



U.S. DEPARTMENT OF

**ENERGY** | Legacy  
Management

# PROGRAM UPDATE

July–September 2018

LTS  
CONFERENCE  
SPECIAL EDITION



## 2018 Long-Term Stewardship Conference

*Preserving the past, preparing for the future: A broad perspective on long-term stewardship*  
August 20–24, 2018



# Director's Corner

## Carmelo Melendez Delivers Opening Statements at LTS Conference

It is my pleasure, as Director of the U.S. Department of Energy (DOE) Office of Legacy Management, to welcome you to the 2018 Long-Term Stewardship (LTS) Conference.

Due to the successes of conferences held in Grand Junction, Colorado, in 2001 and 2010, the changing landscape, technological advancements in LTS, and LM's growth, DOE felt it was time to bring our colleagues and industry partners together again. It takes many people working together for LTS to be successful and effectively implemented. Collaboration, consultation with stakeholders, and teamwork are key to effective LTS. As stewards of our country, our land and resources, our family's well-being, and our children's future, we have an important job protecting human health and the environment, which is the core mission of my organization.

Our nation has a moral obligation to tackle the environmental legacy left after the research, production, and testing of nuclear weapons and other scientific and engineering research conducted during World War II and the Cold War. LM was established in 2003 to manage DOE's responsibilities associated with these activities, and today is responsible for 92 sites in the United States and its territories. From Alaska to Puerto Rico, tribal lands, urban centers, rural and industrial—our sites are as diverse as they are geographically vast.

DOE has taken an aggressive, accelerated cleanup approach to reduce risks, cut costs, and ensure the protection of human health and the environment. We have five key goals for ensuring effective long-term surveillance and maintenance at remediated sites:

- Protecting the environment and human health

- Managing legacy records and making them accessible to the public and future generations
- Ensuring the pension and post-retirement benefit commitments for former contractor nuclear workers
- Facilitating beneficial reuse of closed sites
- Engaging stakeholders in meaningful decision-making processes

“We are committed to the fair treatment and meaningful involvement of all people with respect to the actions and activities we undertake.”

Carmelo Melendez  
Director of the  
Office of Legacy Management

Our successful application of these goals is evident at LM's four sites located on the Navajo Nation. I know I can count on all of our local communities and tribal partners to present a solid, holistic examination of LTS challenges and together we can formulate solutions. That is the value of meaningful consultation and collaboration.

LM is also the DOE-wide coordinator for environmental justice. As avid proponents and practitioners, our goal is to achieve environmental justice and

foster nondiscrimination in programs that affect human health and the environment. We are committed to the fair treatment and meaningful involvement of all people with respect to the actions and activities we undertake.

As you hear stories and presentations over the next few days, I charge each of you to listen with a collaborative spirit. We are all in this together and we cannot complete our respective missions without support and partnership from one another. I encourage all of you to take advantage of this opportunity to network, collaborate, and share technical information on addressing LTS.

A full version of Melendez's opening statement can be viewed here: <https://www.energy.gov/lm/articles/director-melendez-s-opening-remarks-2018-long-term-stewardship-conference> ❖



## LM Goals



**1 Protect Human Health and the Environment**



**2 Preserve, Protect, and Share Records and Information**



**3 Safeguard Former Contractor Workers Retirement Benefits**



**4 Sustainably Manage and Optimize the Use of Land and Assets**



**5 Sustain Management Excellence**



**6 Engage the Public, Governments, and Interested Parties**

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Cover: DOE Office of Legacy Management Director Carmelo Melendez welcomes attendees to the Long-Term Stewardship Conference held in Grand Junction, Colorado, August 20–24, 2018.



# Hundreds Attend 2018 Long-Term Stewardship Conference

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) hosted the 2018 Long-Term Stewardship (LTS) Conference during the week of August 20–24 in Grand Junction, Colorado. The conference provided an opportunity for LTS professionals to exchange information and ideas relating to the challenges and opportunities associated with the stewardship of remediated sites.

Over 350 people attended this year's conference, representing different agencies and stakeholder organizations from all over the world. The conference theme, "Preserving the past, preparing for the future: A broad perspective on long-term stewardship," was prevalent throughout the week's activities.

## MONDAY

Conference attendees had the option to tour the Grand Junction, Colorado, Disposal Site on Monday, August 20, and again on Thursday, August 23. Over 60 participants enthusiastically endured the 90-degree heat to learn about the site's operations, as well as the research underway to improve the cell's functionality.

## TUESDAY

LM Public Participation Specialist and Master of Ceremonies Karen Edson kicked off the conference Tuesday morning with the help of the Grand Junction Central High School Junior Reserve Officers' Training Corps, who performed the presentation of colors.

City of Grand Junction Mayor Pro Tem Bennett Boeschstein and LM Director Carmelo Melendez welcomed attendees to the conference. Melendez stressed the value of purposeful coming together that the LTS Conference provided.

Tuesday's events consisted of two keynote addresses and three panel discussions.

Dr. Michael Paul, who serves as the Division Head of Engineering and Radiation Protection and Head of Water Management Department at Wismut GmbH in Saxony, Germany, gave the first address. Paul shared the story of East Germany's SDAG Wismut, which was the major supplier of uranium to the Soviet Union, as well the complications involved in one of the largest cleanups in the aftermath of the Cold War.

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*Left: Karen Edson, Master of Ceremonies. Right: The opening ceremony attracted a large number of conference attendees.*



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## Hundreds Attend 2018 Long-Term Stewardship Conference

Judy Pasternak, author of *Yellow Dirt: An American Story of a Poisoned Land and a People Betrayed*, shared her experiences as an investigative journalist, revealing the troubling legacy of uranium mining on the Navajo Nation, and shaping policies to address these concerns.

Panel discussions followed, covering a range of topics and issues facing LTS today.

The first panel discussion — “DOE Complex Approach to LTS” — involved senior-level representatives from DOE and the U.S. Army Corps of Engineers, who each discussed the role of long-term stewardship throughout the DOE complex — not just LM, but the other DOE offices and other cooperating agencies.

The next panel — “LTS Practices, Tribal Considerations, and Perspectives” — focused on those working with and within tribal communities, as well as embracing and incorporating native culture into the remediation process.

The final panel — “National Stakeholders Organizations” — featured stakeholder organizations from Colorado, Utah, and Missouri, and shared insight on how to engage stakeholders through generational turnover and political change.

### WEDNESDAY AND THURSDAY

Wednesday and Thursday were dedicated to technical breakout sessions, which covered eight thematic tracks:

1. Advancing current practices at mission and non-mission sites within DOE
2. Advancing science and technology to reduce costs while maintaining or improving protection of human health and the environment
3. Garnering international perspectives on current practices
4. Maintaining strong partnerships with stakeholder and regulatory communities
5. Maintaining continuity of stewardship while transitioning from cleanup to stewardship and beyond

6. Preserving and making accessible critical information to future generations
7. Optimizing federal land and properties for beneficial reuse
8. Addressing legacy uranium mine sites

Over 90 abstracts, organized into 25 sessions within these eight tracks, were presented.

“This is the first Legacy Management conference I have attended and have learned so much.”

Sarah Roberts,  
Oak Ridge Associated Universities

Wednesday's schedule contained one final keynote address. Dr. Stephanie Malin, assistant professor of sociology at Colorado State University and author of *The Price of Nuclear Power: Uranium Communities and Environmental Justice*, shared her research regarding the boom-and-bust cycles of energy markets (particularly those involving uranium mining) and their adverse impact on small communities with limited economic diversity.

Melendez provided the closing remarks for the regular session of the conference.

“Whatever our role is, we need to approach it knowing that we are all working toward the same shared goal in mind: protection of our future health and environment,” said Melendez. “We need to be building a cathedral together not pushing bricks individually.”

### FRIDAY

Though many conference attendees departed following Thursday's events, some stayed to take a tour of the former Atlas uranium mill site Uranium Mill Tailings Remedial Action Project located in Moab, Utah. The project consists of removing approximately 16 million tons of contaminated uranium mill tailings and disposing of them in a new disposal facility near Crescent Junction, Utah, which is about 30 miles north of the former mill site. The project also includes an interim groundwater treatment process to reduce a contaminant plume that is flowing to the Colorado River. ❖

## Welcome to the City of Grand Junction

Mayor Pro Tem Bennett Boeschstein welcomed conference attendees to Grand Junction, Colorado, on the first full day of the conference. He discussed Grand Junction's long history with uranium mining, milling, and disposal.

