Advocate

A publication of the Oak Ridge Site Specific Advisory Board – a federally appointed citizens panel providing independent recommendations and advice to DOE's Environmental Management Program

OREM, ORSSAB Shift Focus to Groundwater Remedies

ORSSAB member and former longtime K-25 plant manager Harold Conner, Jr., views parts of the K-31/K-33 Area of ETTP during a recent tour of the site.

OREM uses monitoring wells like this one at ETTP to identify and track groundwater contents and quality.

As the Oak Ridge Office of Environmental Management (OREM) and UCOR have shifted focus to soil and groundwater remediation at the East Tennessee Technology Park (ETTP), so too have members of the Oak Ridge Site Specific Advisory Board.

After removing more than 500 aging, contaminated structures at ETTP, OREM and UCOR crews are set to finish excavating and removing contaminated soil from the site next year and are shifting their focus to groundwater.

"We've made great strides in reducing risks and restoring the environment at ETTP," said ORSSAB Alternate Deputy Designated Federal Officer (DDFO) and OREM Regulatory Specialist Roger Petrie. "As we near completion on the remaining soil cleanup projects, groundwater remediation is the final effort to achieve our mission at the site."

ETTP is divided into three sections for groundwater remediation planning. One section is the Main Plant Area, which encompasses most of the operations area at the former enrichment complex. Another section is the area where the large K-31 and K-33 uranium enrichment buildings once stood. The third section is called Zone 1, which is the area immediately surrounding the Main Plant and K-31 and K-33 areas.

Planning took a major step forward recently when the U.S. Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC) approved OREM's proposed plans for addressing groundwater in the Main Plant and K-31 and K-33 areas.

OREM hosted a public meeting in April to discuss the preferred approach for groundwater remediation in the Main Plant Area and a separate meeting in May to discuss the preferred approach for groundwater remediation in the K-31 and K-33 Area. The meetings provided opportunities for attendees to share comments. Public comments on

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Reservation Update

Crews have started demolishing ancillary structures attached to the Low Intensity Test Reactor at the Oak Ridge National Laboratory. The project is an EM 2023 priority.

Low Intensity Test Reactor Demolition Underway

The skyline in the heart of Oak Ridge National Laboratory (ORNL) is changing again as workers begin to demolish a once world-famous reactor.

OREM and its cleanup contractor, UCOR, began tearing down the Low Intensity Test Reactor, also known as Building 3005, in late March.

The training reactor became world-famous when a photographer first captured a blue glow caused by radiation in the pool above the reactor. That photo appeared on the cover of the October 1951 issue of Scientific American. The facility is now highly deteriorated and contaminated, requiring demolition.

With demolition underway, Oak Ridge is set to accomplish this EM 2023 priority by the end of the year.

The project follows the recent demolition of the Bulk Shielding Reactor, which marked the first removal of a former reactor from ORNL's central campus area. It was adjacent to the Low Intensity Test Reactor.

Getting to the first bite in demolition of the Low Intensity Test Reactor required nearly five years of planning and deactivation work due to unique conditions associated with the facility.

Employees identified structural concerns associated with the facility that posed significant challenges to standard deactivation and demolition practices.

As workers removed the concrete shield blocks around the reactor, they discovered the slab floor structures were not adequately supported, creating a potentially unstable work environment.

Additional factors complicated the cleanup process. In some cases, the facility's original drawings did not include all necessary information to help inform workers as they perform characterization, a process that determines the types and levels of contamination in and around a facility to support work planning, worker safety and waste management. Nonetheless, they used high-tech equipment to detect radiological material that had not been previously documented in some areas of the facility.

Crews are currently taking down ancillary facilities. The goal is to demolish all structures surrounding the reactor, remove and sample additional shield blocks to support waste disposal and tear down and package the reactor for transport and disposal.

Completion on this work is set for later this year.

Built as a mock-up of the Materials Test Reactor that was being constructed at the Idaho National Laboratory, the Oak Ridge training reactor operated from 1951 to 1968.

