# Annual Report 2021



Oak Ridge Site Specific Advisory Board www.energy.gov/orssab orssab@orem.doe.gov



The East Tennessee Technology Park in Oak Ridge, Tenn. was once a shuttered uranium enrichment complex. EM's cleanup has transformed the site into a multi-use industrial park for the community with private businesses, conservation areas, and a national park.

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## Our Mission

The Oak Ridge Site Specific Advisory Board (ORSSAB) is a federally appointed citizens' panel that provides independent recommendations to the Department of Energy's (DOE) Oak Ridge Environmental Management (OREM) Program.

The board provides advice to the DOE EM program regarding environmental restoration, waste management, long-term stewardship, land use, and economic development among other topics.

Recommendations regarding environmental justice, health and safety issues, historic preservation, and other concerns may also be developed at the request of the DOE assistant secretary for EM or the OREM manager. ORSSAB is one of eight site specific boards across the nation that comprise the EM SSAB and may also participate in joint recommendations with that organization.

The board is committed to reflecting the concerns of the communities impacted by EM activities on the Oak Ridge

Reservation (ORR) and serving as a communications link between the public and relevant government agencies, including local governments.

ORSSAB provides a number of avenues for the public to learn about and express views on OREM's cleanup work. All board and committee meetings are open to the public and are announced in the Federal Register, newspaper advertisements, on our website, and various social media outlets.

Meetings are held at the DOE Information Center in Oak Ridge at 1 Science.gov Way, unless noted otherwise. The first hour of board meetings is filmed and broadcast on local cable TV stations and uploaded to YouTube at www. youtube.com/user/ORSSAB.

The board maintains a web site at **www.energy.gov/orssab**. Information is also available by calling the ORSSAB support office at 865-241-4583 or 865-241-4584 or email us at **orssab@orem.doe.gov**.



Unlike most other DOE facilities, the ORR is almost entirely within the city limits of Oak Ridge. It contains three main facilities: East Tennessee Technology Park, Oak Ridge National Laboratory, and the Y-12 National Security Complex.

ORSSAB was chartered under the Federal Advisory Committee Act in 1995. The board is composed of up to 22 members, chosen to reflect a diversity of gender, race, occupations, views, and interests of persons living near the ORR. Members are appointed by DOE and serve without compensation. Members may serve up to three two-year terms.

At the close of the year, the board consisted of 19 voting members from Anderson, Campbell, Knox, Loudon, Morgan, and Roane counties. More about members who served, including some who exited the board mid-year, can be found in the "Members" section starting **on Page 14**.

Non-voting participants include liaisons from DOE, the U.S. Environmental Protection Agency Region 4 (EPA), and the Tennessee Department of Environment and Conservation (TDEC), which advise the board on their agencies' policies and views.

#### FY2021 Board Officers

ORSSAB officers for FY2021 were Shell Lohmann, chair; Leon Shields, vice chair; and Bonnie Shoemaker, secretary. Amy Jones was chair of the EM & Stewardship Committee.

#### **Board Meetings**

The board meets the second Wednesday of most months at 6 p.m. in Oak Ridge to hear presentations by EM per-

sonnel working on relevant projects, listen to and discuss input from concerned citizens, consider recommendations to DOE, and conduct other business. In August, an annual meeting is held to evaluate the board's work during the year and plan activities for the next year. For 2021, meetings were held virtually via Zoom.

The board conducts its deliberations under ORSSAB bylaws and Robert's Rules of Order and strives to consider all relevant positions in reaching decisions.

#### Committees

General board business is handled at the monthly Executive Committee meeting, which is composed of the elected officers of the board and the chair of the EM & Stewardship Committee. This committee holds general administrative authority to set board agendas, coordinate the work of other committees, and transact business as necessary.

The EM & Stewardship Committee is responsible for monitoring the major cleanup activities on the ORR as well as stewardship requirements for areas of the reservation that have been remediated, but remain contaminated long-term. It originates recommendations to be considered at full board meetings. All board members are part of this committee.

Committees usually meet monthly, and all meetings are open to the public.