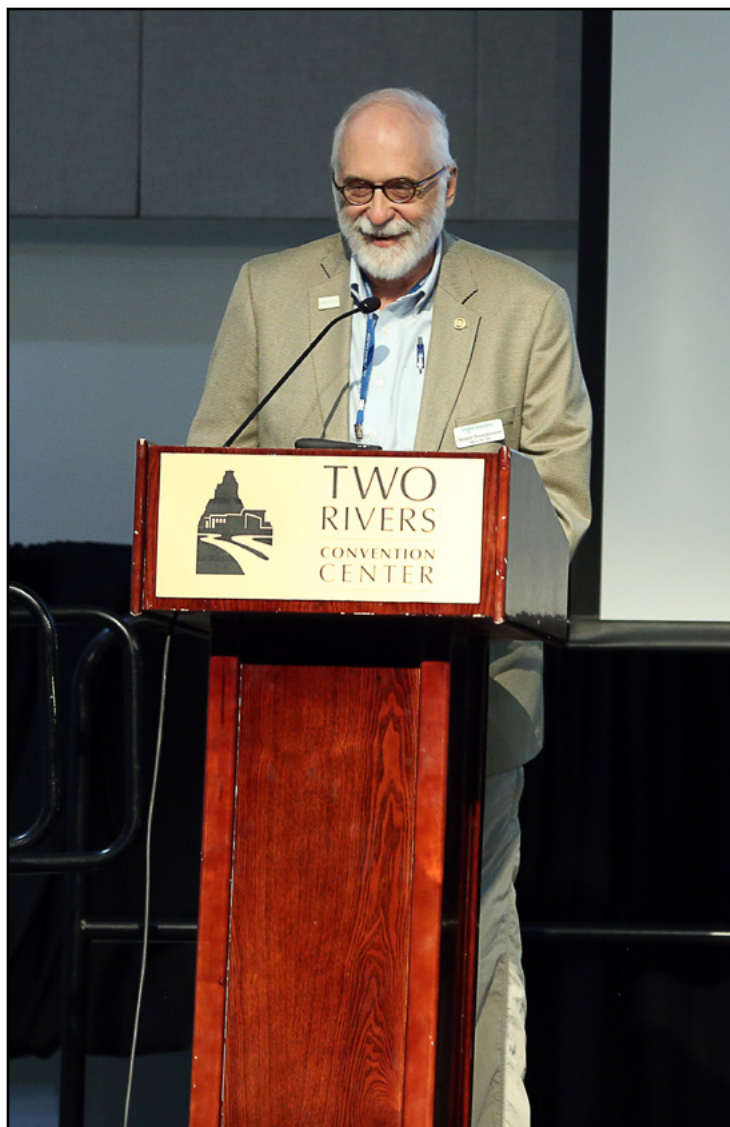
Boeschstein pointed to the Las Colonias Park project on the Colorado River, near downtown, as a major success in remediation and beneficial reuse of a former uranium milling and processing site, which is now an LM site.

"The project cost over \$100 million to clean up," said Boeschstein.

After decades of work, the city is making the cleaned-up areas available for recreational use and as a business district. Las Colonias Park now includes an amphitheater that draws international musical performers. A business park is planned that will feature companies involved in the outdoor recreation industry.

Boeschstein recognized collaboration between the city and DOE that made the project possible.

The mayor pro tem also discussed other city initiatives involving waste treatment and energy. He pointed to Grand Junction's biogas project at the Persigo Wastewater Treatment Facility. Grand Junction is the first city in the United States to use methane produced at a wastewater treatment plant to fuel city buses and vehicles. The project was recently featured on the National Geographic Channel in a series titled "Positive Energy." ❖



*City of Grand Junction Mayor Pro Tem Bennett Boeschstein delivers the welcome address at the LTS Conference.*







## Panels Discuss Departmental Practices, Tribal Considerations, and Stakeholder Perspectives

The first full day of the LTS Conference was dedicated to panel discussions. Each panel incorporated a diverse collection of speakers representing numerous organizations that all contribute to the cause of stewardship of remediated sites.

### Panel: The DOE Complex Approach to Long-Term Stewardship

- **David Shafer**, LM (Moderator)
- **Carmelo Melendez**, LM
- **Andrew Griffith**, DOE Office of Nuclear Energy (NE)
- **Ahmad Al-Daouk**, National Nuclear Security Administration (NNSA)
- **Elizabeth Connell**, Office of Environmental Management (EM)
- **Karen Baker**, U.S. Army Corps of Engineers (USACE)

Senior-level DOE and USACE representatives discussed the role of long-term stewardship throughout the DOE complex, meaning not just in LM but also in other parts of the Department and in cooperating agencies. The speakers emphasized the need for flexibility and adapting to new challenges. “This is not a static program,” Andrew Griffith said. “We are always ready for change, looking at how we can improve things—how we can plan for the future.”

Carmelo Melendez stressed that engineering problems have a human side, something he wished he’d learned early in his career. “We don’t have a monopoly on solutions,” he said. “We can’t come to the table arrogantly thinking we know the only way forward.”

All of the panelists stressed the importance of working with tribal nations and local communities.

“The bottom line is we come from different places and different organizations,” Karen Baker said. “But all share the same value of protecting communities and restoring land so it can be put back to use.” ❖



*Karen Baker shares her experience with long-term stewardship projects while working for the U.S. Army Corps of Engineers.*

“We are always ready for change, looking at how we can improve things—how we can plan for the future.”

**Andrew Griffith**  
DOE Office of Nuclear Energy



*Andrew Griffith (left) presents on the efforts of DOE Office of Nuclear Energy. Also pictured: Ahmad Al-Daouk*

## Panels Discuss Departmental Practices, Tribal Considerations, and Stakeholder Perspectives

### Panel: Practices, Tribal Considerations, and Perspectives

- **Milton Bluehouse**, Navarro Research and Engineering, Inc. (Moderator)
- **Raymond Martinez**, Pueblo de San Ildefonso
- **Kevin Frost**, DOE Office of Indian Energy Policy and Programs
- **Madeline Roanhorse**, Navajo Nation Abandoned Mine Lands (AML)
- **Teara Farrow Ferman**, Confederated Tribes of the Umatilla Indian Reservation
- **Ira L. Matt**, Office of Native American Affairs, Advisory Council on Historic Preservation

The theme of working with tribal nations carried into the second panel, which focused on the perspectives of those working with and within these communities.

Citizen of the Navajo Nation, Milton Bluehouse, who moderated the panel, opened with a brief history of tribal-related policy and legislation, such as DOE Order 144.1 *Department of Energy American Indian Tribal Government Interactions and Policy* and the American Indian Civil Rights Act.



*Milton Bluehouse moderates the panel discussion regarding long-term stewardship on tribal land.*

Acknowledging the importance of working with over 500 federally recognized tribes, Bluehouse called upon all attendees to incorporate tribal culture into stewardship-related remedies.

Bluehouse's plea was echoed by panelists—each of whom provided insight into how to empower tribal communities.

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*Teara Farrow Ferman (second from right) presents on the importance of "first-food resources" in tribal culture. The panel discussion also included (left to right) Milton Bluehouse, Madeline Roanhorse, Raymond Martinez, Ira L. Matt, and Kevin Frost.*



## Panels Discuss Departmental Practices, Tribal Considerations, and Stakeholder Perspectives



Left: Panelist Madeline Roanhorse, Department Manager for the Navajo Nation Abandoned Mine Lands program. Right: Kevin Frost (right) provides best practices on how to engage with native communities.

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Many of the panelists stressed the value of incorporating the deeply held cultural beliefs and practices into remediation planning. For example, Kevin Frost recommended leveraging the “indigenous knowledge” of the community’s spiritual leaders during initial conversations.

“Tribes have an expectation of being a part of a substantive process,” Frost said.

Panelists urged attendees to avoid “one size fits all” solutions in addressing the diverse needs of tribal communities.

“Sometimes the systematic approach can be a roadblock into reaching consensus between tribes and federal agencies,” Ira Matt said.

Panelists also shared the deep-seated connection that tribal communities share with the land.

“Natural resources are cultural resources,” Matt continued.

Bluehouse closed the discussion by reminding the audience of the value in learning from and embracing tribal culture.

“We are the image of our ancestors,” Bluehouse said. ❖



Ira Matt (middle) encourages conference attendees to leverage tribes as a “full partner” during the development of long-term plans.

## Panels Discuss Departmental Practices, Tribal Considerations, and Stakeholder Perspectives

### *Panel: National Stakeholder's Organization*

- **Tony Carter**, LM (Moderator)
- **Megan Casper**, Energy Communities Alliance
- **David Abelson**, Abelson Partners
- **Brandt Petrasek**, EM
- **Carolyn Hanson**, Environmental Council of States
- **Sara Fields**, Uranium Watch

Panelists from major stakeholder groups shared perspectives on project management from a community's perception and perspective.

Multiple panelists mentioned the changing landscape of citizen knowledge about legacy environmental projects.

