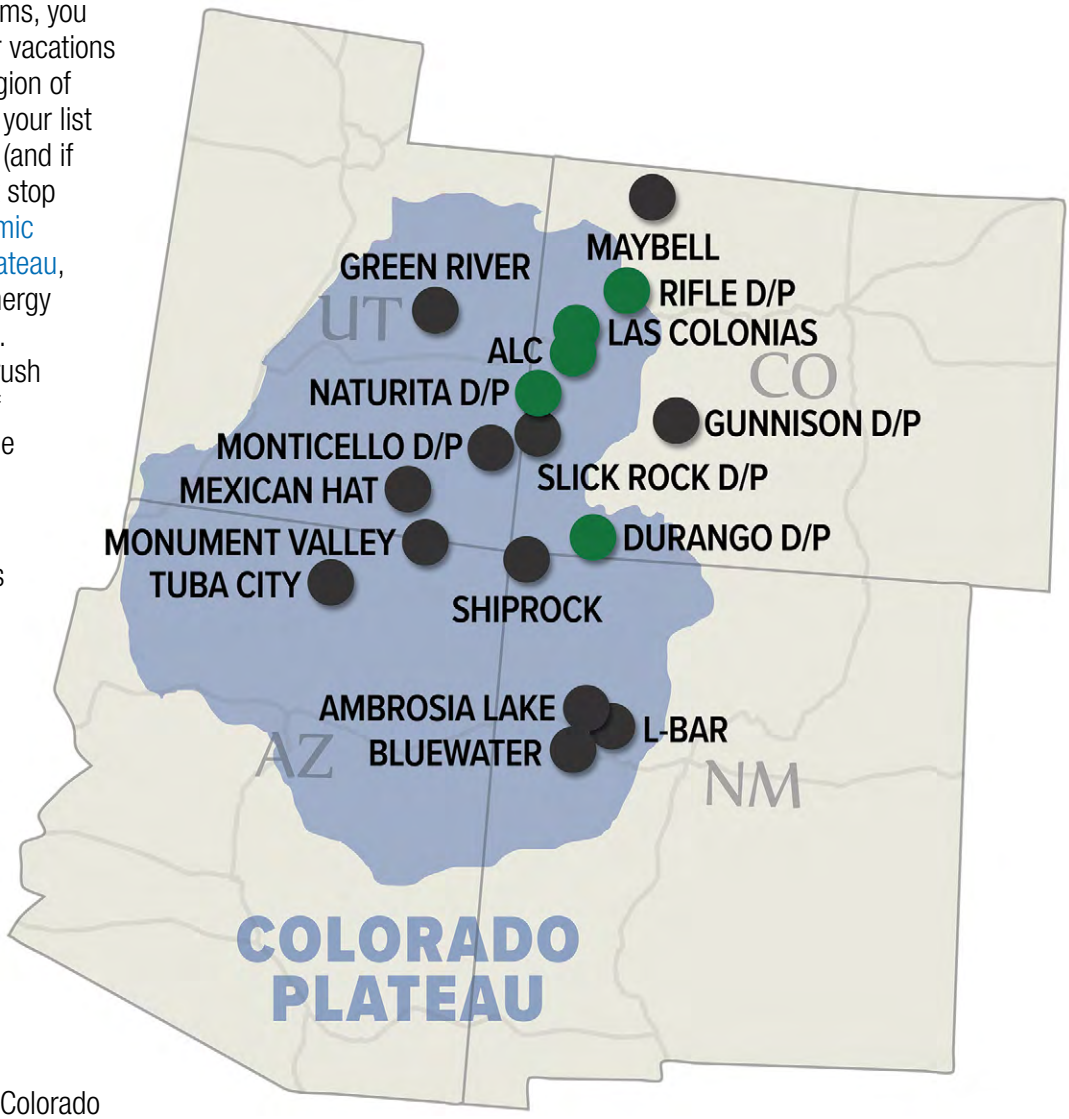
"We appreciate the partnership, expertise, and world-class engineering and construction support from USACE, as well as the fact that we share a focus on protecting human health and the environment," Kerl said. ❖

Left: Project teams from LM and USACE brief leadership of both organizations about plans to address erosional issues at the L-Bar, New Mexico, Disposal Site. Right: Leadership and project teams from LM and USACE Albuquerque District at the Bluewater, New Mexico, Disposal Site.