Upgrades Make MSRE Safer as It Awaits Demolition

EM crews are slated to take down hundreds of old, contaminated buildings at ORNL and Y-12.

Many of them will remain standing for years to come due to the large amount of work required to demolish them. OREM is tasked with keeping them safe until then.

That sometimes requires improvements to maintain safe conditions and prepare the structures for deactivation. A precursor to demolition, deactivation is the process of placing an excess facility into a stable condition to minimize existing risks and protect workers, the public and the environment.

The Molten Salt Reactor Experiment (MSRE) facility at ORNL is a prime example of a structure requiring such improvements, and OREM cleanup contractor UCOR is taking several steps

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For the first time in 26 years, EM crews performed sampling of gases produced as byproducts at the Molten Salt Reactor Experiment at Oak Ridge National Laboratory. This work could not occur until new piping and safety features were installed at the facility. They have performed five samples since December.

to address associated challenges.

Upgrades to the high bay — where the critical systems reside — are underway, and employees have improved infrastructure through work such as installing electrical upgrades and an emergency generator.

For the first time in 26 years, workers recently conducted sampling at the reactor. They measured the amount of fluorine generated in gases produced as byproducts from salt tanks.

Plans had long been underway to sample the gases but concerns over brittle pipes and safe access presented challenges difficult to resolve. Following installation of new robust piping and enhanced safety features, the team was able to safely perform the work.

OREM and UCOR's plans for the reactor's eventual deactivation and demolition are progressing.

Crews have prepared for that work by removing components in the facility. That project led to a downgraded radiological level in a work area there.

They also installed a new portable maintenance shield that enables workers to use long-reach tools, reducing risk of injury and radiological exposure. That system is scheduled to go operational next year. It replaces the current gas removal system, minimizes failure points in the facility, and reduces hazards and required maintenance and oversight.

A study is underway to develop cleanup alternatives for MSRE. The study evaluates alternatives that incorporate one or more basic types of remedial actions, including grouting and removal of contaminated equipment.

MSRE came to prominence when it achieved criticality for the first time in June 1965. That achievement led to a four-year campaign of research and development to prove the viability, safety and efficiency of molten salt reactors.

'Needle in Haystack' Search Reveals Radioactive Source

EM workers recently completed a big task involving a small item by safely removing a highly radiated segment of wire roughly the size of a straightened-out paper clip from a cleanup project at the Oak Ridge National Laboratory (ORNL).

The wire — only 3 to 4 inches in length — presented major challenges as crews cleaned out the East Cell Bank to get it ready for demolition next year. The hot cell structure is the last remaining component of the former Radioisotope Development Laboratory, also known as Building 3026.

Crews with the Oak Ridge Office of Environmental Management (OREM) previously demolished the outer structure of the East Cell Bank and five other hot cells in the former laboratory over the past 13 years.

The cells were heavily shielded concrete rooms that provided researchers protection from radioactive material as they conducted research. The laboratory was built in 1945 to support isotope separation and packaging and was later used to examine irradiated reactor fuel experiments and components.

In the recent project at the East Cell Bank, the first challenge entailed locating and identifying the exact source of the elevated radioactive readings. Workers were operating through an opening atop the hot cell structure, approximately 25 feet from the floor where debris was located.

With other debris scattered in the room, searching for the segment of wire was like trying to find a needle in a haystack.

Once the wire was located, the next challenge was retrieving it.

The project team considered multiple options for safely packaging the radiological source to protect personnel during waste packaging, transportation and disposal. OREM cleanup contractor UCOR safely removed the component using a long-reach tool and placed it in a concrete-shielded 85-gallon drum. The drum was filled with cement and placed in a specialized container to be shipped for disposal.

Those tasks were performed in the concrete-shielded East Cell Bank, which is under a six-story protective cover that provides added safety measures.

The tiny packaged component is slated for shipment to an offsite disposal facility in coming weeks.

UCOR crews will continue removing additional waste from the East Cell Bank as they prepare it for demolition, which is scheduled for 2024.