The Oak Ridge Site Specific Advisory Board



### Join the Board

A broad spectrum of backgrounds and viewpoints is desired for board membership; technical expertise is not required. Applications for membership are accepted at any time and are actively solicited through a variety of media during specific recruitment periods.

Residents from the counties affected by DOE operations are encouraged to apply. These counties include Anderson, Blount, Campbell, Knox, Loudon, Meigs, Morgan, Roane, and Union.

Applications may be obtained by emailing the ORSSAB support offices at **orssab@orem.doe.gov** or visiting our webpage at **www.energy.gov/orssab**.

### Abbreviations

CAB	Citizens Advisory Board	ORNL	Oak Ridge National Laboratory
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	ORR	Oak Ridge Reservation
		ORSSAB	Oak Ridge Site Specific Advisory Board
DDFO	Deputy Designated Federal Officer	TDEC	Tennessee Department of Environment and Conservation
DOE	U.S. Department of Energy		
EM	Environmental Management	TRU	Transuranic
EMDF EMWMF	Environmental Management Disposal Facility Environmental Management Waste Management Facility	TWPC	Transuranic Waste Processing Center
		WIPP	Waste Isolation Pilot Plant
		Y-12	Y-12 National Security Complex
EPA	U.S. Environmental Protection Agency		
ETTP	East Tennessee Technology Park		
OREM	Oak Ridge Office of Environmental Management		

## The Year's Top News



EM crews began demolishing Building 9207 in March 2021. Standing six stories and spanning 255,000 square feet, it was the largest and final building standing in the former Biology Complex at Oak Ridge.

## Biology Complex demo marks new chapter at Y-12

EM crews in 2021 completed demolition of the final building in the former Biology Complex at the Y-12 National Security Complex in Oak Ridge, achieving the most significant skyline change to-date in the new chapter of cleanup at Y-12.

The project removed significant structural risks and opened land for national security missions. The cleared 18-acre footprint where the former Biology Complex once stood is the planned location for the future Lithium Processing Facility.

EM's latest cleanup phase at Oak Ridge, now underway, involves addressing hundreds of excess, contaminated, and deteriorating facilities scattered throughout Y-12 and the Oak Ridge National Laboratory (ORNL) that present hazards and occupy land that can be used for future research and national security missions. Combined, these sites house DOE's largest inventory of high-risk buildings.

EM's latest efforts at the Biology Complex have shortened that list, and plans are underway to address more high-risk facilities in the months and years ahead. The Biology Complex, which dates back to the 1940s, was originally comprised of 11 buildings. It was initially constructed for recovering uranium from process streams, but it was later used for research that led to strides in understanding genetics and the effects of radiation. When operational, the facilities once housed more individuals with doctorates than anywhere in the world.



Crews have completed demolition on the last of 11 structures that comprised the former Biology Complex. Its removal enhances safety at the site and clears land for the National Nuclear Security Administration to reuse for national security missions.



An Isotek employee processes low-dose uranium-233 material in a glovebox at Oak Ridge National Laboratory.

## Low-dose U-233 disposal complete at ORNL

OREM and its contractor Isotek successfully completed processing and disposing the low-dose inventory of uranium (U)-233 stored at ORNL, ending a two-year effort that has eliminated a portion of the site's legacy nuclear material and provided rare nuclear isotopes for next-generation cancer treatment research.

With the low-dose U-233 inventory disposed, OREM and Isotek will focus on treating and disposing the remaining high-dose U-233 inventory stored at ORNL.

Eliminating the inventory of U-233 is EM's highest priority at ORNL. U-233 is a manmade isotope created as an alternative nuclear fuel source in the 1950s. The nation's inventory of U-233 was later sent to ORNL for longterm storage. while other crews prepared the hot cells to address the U-233 material with higher radioactivity levels. This approach was made possible through a unique partnership with TerraPower, a private nuclear innovation company.

Isotek received funds from TerraPower to extract thorium isotopes from the U-233 inventory. Through this arrangement, known as the Thorium Express Project, TerraPower received rare medical isotopes to advance next-generation cancer treatment research, and Isotek received funds it reinvested in the project to purchase gloveboxes and accelerate the processing schedule, saving significant tax dollars.