"Our call is reportedly different than in 2001 and since the last conference," said David Abelson who worked on the Rocky Flats, Colorado, Site—one of the most significant and challenging nuclear weapons plant cleanups and restoration projects to date.

Brandt Petrasek said, "It's inconceivable to see what the long-term effects are [when performing work]."

Government organizations must constantly educate and update key stakeholders and political leaders about their ongoing projects as they progress.

"Long-term stewardship means the buck stops here," said Megan Casper. "Government is ultimately responsible for human health and the environment as the land manager archivist. We are the watchdog of local elected officials."

The panelists agreed consistent communication builds trust. Various monthly briefings help community members learn more about projects and have their questions answered. ❖



*Right: Megan Casper discusses the role of Energy Communities Alliance in acting as a "watchdog" in stakeholder communities. Above: The panel fielded several questions from audience members.*





## Conference Attendees Tour the Grand Junction Disposal Site



*LMS Safety and Health Lead Field Coordinator Scott Ficklin (left) shows visitors the protective clothing that staff must wear while performing work at the disposal site.*

Approximately 25 LTS Conference attendees—who traveled from Brazil, Germany, and across the United States to participate in this event—made their way to the Grand Junction, Colorado, Disposal Site on Monday, August 21. The guided tour of the facility, disposal cell, and site operations was led by Legacy Management Support (LMS) Site Lead Kirk Roemer, LMS Lead Scientist Jody Waugh, LMS Safety and Health Lead Field Coordinator Scott Ficklin, and LM Site Manager William Frazier.

The disposal site tour was the first of several optional activities offered to LTS Conference attendees.

“This is a great way to start off the conference week,” said Roemer.

The afternoon heat did not dampen the spirits of tour-goers as they broke into small groups and rotated through three stations with brief presentations given by Frazier, Ficklin, and Waugh.

Frazier led each group by van around the 94-acre disposal cell.

Within the van, Frazier showed a series of posters displaying the composition of the cell’s many protective layers and an aerial view to provide geographic context for the site.

Ficklin gathered each group in the operations building for his presentation, which covered operations at the disposal site and the personal protective equipment that personnel must wear while working on-site.

As explained by Ficklin, LM opens the cell every two to three years to receive residual radioactive material (RRM) from the City of Grand Junction.”

Depending on the quantity that the site is receiving, RRM is either stockpiled for future placement or placed upon receipt, according to specifications approved by the U.S. Nuclear Regulatory Commission (NRC).

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## Conference Attendees Tour the Grand Junction Disposal Site

Tour attendees also learned about the decontamination process, which the RRM-loading trucks must undergo before they are permitted to leave the site. This process includes an intense high-pressure wash with clean water, followed by a safety and health radiological technician scanning each truck to ensure no contamination is present.

Waugh's presentation informed each group about the cover of the disposal cell as well as his research into using plants on top of the cover to prevent water percolation from penetrating the cell and groundwater.

"The experimentation with using plants on top of disposal cell cover is to give the DOE options and help LM make informed decisions about the disposal sites they manage," said Waugh.

After cycling through each presentation, the tour participants and leaders came back together for a final question-and-answer session. The session involved a lively discussion between site staff and tour attendees.

*Right: Bill Frazier starts the tour by showing attendees a layout of the disposal cell.  
Below: Jody Waugh presents on the design and composition of the disposal cell.*

"This tour was about bringing awareness to the site and showcasing the capabilities of the cell," said Frazier. "We want to support the community and the needs of all Title I sites. There is a need for us to keep the cell open, and the tour is just one way we can inform people of the need here in Grand Junction."

At the end of the two-hour tour, participants were all treated to a Palisade peach as a snack for their van ride back to the hotel. ❖







## From Atlas to UMTRA— A Tour of the Moab, Utah, Project



*Conference attendees learn about the operations of the UMTRA project in Moab, Utah.*

“This is a relatively simple project, just moving dirt—lots and lots of dirt,” said Russell McCallister, Moab Uranium Mill Tailings Remedial Action (UMTRA) project Federal Cleanup Director.

McCallister and several project contractor staff explained the site’s history and the ongoing cleanup efforts to approximately 20 participants from the LTS Conference, who attended a site tour on August 24.

For nearly 30 years the Atlas Minerals Corporation processed uranium ore at a mill near Moab, Utah, to provide the raw material for the nation’s nuclear defense and power needs. Atlas began decommissioning the mill under its U.S. Nuclear Regulatory Commission (NRC) license and demolished the mill buildings, buried the materials in the tailings pile, and installed a temporary cover between 1988 and 1995. Atlas proposed a permanent cap to stabilize the pile, but in 1998 the company declared bankruptcy and gave up its NRC license.

In 2001, the U.S. Congress assigned site ownership and responsibility to DOE for clean up of the site under Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I. In 2009, DOE’s Moab UMTRA project began relocating mill tailings and other contaminated materials from the former mill to an engineered disposal site located 30 miles to the north near Crescent Junction.

Although nearly 90 percent of the uranium was removed during processing, radioactive and chemical contamination remained. These tailings contained a high amount of water, which drained into the soil and carried the contaminants into groundwater.

The high water content in the tailings pile requires the tailings to be spread across a drying bed, according to Joe Ritchey, senior program manager for S&K Logistics Services, the project’s technical assistance contractor.

Once dried sufficiently, the tailings are transported by rail in sealed metal containers to Crescent Junction, and are placed in

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## From Atlas to UMTRA—A Tour of the Moab, Utah, Project

an NRC-approved disposal cell and capped with a nine-foot-thick, multi-layered cover composed of native soils and rock.

In addition to moving and disposing of millions of tons of tailings, DOE is also removing contamination from groundwater that flows downhill to the river.

Ken Pill, groundwater manager with Pro2Serve, explained that the two main contaminants in the groundwater are uranium and ammonia.

“Our goal is to remove as much contaminant mass as possible to protect the river,” Pill said. “The groundwater flows downhill from below the pile to the river, so we’re using a couple of different methods to reduce the load before it gets to the river.” ♦

*Right: Tour attendees stand by railway cars used to transport tailings to the Crescent Junction disposal site. Below: Joe Ritchey leads tour attendees around the Moab UMTRA site.*







## Wismut: Is There Life After Uranium Mining?



*Michael Paul of Wismut GmbH delivers his keynote speech about the challenges of remediating former Soviet nuclear sites in the aftermath of East Germany's collapse.*

In a keynote address to the 2018 Long-Term Stewardship Conference, Michael Paul gave an overview of the cleanup of the SDAG Wismut uranium mining and processing operations in the former East Germany. The business and site are now known as Wismut GmbH.

Paul, the division head of Engineering and Radiation Protection and head of Water Management Department, has worked for Wismut GmbH since 1991. He summarized the cleanup and remediation as “preventing the ugly, managing the bad, and searching for the good.”

SDAG Wismut in former East Germany was the major supplier of uranium to the Soviet Union. Between 1946 and 1990, Wismut produced an approximate total of 220,000 tons of uranium, making it the fourth largest uranium producer in

the world. However, the Wismut mining and processing operations also produced nine billion tons of waste in a densely populated region of Europe.

With the fall of the Berlin Wall and end of the Cold War in the early 1990s, Wismut was taken over by the government of the newly united Germany, and the name was changed to Wismut GmbH. The company began one of the largest cleanup efforts in history when it assumed the task of reclaiming former mining sites and restoring the environment for the benefit humans and the environment.

Activities at the former mine and processing sites include securing and filling underground mine cavities, disposing and storing waste and tailings, treating mine water, and removing and decontaminating the buildings at the sites.

Paul said one of the most important decisions made early in the cleanup was to use the large open-pit mines as large disposal cells for in situ disposal of contaminated materials. Over 130 million metric tons of material were deposited into the pits. Later, 70 percent of the area was afforested to decrease infiltration of water in the layers below and reduce movement of contamination in the groundwater.

He said the highest priority was collecting and preventing seepage of acidic and mineralized water from miles of flooded mine shafts, as well as treating water contaminated from flooded mines (radionuclides, arsenic, and others). Wismut GmbH has been using modified lime precipitation and ion exchange to accomplish this task.

Paul said Wismut GmbH was also searching for the positive benefits of mine remediation by continuing uranium recovery and looking for markets for scandium and other rare earth elements.

Paul asked the question, “Is there life after mining?” He answered with an affirmative “yes.”

He said 90 percent of remediation work is done, and 84 percent of land has been remediated. There has been a significant reduction of contamination transfer to the environment, and large areas of the site have been put into beneficial reuse as a golf course and natural areas.

Paul ended by stressing the success of German-U.S. cooperation, including 25 years of collaboration through workshops, symposia, and conferences. ♦



## Journalist Shares Her Investigation into Injustices on the Navajo Nation



Keynote speaker Judy Pasternak shares her knowledge about the legacy of uranium mining on the Navajo Nation.