Groundwater

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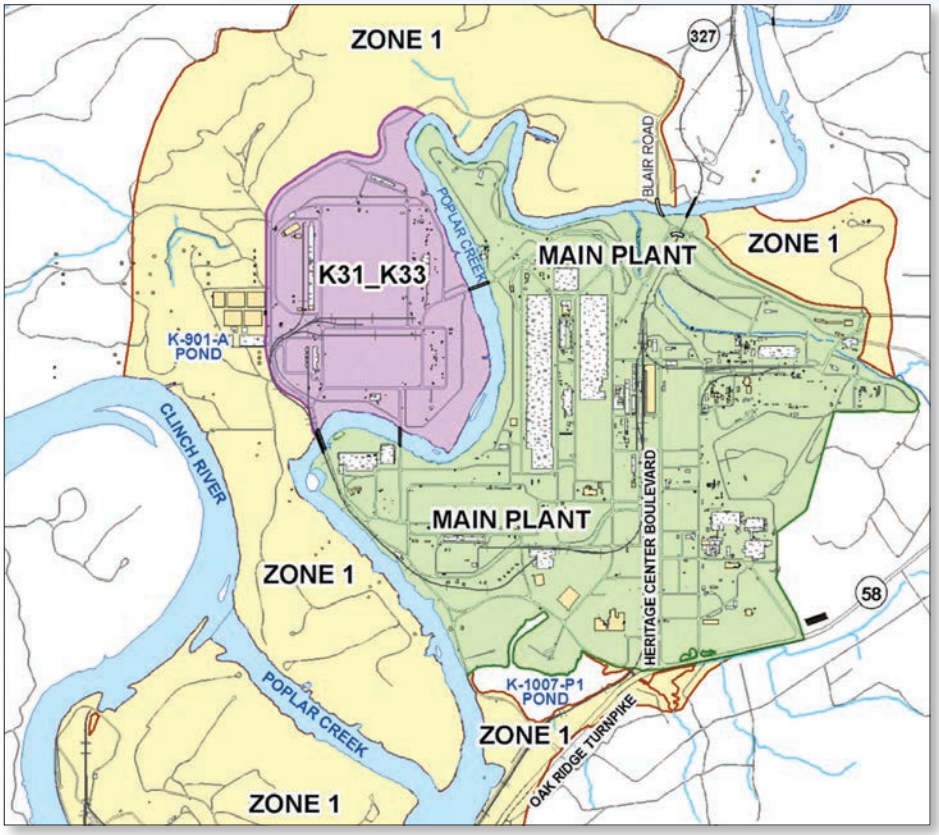
the Main Plant Area proposed plan were also accepted through May 19 and on the K-31 and K-33 Area through June 12.

Now, OREM is seeking ORSSAB input before moving into the next phase of the decision-making process.

Mr. Petrie spoke with members about the Main Plant Area proposed plan during the board's May monthly meeting and the K-31 and K-33 Area during the June monthly meeting. Members also had the opportunity to see the cleanup work in context as Mr. Petrie led members on a bus tour of ETTP's Main Plant Area and K-31 and K-33 Area in early June.



The figure above illustrates the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Groundwater Areas for ETTP.

The Preferred Approaches

The preferred approach for groundwater remediation in the Main Plant Area is a process called enhanced in situ bioremediation. A widely used technology for treating contaminated waste, it involves injecting microorganisms and a carbon source, such as vegetable oil, into the ground. The microorganisms reduce or detoxify the contaminants.

"Because site conditions differ, no single remediation technology is applicable for all areas at ETTP," said Kevin Ironside, Environmental Programs and Planning manager with UCOR. "A different approach is being recommended for the K-31 and K-33 area as the most effective means for addressing groundwater remediation."

For the K-31 and K-33 Area, OREM is proposing a process called monitored natural attenuation along with land use controls. Monitored natural attenuation relies on natural processes that reduce contaminant concentrations in groundwater. Using this process as the remedial action involves monitoring groundwater conditions with land use controls limiting potential exposures.

The proposed remedies for Zone 1 and associated public involvement opportunities will be announced later.