LM Releases Guide to the Colorado Plateau

As spring nears and the weather warms, you may find yourself thinking of summer vacations and road trips. If the Four Corners region of the southwestern United States is on your list of possible destinations this summer (and if it isn't, maybe it should be), your first stop might be the interactive website, Atomic Legacy Discovery Guide: Colorado Plateau, created by the U.S. Department of Energy Office of Legacy Management (LM). This interactive guide will help you brush up on facts about the region, even if you're not planning a trip through the area this year.

LM is the caretaker of legacy sites that played a critical role in America's nuclear history. The office is responsible for 19 sites on the Colorado Plateau that processed uranium during World War II and the Cold War. LM not only manages the sites under its stewardship, but also focuses on moving sites toward beneficial reuse — using the legacy sites in beneficial ways that are consistent with its mission to optimize use of public lands and to protect human health and the environment.



LM sites on the Colorado Plateau.

The Atomic Legacy Discovery Guide: Colorado Plateau provides visitors a wealth of information about the history, geology, and ecology of the region. Find answers to your questions about why it's called the Colorado Plateau, why uranium was prevalent in the area, what role the region played during the Manhattan Project, what plants and animals call the area home, and much more. The guide even offers an interactive map showing locations of LM's sites across the region, the history of those sites, and how LM serves as the steward of the sites, ensuring protection of human health and the environment.

So, regardless of whether you live in the area, are planning a trip to the Colorado Plateau soon, or might want to visit at some point in the future, be prepared to impress your family and friends by spending some time with Atomic Legacy Discovery Guide: Colorado Plateau. It will have you looking like the resident expert! ❖

GOALS 1 & 4

Historic Sign in Naturita, Colorado

Defense-Related Uranium Mines program staff stand under a historic sign in Naturita, Colorado, where local community members displayed their appreciation for the work field teams are performing in the area. ❖

Environmental Justice Activities

Impact Statements from 2021 graduates of the Allen University Environmental Justice Scholars' Program

The Allen University Environmental Justice Institute (AUEJI) proudly celebrated the graduation of the third cohort of scholars from the Allen University Environmental Justice Scholars' Program (AUEJSP). The program is composed of nine different modules taught over nine weekend sessions on the university's campus

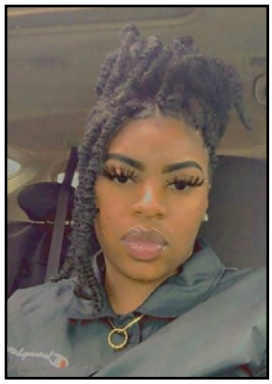
Dr. Oluwole Ariyom, director of the Allen University Environmental Justice Institute, presents to scholars in the Environmental Justice Scholars' Program.

AUEJI is a community-sustainable resource center for rural and economically challenged minorities and low-income populations around the U.S. Department of Energy (DOE) Savannah River Site in Aiken 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 — to attract and mentor students toward the STEM discipline and to build a sustainable pipeline for training, education, and employment. These objectives are accomplished through a three-phased intervention: 1) engagement, 2) education, and 3) empowerment.

Following are impact statements from a few of the scholars in the current graduating cohort:

Venus Rowe, Sophomore, Biology Justice Academy



AUEJSP impacted my life tremendously. I learned a number of things while attending this program. To be honest, this program opened my mind and eyes to multiple things that are going on in our community and even the world at large. I received better clarity on issues such as global warming, flooding in the Charleston area, the Flint, Michigan, water crisis, racial profiling, environmental injustice/justice, natural disasters, and many other environmental issues. I'll try my best to voice environmental justice as much as I can to family, friends, and my community members. I'm highly grateful for the experience I received from this program and I think more people need to attend programs like this to improve their mindset on changing the world positively.

Rene Brown, Junior, Biology

In all honesty, the purpose of being part of this program was not so clear to me at the beginning. But our first session changed my whole perspective completely. Initially, I just had a vague knowledge of what environmental justice is, but there is so much more to the term "environmental justice" than I originally thought. I always thought it is just about different ways by which the environment had been affected by flooding, pollution, carbon monoxide, etc. However, I realized now that it is way deeper than all that. Of course, some of the problems are included, but the term environmental justice is much wider and deeper! Therefore, I am so grateful I completed this program. It is indeed an eye opener to a wider perspective of environmental justice. Consequently, my confidence has been built to better analyze environmental issues within my community. And I can see myself becoming an advocate of a positive change to make my community a better place.

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Environmental Justice Activities

Solomon Powe-Wade, Sophomore, Biology

I was taught a lot right from day one of this program! There are lots of things that I never knew about before, which became clearer to me. I'm so glad to be a part of this team to gain this much knowledge. The knowledge will definitely help me have something tangible to pass down to the next generation.