Judy Pasternak, author of *Yellow Dirt: An American Story of a Poisoned Land and People Betrayed*, was a keynote speaker during the 2018 LTS Conference. Her book documents the toxic legacy of uranium mining on the Navajo Nation.

Pasternak described her personal experience as she unearthed details about the uranium mining and milling legacy on the Navajo Nation. Pasternak discussed how she was forced to quickly learn more about the complexity and corruption that this topic entailed.

“In essence, this is the story of a slow, environmental catastrophe that you know all too well, that is still unfolding today, as in many other places,” said Pasternak.

Pasternak was an investigative journalist for the Los Angeles Times in 2005 when she began her quest to write a series regarding the abandoned uranium mines on the Navajo Nation, as well as the health effects this activity had on the miners and their families.

She explained that it was vital to her research that she understand the Navajo people and their everyday lives. It was apparent to her that all too often many outsiders came to this ancestral homeland demanding information but never returned to follow up or follow through.

“This is a people of a long tradition of telling stories,” said Pasternak. “Their family stories are treasure. They told me they felt like people kept trying to get their stories for nothing.”

Eventually, Pasternak’s reporting sparked the attention of U.S. Representative Henry Waxman (D-CA), who lived in Los Angeles at the time when he read her work in the LA Times.

Pasternak’s reporting led to Congressional hearings and the creation of the Five-Year Plan in 2008, spearheaded by Representative Waxman. According to Pasternak, the coordinated Five-Year Plan “forced” five federal agencies to work together to address the impacts of uranium contamination on the Navajo Nation.

Pasternak openly expressed her appreciation to DOE for their cooperation during the difficult times she was gathering information.

“I really appreciated the DOE, because DOE was the most responsive of all the federal agencies I dealt with as far as answering questions whether it reflected well or not, and it didn’t always,” said Pasternak.

LM Director Carmelo Melendez presented Pasternak with a certificate of appreciation and a remembrance coin as a small token of LM’s gratitude.

“We forget the visual and oral history sometimes in what we do,” said Melendez. “If it wasn’t for Judy and many other investigative journalists, some of the stories that we use today in managing legacy properties would have been lost or not as important as you heard today with *Yellow Dirt*.”

Currently, there are over 500 abandoned uranium mines on the Navajo Nation. From 1944 to 1986, nearly 30 million tons of ore were taken from these mines. Today, the Navajo people and their families continue to advocate for fair compensation for those affected by the legacy of uranium mining and milling on the Navajo Nation. ❖





## The Health and Economic Effects of Uranium Rush on Smaller Communities

Stephanie Malin, assistant professor of sociology at Colorado State University and author of *The Price of Nuclear Power: Uranium Communities and Environmental Justice*, delivered a keynote speech during lunch on the third day of the conference.

During her speech, she discussed the adverse impacts nuclear power has had on small communities. She referenced the City of Monticello, Utah, where a uranium mill operated.

Western Colorado also experienced boom-and-bust cycles related to uranium mining and milling during the last half of the 20th century.

These rural towns relied heavily upon a monopsonistic (single-buyer controlled) economy, the U.S. federal government, and multiple suppliers. As long as the government needed uranium, the economy flourished.

Of course this economic arrangement came to a screeching halt when the federal government announced it would no longer buy the ore. This left smaller towns struggling to recover since there was heavy dependence on one main economic driver.

In addition to paying the economic costs, some small rural towns continue to pay the health costs of environmental mining and drilling.

In the case of Monticello, the city is home to many rare cancer clusters, including leukemia and other cancers that were almost unheard of in previous generations. The city received funding to address these health concerns, which was used to pay for a cancer-screening clinic to help detect early onset of cancer. The clinic operated until the appropriations recently ended.

“The aperture we’re called to use is good judgment to move from knowing and willing to doing,” Malin added. “We may have diverse opinions, but we’re cutting ourselves if we don’t open the aperture.”

Malin’s research suggests small communities can become more economically resilient by moving away from boom-bust markets toward more sustainable agriculture. ❖



Stephanie Malin presents her keynote speech regarding her research on the effects of uranium mining on rural communities.



Conference attendees learn how various communities handled the economic and health fallouts caused by uranium.



## Advancing Current Practices at Mission and Non-Mission Sites Within the U.S. Department of Energy

### General Long-Term Stewardship Practices

- **Art Kleinrath**, LM (Moderator)
- **Bill Hertel**, Navarro Research and Engineering, Inc. – *Evolution of Wastewater Treatment at Fernald, Ohio, with Emphasis on the 2015–2018 Optimization Efforts*
- **David Shafer**, LM – *Learning from Nature's Full-Scale Experiments: Event-Driven Monitoring for Long-Term Stewardship*
- **Jennifer Nyman**, Geosyntec Consultants – *Closure Strategy for Operable Unit III of the Monticello Mill Tailings Site*
- **Raymond Johnson**, Navarro Research and Engineering, Inc. – *Uranium Geochemistry in Groundwater and How to Communicate These Concepts to Laypeople*



Jennifer Nyman discusses the multiple closure strategies considered for the Monticello mill tailings site.



David Shafer presents on how naturally occurring events can reveal the long-term durability of remedies.



Raymond Johnson explains the importance of simplifying the messaging behind long-term stewardship.

“Climate trends are making some events more common, We need to understand how remedies will respond.”

David Shafer  
DOE Office of Legacy Management





## Advancing Current Practices at Mission and Non-Mission Sites Within the U.S. Department of Energy

### Groundwater Remediation and Compliance

- **Darina Castillo**, LM (Moderator)
- **Andrew Keim**, LM (Moderator)
- **Michelle Jarrett**, Consolidated Nuclear Security, Pantex Plant – *Evaluating Groundwater and Contaminant Flux Passive Flux Meters*
- **Brian Zimmerman**, LM – *Expediting Groundwater Remediation Through Enhanced Attenuation at the Mound, Ohio, Site*
- **Mike Truex**, Pacific Northwest National Laboratory – *Use of Conceptual Site Models and Adaptive Approaches for Management of Uranium and Other Plumes*
- **Gary Curtis**, U.S. Geological Survey (USGS) – *Post Audit of a Uranium Reactive Transport Model*
- **Susan Kamp**, Navarro Research and Engineering, Inc. – *Variation in Groundwater Aquifers*
- **Kai Vetter**, University of California, Lawrence Berkeley National Laboratory (LBNL) – *New Concepts in the Mapping, Monitoring, and Visualization of Radioactive Contamination in 3D for Long-Term Stewardship*
- **Rex Hodges**, Navarro Research and Engineering, Inc. – *Modeling of Flow and Transport Induced by Production of Hydrofracture Stimulated Gas Wells Near the Rulison, Colorado, Nuclear Test Site*
- **David Naftz**, USGS – *Identification and Quantification of the Interaction and Potential Impact of a Legacy Groundwater Uranium Plume with the Little Wind River in Riverton, Wyoming, Processing Site*

Finding solutions to contaminated groundwater is an essential component of long-term stewardship.

Michelle Jarrett shared the benefits of the passive flux meter to evaluate movement, flux, and future risk of contaminated water.

Michelle Jarrett  
Consolidated Nuclear Security,  
Pantex Plant



Michelle Jarrett speaks about a beneficial tool used to evaluate contaminated water.

## Advancing Current Practices at Mission and Non-Mission Sites Within the U.S. Department of Energy

### Long-Term Stewardship Practices and Challenges at DOE Legacy Sites

- **Kurt Gerdes**, EM (Moderator)
- **Brian Zimmerman**, LM (Moderator)
- **Brian Looney**, Savannah River National Laboratory (SRNL) – *Sustainable Remediation Approaches Using a Common-Sense Approach to Enhanced Attenuation*
- **Mark Kautsky**, LM – *Progress of Groundwater Remediation at the Uranium Mill Tailings Radiation Control Act (UMTRCA) Site Near Shiprock, New Mexico, Disposal Site*
- **John Boylan**, Navarro Research and Engineering, Inc. – *Evolution of Groundwater Treatment Systems: From Installation to Post-Closure at Rocky Flats*
- **Carol Eddy-Dilek**, SRNL – *Innovative Strategy for Long-Term Monitoring of Metal and Radionuclide Plumes*
- **Jenny Chapman**, Desert Research Institute – *Evaluating Vulnerability of Closed Uranium Tailings Site to Event-Triggered Surface Erosion*
- **William Frazier**, LM – *Erosion Control at the L-Bar Disposal Site*
- **Christopher Strickland**, Pacific Northwest National Laboratory – *Monitoring Strategies for Long-Term Stewardship at Complex Sites*
- **Ken Broberg**, Navarro Research and Engineering, Inc. – *Fernald Preserve Aquifer Restoration Project*



Mark Kautsky presents on the active remediation efforts underway at the Shiprock, New Mexico, Site.