Over the past two decades, OREM has transformed the former uranium enrichment complex into a multi-use industrial center, national park and conservation area benefiting the region.

ETTP is home to 25 businesses with more expected in the years ahead. It's home to an element of the Manhattan Project National Historical Park, and it also has a 3,000-acre conservation area for public use.

RESOURCES

To view the full **ETTP Main Plant Area Proposed Plan**, scan the QR code below or visit: *https://doeic.science.energy.gov/uploads/E.0525.030.0079.pdf*

To view the full **ETTP K-31/K-33 Area Proposed Plan**, scan the QR code below or visit: *https://doeic.science.energy.gov/uploads/E.0525.030.0079.pdf*

OREM Breaks Ground on K-25 Viewing Platform at ETTP

Officials broke ground at ETTP in May on the K-25 Viewing Platform, a facility that will give the public a new perspective of what was once the world's largest building.

Through an interagency agreement signed last year, OREM provided the funds for the project, while the U.S. Army Corps of Engineers (USACE) will oversee its construction. Geiger Brothers was awarded the $9.9 million contract to build the facility.

Smee + Busby Architects designed the K-25 Viewing Platform and OREM contractor UCOR will provide engineering support to USACE and its contractor during construction.

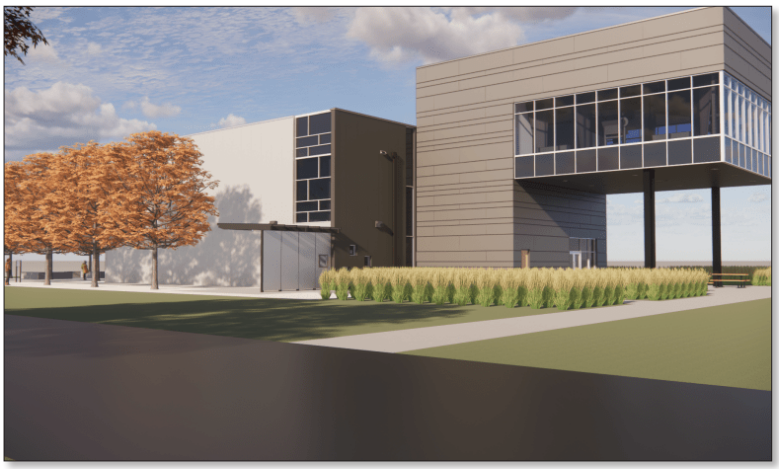
"It couldn't be scripted any better that the agency responsible for the birth of Oak Ridge would be the one to help build the infrastructure that shares the history and accomplishment of that original story," OREM Deputy Manager Laura Wilkerson said of USACE.

The K-25 Viewing Platform will be adjacent to the recently opened K-25 History Center and provide visitors a complete view of the building's massive 44-acre footprint.

"I imagine standing on the viewing platform and seeing this ghost of a facility where so much happened and so much important work was done," said Maj. Todd Mainwaring, deputy commander, USACE, Nashville District. "I think it'll really drive home the importance of the mission here and what the community delivered."

From left, American Museum of Science and Energy Director Alan Lowe; Roane County representative Bonnie Argus; U.S. Army Corps of Engineers Nashville District Deputy Commander Maj. Todd Mainwaring; Geiger Brothers Project Engineer Ian Fitzpatrick; Oak Ridge Office of Environmental Management Deputy Manager Laura Wilkerson; Oak Ridge Historian Ray Smith; UCOR President and CEO Ken Rueter; and Gregor Smee, Smee + Busby Architects break ground on the K-25 Viewing Platform.

Its construction is one of the final components of a multi-project agreement OREM signed in 2012 to commemorate the history of the former Oak Ridge Gaseous Diffusion Plant, where the K-25 Building was located.



The K-25 Viewing Platform, now under construction, is expected to be open to the public late next year.

OREM completed the other elements in previous years, which included construction of the K-25 History Center and preservation of the historic Alexander Inn.

