



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

State and Tribal Governmental Working Group

U.S. Department of Energy (DOE)
Office of Legacy Management (LM)

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STEM WITH
LM

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Agenda

- LM mission
- STEM with LM program
- Tribal STEM
- Q&A



Groundwater model simulation with student (2017)





Office of Legacy Management

Mission: Fulfill the Department of Energy's post-closure responsibilities and ensure the future protection of human health and the environment.

LM Overview



Long-term stewardship



Partnerships



Field activities



Stakeholder engagement



Historic preservation



Beneficial reuse



Sites in LM Requiring LTS&M (as of March 30, 2020)						Site Category	
CERCLA/RCRA	FUSRAP	RENOVA OFFSITES	PLUMS/ARE/ YLLAUMPOON	UMTRCA TITLE I		Category 1 activities typically include records-related activities and stakeholder support. Category 2 activities typically include routine inspection (any site visit needed to verify the integrity of engineered or institutional barriers) and monitoring/maintenance, records-related activities, and stakeholder support.	Category 3 activities typically include operation and maintenance of active remedial action systems, routine inspection (any site visit needed to verify the integrity of engineered or institutional barriers) and monitoring/maintenance, records-related activities, and stakeholder support.
D&D	WINDMILL LEGACY SITE	NWTR	STATE WATER QUALITY STANDARDS	UMTRCA TITLE II			



LM Interpretive Centers



Weldon Spring Site
Interpretive Center
St. Charles, Missouri



Fernald Preserve Visitors Center
Hamilton, Ohio



Atomic Legacy Cabin
Grand Junction, Colorado

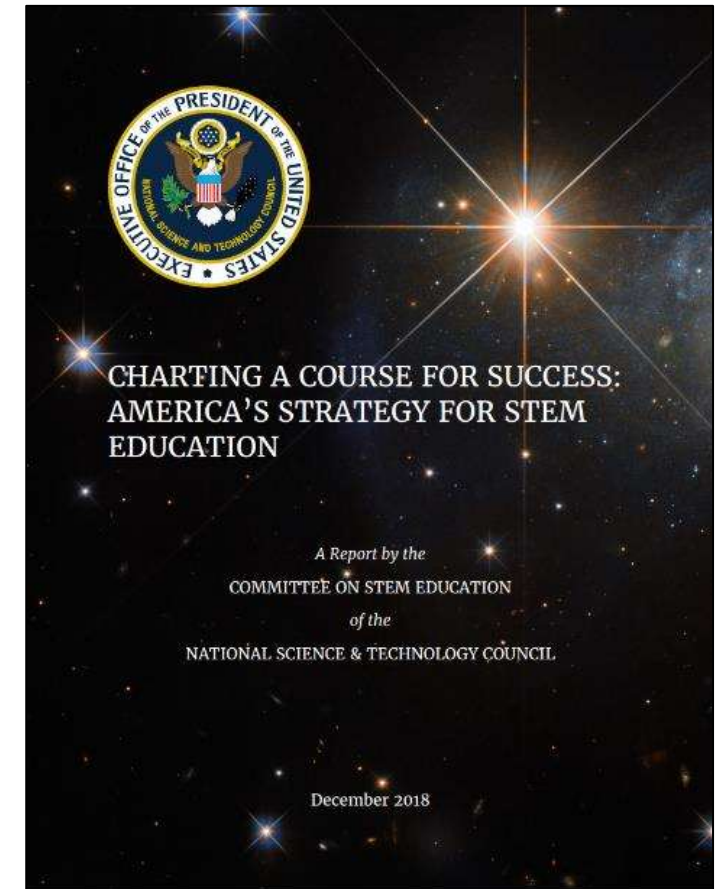




STEM with LM

History of STEM

- Science, technology, engineering, and math (STEM) education
- Acronym introduced in 2001 by scientific staff at the U.S. National Science Foundation
- In early 2000s, international studies showed American students alarmingly underperformed in STEM competency
- [White House's 2018 STEM Education Strategic Plan](#)



Next Generation Science Standards (NGSS)

- *“A goal for developing the NGSS was to create a set of research-based, up-to-date K-12 science standards”*
- Three distinct and equally important dimensions to learning science:
 - Practices
 - Core ideas
 - Crosscutting concepts
- [Next Generation Science Standards](#)



Students participating in a program at the Weldon Spring Site Interpretive Center (2019)



The Process of Building a New Program

- Where do you begin?
- What do you call it?
- How do you define success?
- What are the requirements?
- What's the need or opportunity?
- How to build support?
- How do we do this during the COVID-19 pandemic?



Thousands of questions



Start at the Beginning

- **STEM with LM purpose statement:**
“LM's STEM program brings to life the awe-inspiring and world-changing advancements and events of the nuclear age, remedial actions, beneficial reuse, and ecological transformations for the current and next generation of students, families, and communities through the expertise of educators and technical experts working every day to ensure continued protection of human health and the environment.”