John Boylan discusses the treatment systems utilized at the Rocky Flats, Colorado, Site.



Brian Looney describes an enhanced attenuation remedy that should speed up groundwater remediation at the Mound, Ohio, Site.

“Diverse stewardship challenges require diverse solutions,”

Brian Looney  
Savannah River National Laboratory





## Advancing Science and Technology to Reduce Costs While Maintaining or Improving Protection of Human Health and the Environment

### Groundwater Compliance Challenges

- **Ken Starr**, LM (Moderator)
- **Martin Amos**, DOE Consolidated Nuclear Security, Pantex Plant – *Managing Risk in the Uncertain World of Groundwater Cleanup: A Case Study of the Pantex Plant Southeast Perched Groundwater Lobe*
- **Kenneth Williams**, Lawrence Berkeley National Laboratory – *Surface Water-Groundwater Interactions as a Critical Component of Uranium Plume Persistence*
- **Mark Rigali**, Sandia National Laboratories – *Performance of an In Situ Hydroxyapatite Permeable Reactive Barrier at the Old Rifle Uranium Processing Mill Site*
- **John Bargar**, SLAC National Accelerator Laboratory – *Biogeochemical-Hydrological Uranium Trapping Mechanisms in Alluvial Sediments in the Upper Colorado Basin*



Kenneth Williams uses the Rifle, Colorado, Disposal/Processing Site as an example of a natural laboratory for investigating the underlying causes for uranium plume persistence.



Martin Amos discusses how to effectively manage risk in cleaning up groundwater.



Mark Rigali reports on the field deployment and subsequent performance of new technology at the Rifle site.

“

“Resist the temptation to forget how the problem has been defined and revisit the details of the conceptual site model with the purpose of truly understanding the remaining risks.”

Martin Amos  
DOE Consolidated Nuclear Security,  
Pantex Plant

”

## Advancing Science and Technology to Reduce Costs While Maintaining or Improving Protection of Human Health and the Environment

### *Understanding the Post-Closure Changes of Engineered Disposal Cell Covers*

- **David Shafer**, LM (Moderator)
- **Art Kleinrath**, LM (Moderator)
- **Russell McCallister**, DOE Office of Environmental Management – *Challenges in Long-Term Remediation of the Moab UMTRA Project*
- **Sue Collins**, Sandia National Laboratories – *Long-Term Stewardship of Three Evapotranspirative Covers, 15 Years*
- **Craig Benson**, University of Virginia-Engineering – *Field Hydrologic Performance of Earthen Covers for Uranium Mill Tailings Disposal Sites on the Colorado Plateau and Field Evaluation of Radon Fluxes from In-Service Disposal Facilities for Uranium Mill Tailings*
- **Mark Fuhrmann**, U.S. Nuclear Regulatory Commission – *Can Pb-210 Profiles in Radon Barriers be Used as Indicators of Long-Term Rn-222 Transport?*
- **Morgan Williams**, University of California Berkeley – *The Spatial Development of Soil Architecture at Four UMTRCA Sites: Implications to Hydraulic Conductivity and Long-Term Performance*
- **Jody Waugh**, Navarro Research and Engineering, Inc. – *Are Natural Processes Transforming Conventional Disposal Cell Covers into Evapotranspiration Covers? Should We Enhance Beneficial Processes?*

Craig Benson discussed the differences between conventional resistive covers (riprap surface with fine-textured radon barriers) and water-balance covers (ones that rely upon evapotranspiration), and how the effectiveness of each cell cover solution depends on local conditions, such as annual precipitation.

Craig Benson  
University of Virginia-Engineering



*Craig Benson delivers his presentation to a full audience.*



## Advancing Science and Technology to Reduce Costs While Maintaining or Improving Protection of Human Health and the Environment

### Advances in Environmental Science

- **Andrew Griffith**, DOE Office of Nuclear Energy (NE) (Moderator)
- **Steven Link**, Confederated Tribes of the Umatilla Indian Reservation – *Reducing Costs of Ecological Restoration at the Hanford Site: Using Native Species to Control Weeds and Technology to Reduce Greenhouse Propagation Costs*
- **Raymond Johnson**, Navarro Research and Engineering, Inc. – *Zooming in for a Microscopic View of Uranium Plume Persistence*
- **Raymond Johnson**, Navarro Research and Engineering, Inc. – *Multiple Tracer Testing Approaches for Improved Groundwater Flow and Reactive Transport Models*
- **Nancy Hess**, Pacific Northwest National Laboratory – *Advanced Molecular Characterization Approaches to Enable Management of Legacy Contaminant Fate and Transformation*

Raymond Johnson gave two presentations during this session detailing new findings in understanding the dynamics of plume persistence, as well as how tracer testing approaches for groundwater flows can be used to modify reactive transport models.

**Raymond Johnson**  
Navarro Research and Engineering, Inc.



Steven Link discusses the role of native species in ecological restoration efforts at the Hanford site.



Raymond Johnson shares why more detailed information is needed to better understand uranium plume persistence.



As an audience member, David Shafer provides his insight during a presentation.

## Advancing Science and Technology to Reduce Costs While Maintaining or Improving Protection of Human Health and the Environment

### Advances in Data Acquisition

- **Josh Linard**, LM (Moderator)
- **Christopher Jarchow**, Navarro Research and Engineering, Inc. – *Using Remote Sensing to Characterize Landscape-Scale Vegetation and Evapotranspiration at UMTRCA Sites*
- **Susan Kamp**, Navarro Research and Engineering, Inc. – *Data Mining and Remote Data Acquisition to Assess Gold King Mine Release Impacts at LM Sites*
- **Brian Soliday**, Juniper Unmanned – *Unmanned LiDAR for Legacy Management*
- **Heather Theel**, U.S. Army Research and Development Center – *Restoration Monitoring: Integrating Innovative Spatial Technologies*



Christopher Jarchow presents on the use of remote sensing as a means to characterize sites.



Susan Kamp shares how LM utilized data mining tools and remote environmental monitoring technologies to evaluate the impacts of the Gold King mine release.



Heather Theel discusses how integrating new spatial technologies supported restoration efforts at the Fernald Preserve, Ohio, Site.

Susan Kamp described how site managers responded to the release of three million gallons of acidic, mine-impacted water from the Gold King Mine above Silverton, Colorado, into the Animas River, which eventually moved into the San Juan River.

**Susan Kamp**  
Navarro Research and Engineering, Inc.





## Garnering International Perspectives on Current Practices

### Remediation, LTS, and Stakeholder Involvement

- **Russel Edge**, LM (Moderator)
- **Peter Waggitt**, Northern Territory Department of Primary Industry and Resources – *Stakeholder Involvement for Uranium Legacy Sites Northern Territory, Australia*
- **Arnaldo Mezrahi**, Brazilian Nuclear Energy Commission – *Stakeholder Involvement in Uranium Facilities – Lessons Learned: Brazil*
- **Ulrike Rantzsch**, Wismut GmbH – *Development of a Water Monitoring System from Pre-Remedial Investigations to Post-Remedial Long-Term Surveillance at the Former Uranium Mining Site*
- **Bill Daly**, Canadian Nuclear Laboratories – *Port Hope Area Initiative – Challenges and Successes*

International environmental programs face challenges when remediating and managing legacy waste sites.

With more information, some stakeholders have a better understanding of the government work involved. It takes constant positive interaction to build trust.



Arnaldo Mezrahi discusses the various approaches to stakeholder involvement utilized during his tenure with the Brazilian Nuclear Energy Commission.



Bill Daly presents on the Port Hope Area Initiative, which is currently one of the largest environmental remediation projects in Canada.



Ulrike Rantzsch shares her experience with the development of water monitoring systems during the reunification of East and West Germany.

## Garnering International Perspectives on Current Practices

### Legacy Uranium Sites

- **Russel Edge**, LM (Moderator)
- **Maria de Lurdes Dinis**, Porto University, Portugal – *The Long-Term Stewardship of Uranium Mine and Milling Remediated Sites in Europe*
- **Peter Waggitt**, Northern Territory Department of Primary Industry and Resources – *Legacy Uranium Mine Sites in Australia's Northern Territory*
- **Arnaldo Mezrahi**, Brazilian Nuclear Energy Commission – *Legacy Uranium Sites: Brazil*
- **Michelle Roberts**, International Atomic Energy Agency (IAEA) – *International Cooperation to Remediate Uranium Legacy Sites in Central Asia*



Maria de Lurdes Dinis provides an overview of the current issues faced with uranium remediation in Europe.



Peter Waggitt shares the history of remediation projects in the Northern Territory of Australia.



Michelle Roberts presents on the challenges faced when legacy work transcends national borders—specifically where the Kyrgyz Republic, Kazakhstan, Tajikistan, and Uzbekistan intersect.