OREM finished disposing approximately half of the U-233 inventory in 2017, while the remainder of the material required processing and downblending to convert it into a form for safe shipment and disposal.

An initial approach involved processing all of the remaining inventory in heavily shielded rooms, known as hot cells. However, the building where this would occur required significant upgrades before that work could begin.

Isotek identified a subset of the U-233 material with lower radioactivity levels that employees could begin processing in gloveboxes



Employees with Oak Ridge Office of Environmental Management contractor Isotek gather in front of drums containing the final low-dose uranium (U)-233 material they processed for disposal.

#### January

Upgrades Prepare Way for Oak Ridge to Process Remaining Uranium-233



Crews install an 11,000-pound, 35-foot-tall silo that can hold 10,000 pounds of dry cement. Cement from the silo will be transferred to tanks containing the downblended uranium-233 to solidify the material and make it safe for transportation and disposal.

Crews in January performed major construction upgrades that would allow OREM and its contractor Isotek to begin processing a high-dose inventory of uranium (U)-233 stored at ORNL.

That work supports the U-233 Disposition Project, OREM's highest priority project at ORNL. The project is removing a significant risk by eliminating the inventory of the legacy nuclear material stored in the world's oldest operating nuclear facility located in the heart of one of the nation's most important scientific research sites.

Numerous facility modifications and infrastructure additions were needed at Building 2026 to initiate largescale processing and downblending of the high-dose U-233 inventory in the facility's hot cells, which are radiation containment chambers.

Crews installed a 35-foot-tall silo essential to the project. The silo structure weighs 11,000 pounds and can hold 10,000 pounds of dry cement. Cement from the silo will be transferred to tanks containing the downblended U-233 to solidify the material and make it safe for transportation and disposal.

Workers also finished placing a backup diesel generator. If there is a loss of power, the generator will be able to continue powering the equipment necessary for processing. That equipment includes the system that pumps material into the hot cells to downblend U-233; the operation that transfers cement to the downblended material tanks; the hydraulic power unit that drives the mixing blades; and the equipment that moves the tanks of solidified waste.

Approximately 20,000 linear feet of conduit, used to connect the generator to the components it will power, will

be installed around the facility. Crews will also install new portals and manipulators for the hot cells and replace a 5-ton crane needed to transport canisters before processing can begin in the hot cells.

#### February

#### Crews demolish hot cells at ORNL's former Radioisotope Development Lab

Crews in February began removing the two remaining structures at the former Radioisotope Development Lab at ORNL.

Known as "hot cells," the structures demolished were heavily shielded concrete rooms that provided researchers protection from highly radioactive material during the years the laboratory was operational.

The laboratory dates back to the Manhattan Project and postwar era, when one of the facility's primary missions was the production of radioisotopes for medical, research, and industrial uses. Constructed in the early 1940s, the laboratory contained six hot cells where radioisotopes from ORNL's Graphite Reactor and succeeding reactors were processed for shipment.

The outer structure and four of the hot cells were demolished in prior years using funds from the American Recovery and Reinvestment Act of 2009.

UCOR completed several tasks to prepare the final structures for demolition. Workers eliminated contamination pathways, which involved pumping and grouting a 47-foot-long underground transfer tunnel formerly used to load radioactive material into the hot cells.



A view of the demolition of a hot cell inside a protective cover at the former Radioisotope Development Lab at Oak Ridge National Laboratory.

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The cleanup contractor also constructed a six-story protective cover over the hot cells to ensure nearby research facilities were not impacted during the demolition. Using a 175-ton crane, crews set a foundation of 92 16,000-pound blocks. Workers then used the crane to erect 20 steel trusses for the frame and they added nearly 12,000 square feet of fabric to complete the protective cover.

Crews also constructed an intermodal rail system to transport boxes containing demolition debris from the site. The system provides a safe way to transport the debris outside of the space-limited tented area. The boxes are then loaded onto trucks and transported for disposal.

#### March



A view of the site where crews removed the building slab for the Centrifuge Complex.

## Crews address slabs, soils at ETTP to prepare site for future land transfers

In March, work was underway removing building foundations and remaining contaminated soil areas at ETTP to achieve EM's ultimate vision for the site: a multiuse industrial center, national park, and conservation area.