Total solar eclipse public event at the Weldon Spring Site (2017)



Build a Plan and Adjust

- Goals and objectives
- Define project scope
- Schedule
- Develop graphic products
- Build a webpage
- Set budget and assign staff



Plan the work.
Work the plan.




Initial Launch of STEM with LM

- [Program Update, January-March 2020](#)



LM Director Carmelo Melendez engages with students at the Weldon Spring Site Interpretive Center (2019)

Director's Corner



In this issue of *Program Update*, we bring you a profile of Ken Williams, one of our partners from the U.S. Department of Energy (DOE) Lawrence Berkeley National Laboratory. A pioneer in biogeophysics, Ken has worked closely with the Office of Legacy Management (LM) for years to help us advance our environmental remediation and long-term stewardship goals.

As I read about Ken's rewarding career overseeing field activities for a multidisciplinary team of researchers, I'm reminded that career paths in science don't unfold magically. I've worked with enough engineers, technicians, scientists, and researchers over the years to know that we need to nurture the curiosity and intellect of students at a young age and provide the right resources for them to embark on this intellectually demanding career path.

In 2018, the U.S. Department of Education released a five-year strategy for federal agencies to provide all Americans with lifelong access to quality STEM (science, technology, engineering, and mathematics) education to ensure that the United States is a global leader in high-quality technical education. The strategy outlines a nationwide collaboration within the STEM community of schools, educators, and other partners.


I'm proud to say that LM is fully committed to supporting this collaboration. We have a robust STEM program in place that supports the nationwide effort via school and community events, curriculum development, student and teacher mentoring, internships and graduate programs, interpretive centers, tribal

collaborations, and the integration of applied studies and technology into LM's site management activities. In February 2020, we took part in a department-wide workshop hosted by the DOE Research and Technology Investment Committee in which STEM leaders came together to contribute to an overall strategy for DOE.

I'm excited to announce that this year, we're poised to take our STEM efforts to a new level with the launch of *STEM with LM*, a comprehensive program designed to inspire, educate, and spark student interest in STEM careers. The central feature of *STEM with LM* is that our staff will conduct STEM outreach in their communities via paid hours during and outside of work.

While a number of our Earth Day activities across sites are canceled due to real world events, we will celebrate at a future date. Eventually, we'll also return to regular STEM programming at our interpretive centers and on the Navajo Nation. When that time comes, get involved, volunteer your time, and help inspire the next generation of STEM professionals.

Warm Regards,
Carmelo
Carmelo Melendez



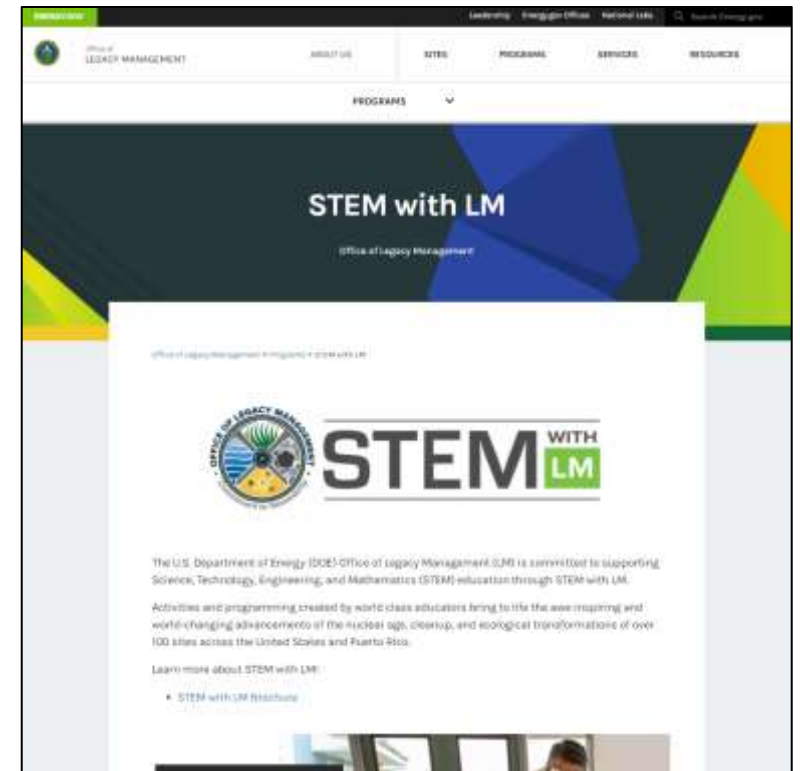
STEM WITH LM

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STEM with LM Webpage

- Launched in April 2020, in conjunction with the 50th anniversary of Earth Day
- Webpage provides:
 - Activities at home and in the classroom
 - Ask LM — An easy way to connect students and educators with LM staff and subject matter experts
 - Internships — Information regarding internships and employment with LM
 - Interpretive centers
 - Resources — LM publications and reference materials
 - Partners — Connecting with other federal agencies and partners
- [Visit the STEM with LM webpage](https://www.energy.gov/lm/programs/stem-lm)