"To be here, to work on this site, and provide the community and visitors this building is profound," said Geiger Brothers Project Engineer Ian Fitzpatrick. "We want to hit the ground running so there's no delay in the community having access to it."

The K-25 Viewing Platform is expected to be complete and open to the public by late 2024.

While the K-25 History Center focuses on the men and women who built and operated the Oak Ridge Diffusion Plant during the Manhattan Project and Cold War, the viewing platform will help visitors understand

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Energycast

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"Energycast Oak Ridge" premiered on May 22, 2022, with the goal of showcasing the full scope and local impact of the cleanup mission in a new way — a news show. It airs on community television channels in 24 counties across eastern and middle Tennessee, including some of the state's largest cities, Nashville and Knoxville.

The newscast includes OREM project updates from the Y-12 National Security Complex, Oak Ridge National Laboratory and East Tennessee Technology Park. It also highlights employee successes, personal stories, workforce development initiatives, budget breakdowns, science, technology, engineering and math (STEM) events, as well as partnerships and major economic developments happening in the community made possible by OREM's work.

"Energycast Oak Ridge" is OREM's latest effort to expand outreach aimed at educating employees, stakeholders and area residents about the work happening across the site. In addition to appearing on local television channels, new episodes are also shared directly with the federal and contractor workforce, regulators, local advisory boards, business leaders, and local, state, and federal officials.

"We've put a lot of hard work into this show, so it's rewarding to see the community's increased awareness of our workforce and our projects benefitting the region," said Williams. "A personal highlight is getting messages from employees and co-workers that they're sharing these meaningful stories with their friends and family."

New episodes air on the third Sunday of each month in the Oak Ridge area, and they are posted to OREM's YouTube channel (www.youtube.com/user/usdoeoakridge/videos) the following Monday. In the Nashville area, episodes air on Tuesdays and Fridays.

Anyone interested in subscribing to monthly emails with new episodes can send a request to OakRidgeEM@orem.doe.gov.

Groundbreaking

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the scope and magnitude of the former K-25 Building.

Originally constructed in 1944, the K-25 Building was the largest structure in the world and carried an equally immense and important mission to help end a global war by producing uranium for the world's first nuclear weapon. Yet despite its size and urgent work, the public would not learn of its existence in Oak Ridge until the end of World War II.

Uranium enrichment operations ceased there in 1985, and the site was permanently shut down in 1987. Afterward, DOE began a massive environmental cleanup effort to transform the site into a multi-use industrial park for the community. That effort involved tearing down five massive enrichment facilities, including the K-25 Building, and 500 other structures that supported operations at the site. OREM and UCOR completed demolition of the K-25 Building in 2013 and finished all demolition at the site in 2020.

The transformed site, now called the East Tennessee Technology Park, already has numerous private businesses onsite along with large conservation areas and a national park. The K-25 Building footprint is within the Manhattan Project National Historical Park, a unit of the National Park Service that contains sites in Oak Ridge, Los Alamos, New Mexico and Hanford in Washington.

RESOURCE

To watch a video of the groundbreaking ceremony, scan the QR code below or visit: www.youtube.com/watch?v=778gxc80kNY

Join Us for ORSSAB's Annual Planning Meeting for FY 2024

6 p.m. Wednesday, August 9
1 Science.gov Way and Virtually via Zoom

Representatives from DOE, the EPA and TDEC will discuss their respective organizations' priorities for the OREM cleanup program to offer input as ORSSAB begins planning topics to address during the board's FY 2024 year.

Questions? Want to attend virtually? Contact us at 865-241-4584 or orssab@orem.doe.gov

Recent Recommendations

Recommendation 253: On FY 2025 OREM Budget Priorities

Each year the DOE-EM Program develops its budget request for the fiscal year (FY) two years beyond the current year, including requests from DOE field offices to develop the EM Program budget request to the president.

DOE-EM Headquarters typically issues guidelines to the field offices advising them how much funding they should reasonably expect when developing their FY+2 budget requests. The field offices then brief the public, the regulatory agencies, and the respective site-specific advisory boards and seek input from each regarding budget requests.