All building removals and many major soil remediation projects at ETTP, which is the former Oak Ridge Gaseous Diffusion Plant, were completed in 2020. The work in March was not as pronounced as the massive demolition projects that took place there over the past two decades, but it's just as critical as EM transforms the former Manhattan Project and Cold War-era enrichment complex into new uses.

The former Centrifuge Complex area, which had a footprint of 235,000 square feet, was the largest slab removal taking place at ETTP. Crews broke up and removed the concrete slab, sampled soil to identify potential contamination, and backfilled excavated areas with clean soil.

The project would convert the site into a grassy field available for transfer from government ownership for economic development.

Crews with OREM cleanup contractor UCOR also removed contaminated soil and backfilled sites in other ETTP areas. At the location of the former K-1401 facility, workers removed thousands of cubic yards of contaminated soil and backfilled the area with clean soil. K-1401, one of the site's early facilities, was used as a cleaning and decontamination facility, generating a variety of contaminants.

In another area where tanks associated with the site's former power infrastructure stood, crews placed a 2-foot protective soil cover over a 9-acre tract that contained asbestos-contaminated soil. They also placed a 2-foot cover on an adjacent 21-acre site and contoured it to ensure proper stormwater drainage.

OREM also worked with regulators on an interim record of decision to address groundwater cleanup at the site. It would accompany two existing records of decision addressing soil remediation of the site's main plant and the area surrounding it.

Cleanup at ETTP is paying dividends for the region. More than 20 business are already located there. Future industrial development projects include a medical radioisotope pharmaceutical company and a nuclear test reactor facility.

#### April

#### Crews remove Tritium Facility at ORNL

EM crews in April completed demolition on a contaminated 1960s-era building at ORNL, opening land that DOE can reuse for future missions.

With the Tritium Target Preparation Facility removed, crews can address the soils and substructures associated with the building. The cleanup effort eliminated several contaminated areas, allowing for a transformation in a location that can support the Department in the years ahead.

The Tritium Target Preparation Facility, also known as Building 7025, was constructed in 1968 and operated until 1990, producing tritium targets for nuclear operations. The facility was deactivated in 1997 and all its systems were left in place. The general work area around the structure was identified as a contamination area due to the tritium present inside the building.

Small businesses supporting EM's cleanup performed characterization and demolition of the facility. GEM Technologies conducted the preliminary characterization while CTI and Associates, Inc. led efforts to demolish the structure and remove, package, transport, and dispose the building's equipment and debris. Characterization is a process to determine the types and levels of contamination in and around a facility to support work planning, worker safety, and waste management.

OREM is identifying tasks – like those completed at the Tritium Target Preparation Facility – in which small businesses can accomplish work and advance cleanup while its prime cleanup contractor UCOR conducts larger projects with more complexity and longer schedules, such as deactivating former research reactors.



A view of the Tritium Target Preparation Facility at Oak Ridge National Laboratory prior to demolition. The building was constructed in 1968 and had not been operational since 1990.

May

## Crews prepare experimental reactor for deactivation, demolition at ORNL

In May, crews prepared to deactivate the former Experimental Gas-Cooled Reactor (EGCR) at ORNL before removing the contaminated facility and opening the DOE land for reuse.

The EGCR is one of 16 inactive research reactor and isotope facilities EM is addressing at ORNL. This massive cleanup effort is happening simultaneously with other cleanup projects underway at Y-12.

At the EGCR, OREM and cleanup contractor UCOR worked to make the facility safer for deactivation and demolition crews by removing combustibles, abating loose asbestos-containing materials, and creating multiple emergency exits.

The UCOR team used an innovative technology to create an additional exit from the building. Workers used a waterjet process with a garnet-based abrasive — similar to an intense pressure washer but using a sharp, angular mineral agent — that was able to cut an opening in the facility's thick carbon-steel outer shell. This method avoided hazards associated with torch cutting, and it was less labor intensive than using standard hand tools. EM and UCOR also collaborated to perform the work in a cost-efficient manner. They identified an opportunity to reuse unique equipment across multiple projects, saving nearly \$3.5 million. UCOR moved transport platforms – large elevator-like devices installed outside facilities – to this project from the Biology Complex.