STEM with LM webpage
www.energy.gov/lm/programs/stem-lm



STEM with LM Webpage — Public Activities



STEM with LM webpage materials

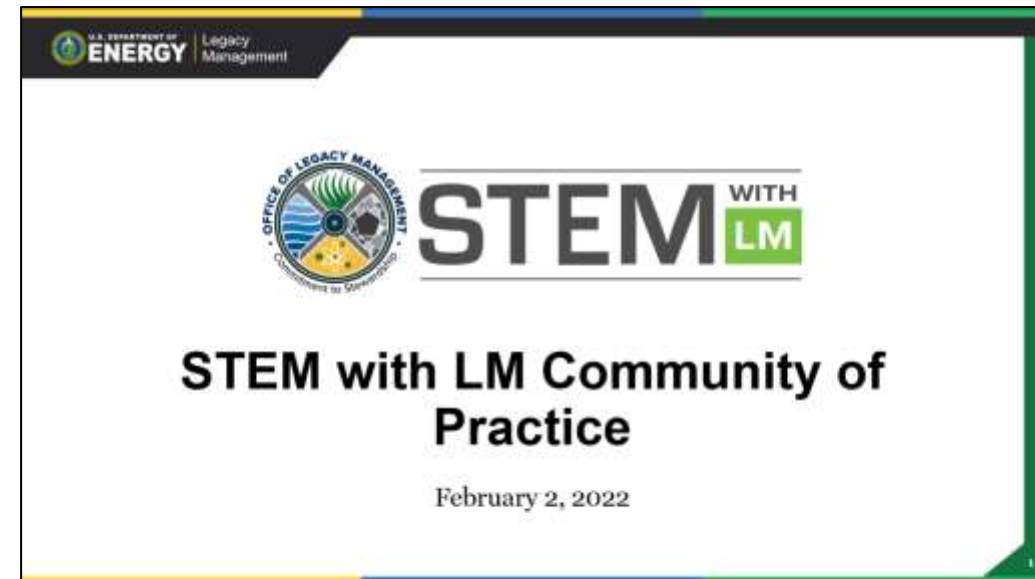


Staff Training and Support

Ongoing training opportunities



Bimonthly team building



Success Story

- Partnership program with [We are R.I.S.E.](#)
 - Girls, ages 7-12, in south central Los Angeles — primarily from underrepresented communities
- Virtual program hosted by LM Site Manager Darina Castillo
- Follow-up programs throughout summer by each of LM's interpretive centers
- Read the article: [“STEM with LM Inspires Young Audiences and Brings Learning to Life”](#) (July 14, 2021)



We are R.I.S.E girls conduct a home-based experiment by blowing up a balloon using baking soda and vinegar to create carbon dioxide (2021)





Tribal STEM Activities, Outreach, and Upcoming Events

STEM Activities

- Participation in the 2022 American Indian Science and Engineering Society (AISES) Conference
 - STEM Day — Radiation 101 booth
 - College and Career Fair booth
 - The past two years LM has participated virtually
- Navajo Nation STEM activities
 - STEM-sation events
 - March 23-24, 2022, Chinle High School (virtual) -31 students and 2 teachers
 - April 7, 2022, Utah State University (in-person) - 850 students (approx.)
 - STEM Festival
 - April 19 and 21, 2022, Diné College (virtual) - 109 students and 4 teachers.



STEM Activities (continued)

- STEM on the Navajo Nation
 - LM scientists, hydrologists and engineers are actively engaged in STEM education with Navajo Nation schools (K-12)
- LM Applied Studies and Technology partners with Diné College through teaching, presenting seminars, and mentoring students in fieldwork activities (funding from National Science Foundation grant)
- LM and Navajo Nation Abandoned Mine Lands Reclamation Department cooperative agreement with funding toward Navajo Nation STEM-sation events



STEM event in Blanding, Utah (2022)



High School Student reacting at a STEM event in Tohatchi, New Mexico (2020)



Collaborate with Miss Navajo Nation on STEM

- Miss Navajo Nation STEM event
 - Legacy event — proposed Fall 2022
 - To be held at the current Miss Navajo Nation's high school
 - Miss Navajo Nation is host of the event
 - LM will provide administrative support to organize event
 - Invite Navajo Nation organizations to participate
- Potential STEM Club
 - Coordinate with designated teacher
 - Navajo Nation students meet monthly
 - Send “STEM in a box” activities



Recent meeting with Miss Navajo Nation
at LM's Window Rock, Arizona, office



Thank You



Staff-hosted STEM program (2019)

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STEM WITH LM