“Find out who the right people are and talk to them. Get stakeholder buy-in. Be quick to apologize. Use common sense and be polite and respectful.”

**Peter Waggitt**  
Northern Territory Department of  
Primary Industry and Resources





## Maintaining Strong Partnerships with Stakeholder and Regulatory Communities

### *Interpreting the Past and Informing the Future: A Fresh Look at History and the Preservation of Information Critical to LTS*

- **Mandy Askins**, Mound Discovery Center (Moderator)
- **Tracy Atkins**, LM – *Creation of the Manhattan Project National Historical Park*
- **Padraic Benson**, LM – *Grand Junction Manhattan Project Cabin to Open to Public*
- **Sue Smiley**, LM – *Visitors Center and Interpretive Services Elevate Visitor Experience at the Fernald Preserve*
- **Sue Smiley**, LM – *Preserving the Mound, Ohio, Site: The Mound Cold War Discovery Center*
- **Ken Starr**, LM – *Weldon Spring Site Interpretive Center: Progression Over the Years*
- **Cliff Carpenter**, LM – *Dr. Modesto Iriarte Technology Museum*

Interpretive centers are essential to long-term stewardship.

Two sites—  
Weldon Spring, Missouri, Site  
and  
Fernald Preserve, Ohio, Site—  
are proving to be community  
assets and shining examples  
of beneficial reuse.



*An audience member asks a question during a panel discussion regarding interpretive centers.*

## Maintaining Strong Partnerships with Stakeholder and Regulatory Communities

### *The Impact of Citizens and Regulators in Long-Term Stewardship: Engaging the Community Through Consultation, Coordination, and Communication*

- **Robert Seibert**, EM (Moderator)
- **Cortasha Upshaw**, Navajo Nation Abandoned Mine Lands (Moderator)
- **Jason Remien**, Brookhaven National Laboratory – *From Crisis to Collaboration: Building Stakeholder and Regulatory Partnerships Through Openness and Engagement—A Case Study*
- **Scott Surovchak**, LM – *RFLMA and the Consultative Process at Rocky Flats*
- **Matt Johnson**, Confederated Tribes of the Umatilla Indian Reservation – *Tribal Involvement in Long-Term Stewardship at the Hanford Site*
- **Peter Chestnut**, State and Tribal Government Working Group – *Closure for the Seventh Generation, 2017 Edition*

“If you are protecting tribal access, tribal people, tribal natural and cultural resources, you are protecting everybody else because the tribal access means gathering more local resources, more contact with the local environment.”

**Matt Johnson**  
Confederated Tribes of the  
Umatilla Indian Reservation



*Audience members listen to a presentation.*



## Maintaining Strong Partnerships with Stakeholder and Regulatory Communities

### *How Regulators Shape Emerging Issues with Vapor Intrusion*

- **Gwendolyn Hooten**, LM (Moderator)
- **Mary Stallard**, Weiss Associates – *Post-Remedy Vapor Intrusion Evaluation for the Laboratory for Energy-Related Health Research Superfund Site*
- **Brian Zimmerman**, LM – *Vapor Intrusion Assessment at the Mound, Ohio, Site*
- **Zafer Demir**, Lawrence Livermore National Laboratory – *Vapor Intrusion Pathway Analysis for LLNL Livermore Site and Site 300*
- **Joe Daniel**, Navarro Research and Engineering, Inc. – *Vapor Intrusions Mitigation for Building 100 Pinellas County, Florida, Site*

Regulators discussed vapor intrusion and long-term stewardship at four different sites in a panel session. The U.S. Environmental Protection Agency Five-Year Guidance update in 2012 requires all Superfund sites to reevaluate their vapor intrusion pathways.



Brian Zimmerman discusses vapor intrusion at the Mound, Ohio, Site.



Mary Stallard shares her findings regarding vapor intrusion at the LEHR Superfund site.

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@hq.doe.gov](mailto:lm@hq.doe.gov) so that we can update our database.

Thank you for your assistance.





## Maintaining Continuity of Stewardship while Transitioning from Cleanup to Stewardship and Beyond

### Regulator Perspectives on Site Long-Term Stewardship

- **Jeffrey Murl**, LM (Moderator)
- **John Price**, State of Washington, Department of Ecology – *Integrating Long-Term Stewardship with Hanford's Ongoing Cleanup*
- **Lindsay Masters**, Colorado Department of Public Health and Environment – *Colorado's Institutional Controls: A Long-Term Stewardship Tool*
- **Sarah Roberts**, Oak Ridge Associated Universities – *Requirements for Independent Verification at DOE Sites*
- **Dominick Orlando**, NRC – *U.S. Nuclear Regulatory Commission's Role in the Management of UMTRCA Sites*

“

“The ultimate safety of the sites is of great concern. We have heard a lot about that this week. What's most important is that those final site conditions have been verified to be safe for public or restricted use. That is the ultimate goal of independent verification.”

Sarah Roberts  
Oak Ridge Associated Universities

”



Sarah Roberts discusses what is behind independent verification of DOE sites.



## Maintaining Continuity of Stewardship while Transitioning from Cleanup to Stewardship and Beyond

### Site Transitions, Reducing Costs, Minimizing Waste, and Exit Strategies

- **Darina Castillo**, LM (Moderator)
- **Peter McKereghan**, Lawrence Livermore National Laboratory – *Enhanced Source Area Remediation Studies, Reducing Long-Term Cleanup Costs and Minimization of Waste*
- **Ann Ewy**, U.S. Army Corps of Engineers (USACE) – *Vicinity Property Assessments at Formerly Utilized Sites Remedial Action Program (FUSRAP) Sites*
- **Josephine Wade**, USACE – *Hazelwood Interim Storage Site/Futura Coatings Company (HISS/Futura/Latty) FUSRAP*
- **Mike Truex**, Pacific Northwest National Laboratory – *Analysis Tools that Support Remedy Exit Strategies and Transition to Long-Term Stewardship*

“Transitioning sites from the clean-up phase performed by one agency to long-term stewardship performed by another agency is a process including many steps to assure preservation of records, public access to information, maintenance of land-use controls, and enabling the site for beneficial reuse. The process demands efficient interaction between the transferring and the accepting agencies.”

Ann Ewy  
U.S. Army Corps of Engineers



Conference breakout sessions were well attended and highly interactive.



## Preserving and Making Accessible Critical Information to Future Generations

### *Records and Information are Essential for LTS Success*

- **Jeanie Gueretta**, LM (Moderator)
- **Gregory Lewis**, DOE Office of Environment, Health, Safety, and Security, and **John Vance**, U.S. Department of Labor (DOL) – *Energy Employees Occupational Illness Compensation Program Act (EEOICPA): The Importance of Preserving Worker Records for Compensation Programs*
- **Gail Splett**, DOE Richland Operations Office  
**Cindy Lepore**, Interactive Technologies Group, Inc.  
**Tyler Nipper**, Interactive Technologies Group, Inc.  
– *Preservation of Critical Health and Safety Information for Future Generations at the Hanford, Washington, Site*

“I encourage folks, if you are someone that does research or has records, or if you have something that you think is going to contribute to our understanding, please submit it. We have lots of evidence for submission of records—even on contractors and subcontractors. We have a portal for that information to be submitted.”

**John Vance**  
U.S. Department of Labor



*Tyler Nipper discusses the efforts made to digitize records at the Hanford site.*



## Preserving and Making Accessible Critical Information to Future Generations

### Information and Knowledge Management

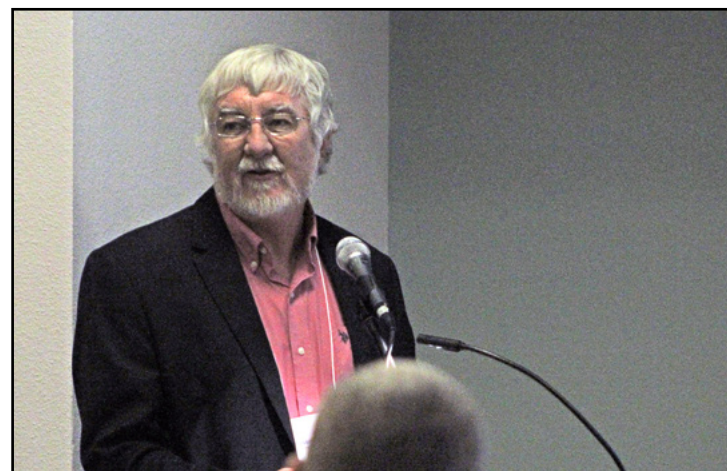
- **Doc Parks**, LM (Moderator)
- **Elke Kreyssig**, Wismut GmbH – *Knowledge Transfer within the Wismut Environmental Rehabilitation Project*
- **Vicky Freedman**, Pacific Northwest National Laboratory – *Tracking Restoration and Closure (TRAC): Use of Story Maps for Transitioning Sites to Long-Term Stewardship*
- **Denise Bleakly**, Sandia National Laboratories – *Working with LM for Long-Term Geospatial Data Management*
- **Russell Patterson**, DOE Carlsbad, New Mexico, Field Office – *Waste Isolation Pilot Plant's Passive Institutional Controls Program, Implementing the Records, Knowledge and Memory (RK&M) Initiative*



Vicky Freedman shares how the story mapping functionality of the TRAC platform helped DOE.