The experience has been phenomenal! It made me think a lot more about life and others in community that don't get support at all. I believe that we can start making changes now! It's never too late to start and reform everything from scratch. By breaking the root of the problem, we'll be able to transform a community that was negative into something positive. Many thanks to all the speakers that came here giving me the knowledge that I would need for the future.

Lauren Rowe, Sophomore, Biology

My name is Lauren Rowe, and I am a member of the Allen University Environmental Justice Scholars' Program. Since participating in the first program, it has impacted my life in so many ways. Listening to all the different presentations opened my eyes that there's more to what's going on in this world, and with our society, including the people of all races, and how to prepare yourself for the real world. I learned from everyone's perspective and views. Now, I know in the future that dealing with people of different race, color, religion, national origin, and gender you must be able to keep your composure because not everyone knows what "justice" or "equality" means. Another thing for future references is getting people involved with their community more and to persuade others that are having a problem with anything in their environment anywhere around the world to speak up and let their voice be heard. I have taken away numerous pieces of information, quotes, acronyms, and some history from this program. A quote I took from this program is "If you do not understand white supremacy/racism, everything that you do understand will only confuse you." - Neely Fuller Jr.

Ray Green, Senior, Social Science

The Allen University Environmental Justice Institute program helped me view environmental activism through a different lens. I now have a sense of responsibility to the sustainability of my community to maintain, educate, and nurture it, so that it may be a thriving hub for the community and families that will live here after I am gone. Going forward, I will pay attention to the environment around me; I will wonder where the nearest park is; I will be concerned about the educational framework wherever I choose to live. When I interview for a position, one of my questions will be: How is the company giving back to the community where they do business? In this program, I have learned that someone must assume a leadership role to be the voice that represents the interests and progression of the community.

Downing Presents on DOE EJ Program at ASTSWMO Mid-Year Meeting

Melinda Downing, manager of the DOE Environmental Justice (EJ) program, presented during a panel discussion incorporating EJ at federal facility cleanups at the virtual Association of State and Territorial Solid Waste Management Officials (ASTSWMO) Mid-Year meeting on April 30, 2021.

The DOE EJ strategy provides an overarching vision that is reflected in its EJ goals. The Department has identified key priorities that will increase capacity building, public participation, and opportunities for minority populations, low-income populations, Native American tribes, and Alaska Natives.

Downing described the application of the DOE EJ strategy at the Hanford site in Washington, the Savannah River site in South Carolina, and at the Oak Ridge National Laboratory site in Tennessee. She also described the role of EJ in the Navajo Nation Five-year Plan for cleaning up abandoned mine lands.

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Environmental Justice Activities

In addition to implementing EJ principles and policies at its federal facilities, DOE also implements EJ via additional program initiatives: 1) public participation and community capacity building, 2) educational support, 3) training programs, 4) support of youth leadership institutes, 5) economic development tools and entrepreneurship, 6) proposal writing and grants management workshops, 7) tribal energy projects, 8) 15 cooperative agreements, and 9) the Massey Chairs of Excellence Program. DOE also encourages program and field offices to incorporate community environmental considerations into the National Environmental Policy Act process.

Downing confirmed that Secretary Granholm and the Department continue to be committed to EJ and the execution of EJ at the Department has always been at the forefront of DOE's commitment to Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*; the 2011 Memorandum of Understanding signed by all 17 federal agencies; and other recent executive orders. The Department continues to work with other agencies and the newly appointed White House Environmental Justice Interagency Council to continue stakeholder and community engagement and participation in DOE initiatives.

For additional information, please contact Melinda Downing at Melinda.Downing@hq.doe.gov or (202) 586-7703.

MES Program Interns Return to the Lab PPE Ready

The Mentorship for Environmental Scholars (MES) Program recruits, trains, and places interns at DOE Office of Legacy Management offices across the country. Every year, the program selects 15 traditionally underrepresented students from Historically Black Colleges and Universities, Hispanic Serving Institutions, and Tribal Colleges and Universities to do research and support work for 10 weeks during the summer. Students represent majors and fields of study integral to the DOE mission.

This year, most of the students selected for the MES Program are spending their summer on-site at DOE labs and complexes. Considering the slow comeback from the COVID-19 pandemic that prevented program participants from traveling last summer, this year's program was designed with safety in mind. Since interns can participate on-site again, the program decided to provide a grab bag of personal protection equipment (PPE).