On March 8, 2023, OREM representatives presented on OREM's FY 2025 budget formulation process to ORSSAB. This presentation provided content and discussions that ORSSAB used to draft its recommendations.

In creating its recommendations for the FY 2025 OREM budget, ORSSAB focused on general near-term and long-term cleanup priorities identified by OREM. Project-specific objectives provided additional details for discussions that took place at the March 22, 2023 EM & Stewardship Committee meeting.

The board referred to the OREM 10-year Program Plan, the EM Strategic Vision, the current EM Budget Request, and the board's previous Recommendations for additional guidance on budget recommendations.

ORSSAB members recommended fully funding work on the Mercury Treatment Facility as part of the board's broader recommendation for OREM's FY 2025 Budget Priorities. Above, Oak Ridge construction crews installed micropiles to help lay the foundation for the headworks facility site for the Mercury Treatment Facility. They installed 79 micropiles, some going nearly 70 feet down, to provide structural foundation support for the headworks facility.

Recommendations

ORSSAB supports OREM's Program Plan and recommends fully funding the activities that are currently supported by that Plan for FY 2025, broadly understood as follows:

- Complete remediation & transfer all potential property at ETTP.
- Continue demolition of excess contaminated facilities at ORNL & Y-12.
- Continue to develop infrastructure to enable cleanup at ORNL & Y-12.
- Mercury Treatment Facility (MTF), including mercury technology development.
- CERCLA waste disposal facility (EMDF).
- Continue disposition of U-233 material.
- Continue disposition of legacy transuranic debris and sludges, including use of data from the onsite sludge test area to inform design of the future Sludge Processing Facility.
- Maintain and operate facilities at ORNL and Y-12.

With this support, ORSSAB recommends funding the FY 2025 budget to include all activities necessary to complete these cleanup priorities in an effective, timely and safe manner.

Related to this, ORSSAB is also concerned that inflationary pressures exist to an extent that has not been realized in 40 years; therefore, ORSSAB further recommends that the funds requested for FY 2025, two years from now, reflect the appropriate amount necessary to offset those inflationary pressures.

OREM's U-233 disposition project was among the items ORSSAB recommended fully funding as part of the board's FY 2025 budget recommendation. To the left, ORSSAB members tour the U-233 processing facility.

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Energycast Wins National Award in First Year on Air

In the first year of producing its groundbreaking monthly news show, "Energycast Oak Ridge," OREM took home a national award recognizing excellence in storytelling and public outreach.

"We've been really pleased with the interest and response to this newscast, and our team is actively working on some exciting ideas to continue strengthening the show as we kick off its second year," said Ben Williams, OREM public affairs specialist.

OREM's communications team won a 2023 Hometown Media Award in the government activities independent producer category. The awards were established to honor and promote community media, community radio and local cable programs distributed on public, educational and governmental access cable television channels.

The host of "Energycast Oak Ridge," Summer Dashe, interviews Roane County Executive Wade Creswell for a segment on a recent episode. The newscast covers a wide range of topics related to EM's mission in Oak Ridge.

This year's winners were recognized at an awards ceremony on June 28 in New York City.

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ABBREVIATIONS

CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act, also known as Superfund
DOE – Department of Energy
EM – Environmental Management
EMWMF – Environmental Management Waste Management Facility
ETTP – East Tennessee Technology Park
OREM – Oak Ridge Environmental Management
ORNL – Oak Ridge National Laboratory
ORR – Oak Ridge Reservation
ORSSAB – Oak Ridge Site Specific Advisory Board
TDEC – Tennessee Department of Environment & Conservation
UCOR – United Cleanup Oak Ridge
Y-12 – Y-12 National Security Complex

UPCOMING MEETINGS

Meetings are 6 p.m. at 1 Science.gov Way, Oak Ridge & virtually via Zoom. Email orssab@orem.doe.gov to attend virtually.

Board: ORSSAB Annual Planning Meeting for FY 2024, Aug. 9
EM & Stewardship Committee: TBD

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