Denise Bleakly shares best practices regarding the geospatial data life-cycle.



Russell Patterson discusses passive institutional controls.

“ Denise Bleakly shared best practices in managing geospatial metadata. She stressed the importance of “leaving bread crumbs” in data management systems, as well as the development of plans that make stored information easily accessible.

Denise Bleakly  
Sandia National Laboratories

”

## Preserving and Making Accessible Critical Information to Future Generations

### *Advancing Integrated Monitoring Systems: A DOE Integrated Systems-Based Monitoring Approach*

- **Michael Garrett**, LM (moderator)
- **Vicky Freedman**, Pacific Northwest National Laboratory – *Use of Story Maps for Transitioning Sites to Long-Term Stewardship*
- **Josh Linard**, LM – *Working with Legacy Management for Long-Term Geospatial Data Management*
- **Kenneth Williams**, DOE Office of Science – *Performance of an In Situ Hydroxyapatite Permeable Reactive Barrier at the Old Rifle Uranium Processing Mill Site*
- **Rob Seifert**, EM – *The Impact of Citizens and Regulators in LTS: Engaging the Community Through Consultation, Coordination, and Communication*

“

“We want to extract data that helps multiple offices. The legacy of existing data is a treasure trove. We don’t need to reinvent the wheel. It’s already there.”

Kenneth Williams  
DOE Office of Science

”



Kenneth Williams (second from right) responds to a question from the audience.





## Optimizing Federal Land and Properties for Beneficial Reuse

### Revitalizing Las Colonias Park

- **Joyce Chavez**, LM (Moderator)
- **Trent Prall**, City of Grand Junction
- **Traci Wieland**, City of Grand Junction
- **Ted Ciavonne**, Ciavonne, Roberts & Associates, Inc
- **William Dam**, LM – *Uranium Leasing Program: Reclamation of Legacy Mine Sites*
- **Michael Cosby**, Colorado Department of Public Health and Environment

“

“It’s all about building relationships and building trust,” William Dam said of the cooperation among local, state, and federal agencies. “DOE wanted more involvement than just [institutional controls].”

William Dam  
DOE Office of Legacy Management

”



William Dam (middle) discusses the importance of developing and maintaining stakeholder trust in the development the long-term stewardship strategies. Also pictured (left to right) Ted Ciavonne and Michael Cosby.

## Optimizing Federal Land and Properties for Beneficial Reuse

### *Transition of the Former Mound Plant to a Privately Owned Industrial Park*

- **Bud Sokolovich**, LM (Moderator)
- **Sue Smiley**, LM – *Transition of Former Mound Plant to a Privately Owned Industrial Park*
- **Eric Cluxton**, Mound Development Corporation – *Mound Business Park*
- **Randy Tormey**, EM – *Institutional Controls—The Interplay of Real Estate Law, Regulatory Requirements, and Local Code*

### *An Overview of Transactional Considerations in the Revitalizations of Federally Owned Environmentally Impaired or Impacted Property*

- **Beverly Cook**, Navarro Research and Engineering, Inc.
- **William Consuegra**, Navarro Research and Engineering, Inc.
- **David McNeil**, LM

“The Cold War Discovery Center opened in May 2018. It is just the latest innovation at Mound Business Park in Ohio.

“This is a tremendous, tremendous success story,” Eric Cluxton said of the Discovery Center

**Eric Cluxton**  
Mound Development Corporation

“Stakeholders have a big role,” Beverly Cook said. “The requirements with stakeholders are constantly changing. We have to look at the changeover of stakeholders and plan for that.

**Beverly Cook**  
Navarro Research and Engineering, Inc.



A panel discussion about the beneficial reuse of the Mound, Ohio, Site.



Beverly Cook (right) shares the numerous transactional processes that need to be considered before remediation. Also pictured (left to right) David McNeil and William Consuegra.





# Addressing Legacy Uranium Mine Sites

## LM Defense-Related Uranium Mines Program

- **Russel Edge**, LM (Moderator)
- **Deborah Steckley**, LM, and **John Elmer**, LMS – *Standing Up the Defense-Related Uranium Mines (DRUM) Program*
- **Edward Cotter**, Navarro Research and Engineering, Inc., *Uranium Leasing Program: A Seventy-Year Heritage*
- **Craig Goodknight**, Navarro Research and Engineering, Inc. – *DRUM Reconciliation Process*
- **Brent Lewis**, LM – *DRUM Field Inventory and Environmental Sampling Strategies and Techniques*

Brent Lewis shared some strategies as to how the DRUM Team acquires analytical data, such as sediment sampling and gamma surveying.

**Brent Lewis**  
DOE Office of Legacy Management



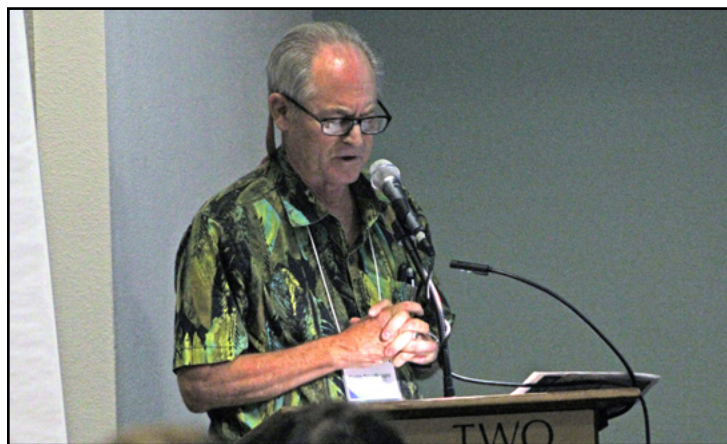
Deborah Steckley discusses the historical context of the DRUM program.



Edward Cotter presents the history of the Uranium Leasing Program.



Brent Lewis shares successful sampling techniques utilized at DRUM sites.



Craig Goodknight explains DRUM's reconciliation process.



## Addressing Legacy Uranium Mine Sites

### *Environmental and Human Health Risk Screening of Abandoned Mines*

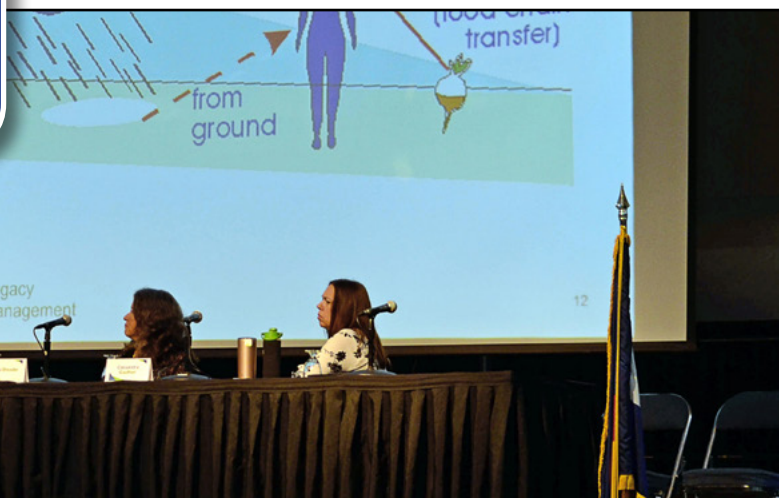
- **William Dam**, LM (Moderator)
- **Steven Brown**, SHB Inc. – *Establishing Radiological Screening Levels for DRUM Sites on BLM Land Using a Recreational Future Use Scenario*
- **Linda Sheader**, Navarro Research and Engineering, Inc. – *Ecology of DRUM Sites*
- **Cassandra Gauthier**, LM – *DRUM Risk Scoring Assessment and Risk Ranking Results*

Linda Sheader discussed the ecological perspective of the DRUM Program, providing details about the vegetation and wildlife that inhabit these sites. Sheader also explained how ecological data units are gathered and used for risk scoring.

**Linda Sheader**  
Navarro Research and Engineering, Inc.



Linda Sheader describes the gathering of data on indigenous inhabitants at DRUM sites.



Steven Brown presents the analysis used to develop radiological screening criteria for DRUM sites.