Many of the sites hosting interns this year are optimistic but cautious about the conditions surrounding this summer reopening for students. As managers of the MES Program, Pre-College University, Inc., wants to make sure it is doing its share of allaying fears on the part of the lab and the intern. With this as a goal, the organization has purchased hand sanitizer, sanitizing wipes, two-ply face masks with filter inserts, and no-touch door openers. This PPE has been put together in a program bag and shipped to all participants in order to arrive in time for the virtual program orientation. ❖

The MES Program is providing a grab bag of personal protection equipment (PPE) for interns participating in summer internships.

MES Program PPE grab bags include hand sanitizer, sanitizing wipes, two-ply face masks with filter inserts, and no-touch door openers.

New Employee Bios

Charlee Boger

Charlee Boger has joined the Uranium Mill Tailings Radiation Control Act (UMTRCA)/Nevada Offsites team as a site manager. She was born in Grand Junction, Colorado, and graduated from Colorado Mesa University with a Bachelor of Science in environmental science and technology.

Boger started her career as a contractor to the U.S. Environmental Protection Agency (EPA), working on greenhouse gas emissions inventories and projects to mitigate methane emissions from coal mines worldwide. She co-authored policy analyses and feasibility studies, traveling across the United States and to Mongolia in support of EPA and the Global Methane Initiative. She later worked as a project manager in regulatory permitting and air compliance for oil and gas projects. Prior to joining the DOE team, she was a site lead for the LM Strategic Partner, supporting eight UMTRCA sites. She is happiest on a bike, in her kitchen trying new recipes, or on a beach.

Rebecca Roberts

Rebecca Roberts has joined the U.S. Department of Energy Office of Legacy Management (LM) as a site manager at the Weldon Spring Site in Missouri. Roberts worked previously as the Formerly Utilized Sites Remedial Action Program (FUSRAP) task assignment manager with the LM contractor. Prior to that, she worked as a contractor to the U.S. Army Corps of Engineers on FUSRAP sites in the St Louis, Missouri, area. She spent six years in the U.S. Navy, supporting the U.S. Navy Nuclear Power Program. Roberts has a Bachelor of Science in environmental physical science and recently completed her master's in engineering management through Pennsylvania State University. She was raised in Rapid City, South Dakota and now lives in St. Charles, Missouri, with her husband and sons. ❖

LM NEWS Feed

Visit www.energy.gov/lm/listings/lm-news to access these articles in the LM NEWS Feed.

JUNE 10, 2021

Las Colonias River Park Hosts Ribbon-Cutting

LM celebrates riverfront development with community and local leaders

JUNE 8, 2021

Virtual Programming at LM's Public Interpretive Centers

A look back at one year of virtual programming.

JUNE 2, 2021

Osprey Love at LM's Atomic Legacy Cabin

Spring and summer osprey watching, hatching are underway.

JUNE 1, 2021

The Office of Legacy Management Rolls Out Fiscal Year 2022 Budget Request

On Friday, May 28, the Office of Legacy Management (LM) rolled out its fiscal year (FY) 2022 budget request of approximately $429 million.

MAY 25, 2021

Outside-the-Box Thinking Drives LM's Beneficial Reuse Program

LM works with communities to reimagine the future of former contaminated sites.

MAY 14, 2021

Rocky Flats Site and Las Colonias Park Win U.S. EPA Site Reuse Awards

Award highlights excellence in the restoration and reuse of contaminated land at federal facilities.

MAY 13, 2021

LM Receives EPEAT Purchaser Award for Advancement of Sustainability

The award recognizes excellence in sustainable procurement of electronic equipment.

MAY 13, 2021

LM and Strategic Partner Recognize Veterans on Armed Forces Day

We asked some of our veteran teammates to reflect on their service.

MAY 11, 2021

Former Colorado Uranium Mill Site Transformed into Solar Power Farm

Construction will begin in June 2021 on a new 2 MW solar array.

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LM NEWS Feed

MAY 5, 2021

Royalty Payments Resume under Uranium Leasing Program

ULP has begun receiving royalty payment from lease holders in southwest Colorado.

APRIL 29, 2021

Interagency Data Management Working Group Develops Transition Guidance for FUSRAP

Working Group reaches milestone in collaboration.

APRIL 27, 2021

Stewardship in Action: Waterline Replacement Project at LM's Weldon Spring Site

Replacement of a remediation-era water system improved efficiency, safety, and savings.

APRIL 22, 2021

On Earth Day: An Annual Reminder of a Daily Mission

LM's Shawn Montgomery credits his reverence for the environment to serving alongside Native Americans at home and abroad.

APRIL 20, 2021

Reclamation Plan for Uranium Leases Moves Forward

Gold Eagle Mining plans reclamation of uranium mining leases in western Colorado.

APRIL 14, 2021

An Overview of LM's Natural Resources Management Plan

In 2020, LM created a plan for defining and guiding existing natural resource management efforts.

APRIL 8, 2021

LM Helps Nature Heal Itself: Bioremediation is a Game Changer

When persistent contaminants slowed remediation efforts, LM turned to a nature-based solution that sped up progress.

APRIL 6, 2021

LM's Aviation Program Monitors Sites and Reduces Risk

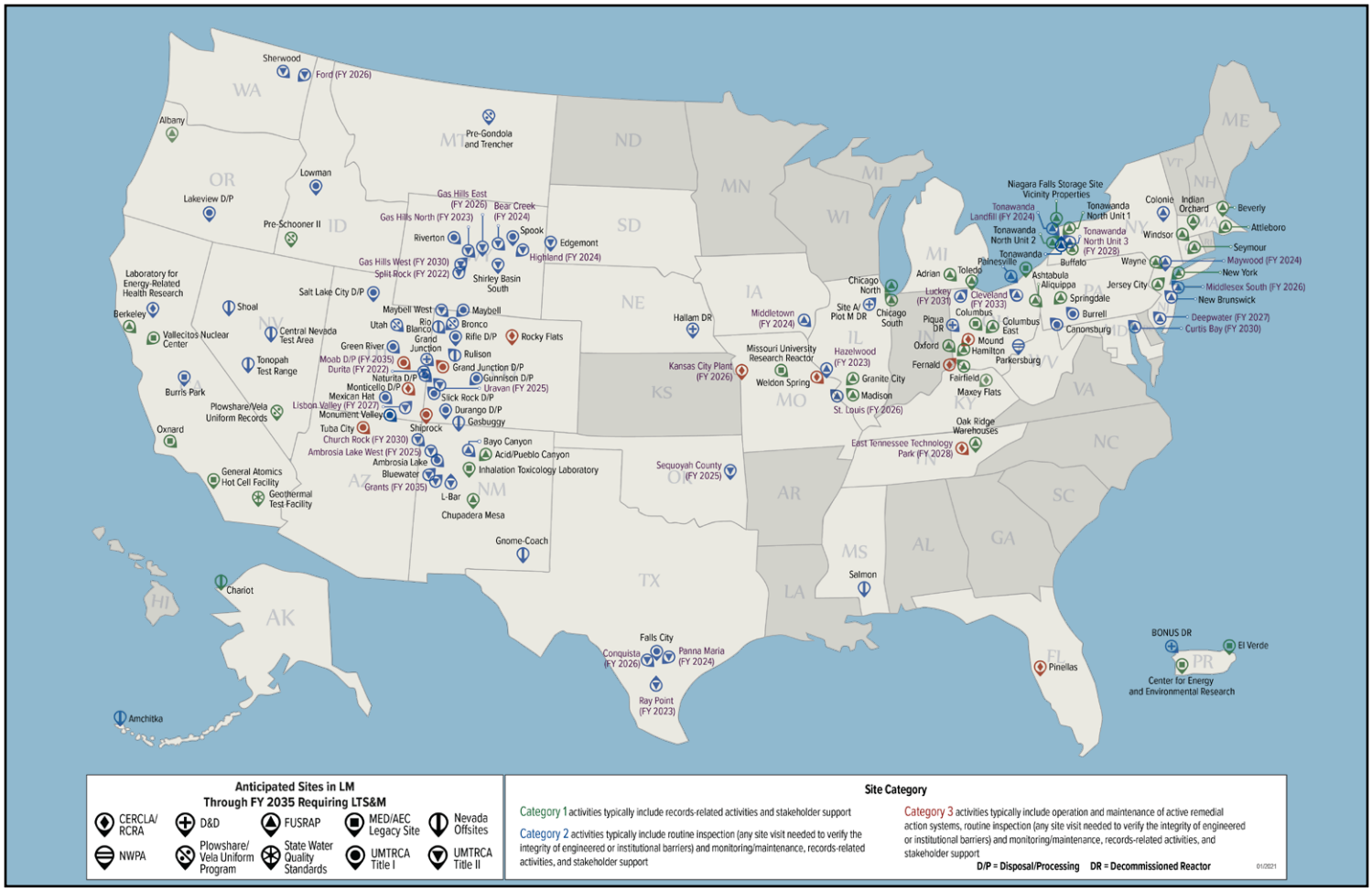
Small unmanned aircraft systems perform topographic mapping at LM sites.

APRIL 1, 2021

Reclamation of the Burro Mines Complex Ready to Begin in Southwest Colorado

The project will protect the Dolores River by addressing sedimentation issues.

Anticipated LM Sites Through Fiscal Year 2030



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