## Addressing Legacy Uranium Mine Sites

### *Addressing Physical Hazards and Human Health Risks at Abandoned Mines*

- **Deborah Steckley**, LM (Moderator)
- **Edward Cotter**, Navarro Research and Engineering, Inc. – *Uranium Leasing Program (ULP): Reclamation of Legacy Mine Sites*
- **Jeff Graves**, Colorado Division of Reclamation, Mining and Safety – *Implementing Source Control at the Pennsylvania Mine, Summit County, Colorado*
- **Melvin Yazzie**, Navajo Nation Abandoned Mine Lands (AML) – *Navajo AML Reclamation*
- **Brent Lewis**, LM – *Agency Decisions: Prioritizing Resources for Addressing Abandoned Uranium Mines*

Melvin Yazzie discussed at length the Navajo Abandoned Mine Lands Reclamation Program (NAMLRP) of the Navajo Nation's Division of Natural Resources. He described the history of the program, its numerous partnering agencies, and what the future holds for the remediation of abandoned mines in the Navajo Nation.

**Melvin Yazzie**  
Navajo Nation Abandoned Mine Lands



*Jeff Graves discusses the implementation of source controls at the Pennsylvania Mine, Summit County, Colorado.*



*Brent Lewis shares how multiple agencies collaborated to develop the DRUM program.*



*Melvin Yazzie presents on the finer details of the NAMLRP.*





“Nationally or internationally,  
the three ingredients for  
successfully solving LTS challenges in a  
workload-driven but resource-constrained  
world are expertise, engagement,  
and deliberate execution.”

Carmelo Melendez  
Director of the Office of Legacy Management





*LWM thanks everyone who participated!*







## LM NEWS Feed

Visit <https://energy.gov/lm/listings/lm-news> to access these articles in the LM NEWS Feed.

SEPTEMBER 6, 2018

### DOE Releases Its First Defense-Related Uranium Mines Program Annual Report

The DRUM Annual Report is accessible through [www.energy.gov](http://www.energy.gov).

SEPTEMBER 5, 2018

### LM Goal 1 Supports IAEA Water Mission to Jordan

LM hydrogeologist assists with assessment of treatment options for drinking water in Jordan.

AUGUST 29, 2018

### Secretary Perry Hosts DOE Secretary's Honor Awards Ceremony

Secretary Perry recognizes the outstanding achievements of individuals and teams who have gone above and beyond in fulfilling DOE's mission.

AUGUST 20, 2018

### Director Melendez's Opening Remarks to the 2018 Long-Term Stewardship Conference

Carmelo Melendez welcomed conference attendees and laid out his vision of long-term stewardship in an address during the opening session on August 21.

AUGUST 14, 2018

### Department of Energy Office Installs Photo Exhibit

LM office in Grand Junction, Colorado, shares historical photos of its role in WWII and the Cold War.

AUGUST 6, 2018

### LM Site Named Conservation Educator of the Year

DOE Office of Legacy Management site in Fernald, Ohio, is recognized for its environmental accomplishments.

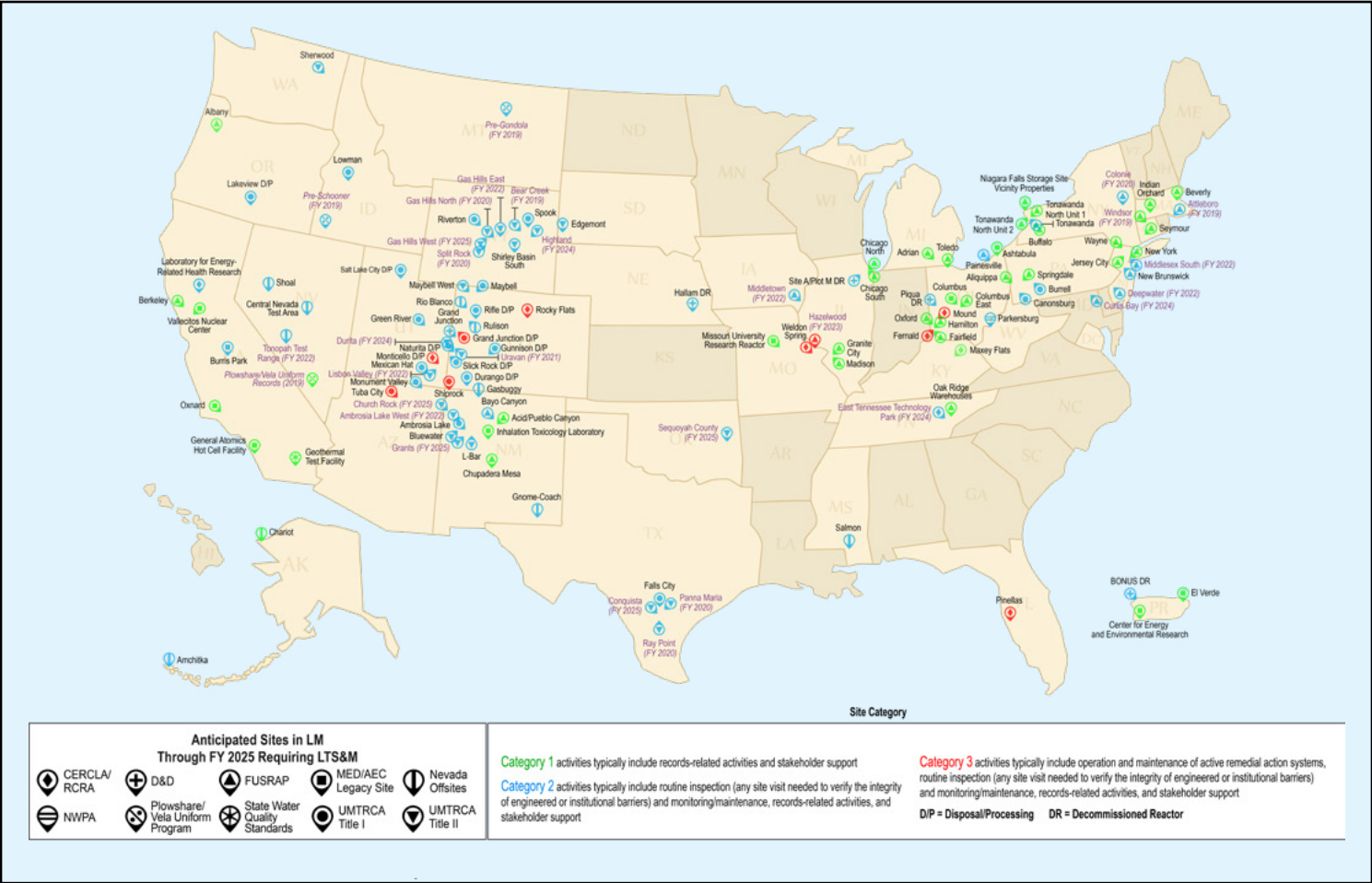
JULY 9, 2018

### Defense-Related Uranium Mine Team Paper Receives "Superior" Rating

Paper by LM team co-authors rated superior by Waste Management Symposia.



# Anticipated LM Sites Through Fiscal Year (FY) 2025



## Video

Please enjoy this short video of the 2018 Long-Term Stewardship Conference  
<https://www.energy.gov/lm/articles/2018-long-term-stewardship-conference>

## Post-Conference Survey

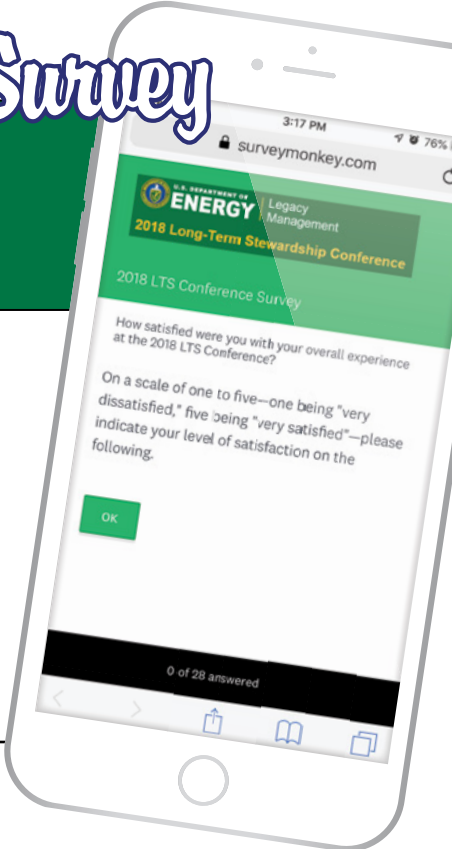
Please take our post-conference survey to let us know what you liked and what we can do better.  
<https://www.surveymonkey.com/r/2018LTS>

## Stay Up-To-Date

For up-to-date LM news, be sure to visit LM's website and LinkedIn page

**U.S. DEPARTMENT OF ENERGY** Legacy Management  
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