While the Biology Complex stood six stories tall, the EGCR stood eight stories and required these special platforms for the deactivation phase to access upper levels and move crews, equipment, and supplies more easily.

EM and UCOR moved the facility to a "cold and dark" state, a crucial step prior to deactivation that requires isolation of all potentially hazardous energy sources. The EGCR deactivation phase is slated to begin this summer.

In 1956, Congress directed the Atomic Energy Commission (AEC), which would later become DOE, to build the EGCR, a gas-cooled, graphite-moderated reactor – the first civilian reactor of its kind in the U.S.

The 107,922-square-foot facility, standing 216 feet tall, was intended to be more than an experimental reactor. It was to be a prototype for the Tennessee Valley Authority's



Crews prepare the Experimental Gas-Cooled Reactor for deactivation. The eight-story facility at the Oak Ridge National Laboratory stands 216 feet tall.

nuclear power generation. TVA is a corporate agency of the U.S. that provides electricity for business customers and local power companies, serving 10 million people in parts of seven southeastern states.

However, in 1965, when the facility was 90-percent complete, the AEC decided to go in another direction and stopped construction of the EGCR.

The reactor was never put into service, but its control, service, and turbine buildings were later used as development space for other research programs. The facility would go on to house ORNL's fuel recycle division.

June



Crews used more than 2,000 truckloads of topsoil to recontour a portion of the former Powerhouse Area at Oak Ridge. UCOR employees identified an innovative approach to avoid costs and enhance efficiency by grading down a nearby ridge to obtain soil for the work.

## Crews prime powerhouse site at ETTP for future recreational use

Once home to a massive power plant and oil tanks, the former Powerhouse Area at ETTP is now a clean, grassy field primed for future recreational use.

OREM and cleanup contractor UCOR in June backfilled and contoured a 21-acre section of the area previously used as a scrapyard. EM removed the 50,000 tons of scrap metal and contaminated soil there more than a decade ago.

The recently completed project directed stormwater to wetlands and the nearby Clinch River. Transforming and recontouring the site, which is proposed for recreational development, required more than 6,000 truckloads of backfill and 2,000 truckloads of topsoil.

The project followed a similar one earlier in 2021 in which workers placed a 2-foot soil cover on an adjacent 9-acre area that housed oil tanks also associated with the former powerhouse. Employees used an innovative GPS system on both projects to ensure appropriate soil placement and contouring.

Given the large amount of soil required to complete the latest project on the 21-acre site, employees identified an innovative approach to avoid costs and enhance efficiency. They graded down a nearby ridge to access soil for recontouring. This approach eliminated costs associated with buying soil, enhanced efficiency by using trucks from UCOR opposed to an outside vendor, and created more useable acreage by reducing the grade of the adjacent ridge.

As with EM's other soil remediation projects at ETTP, completing this effort enabled EM to transfer land from federal ownership for reuse by the community.

Several excavation projects are underway to remove contaminated soil from various locations at ETTP and replace it with clean dirt — resulting in property available for industrial and recreational development. The powerhouse powered early operations at the former uranium enrichment site.

July

#### WIPP Marks 100 Shipments From Oak Ridge Waste Processing Centerg

EM's Waste Isolation Pilot Plant (WIPP) in July marked a milestone after receiving its 100th waste shipment from Oak Ridge since shipments resumed in August 2017, following a fire and radiological events in the WIPP underground in 2014.

The 100 shipments from the Transuranic Waste Processing Center (TWPC) were made up of 3,327 drums of legacy contact-handled (CH) transuranic (TRU) waste, representing a 50-percent reduction in the center's waste inventory.

The accomplishment highlights progress toward meeting the TDEC Site Treatment Plan milestones for TRU waste certification. The waste streams were generated by ORNL and Nuclear Fuel Services, processed at TWPC, and certified for WIPP disposal by the Nuclear Waste Partnership (NWP) Central Characterization Program (CCP).

The Carlsbad Field Office (CBFO) helped achieve the shipment milestone by allocating WIPP transportation resources to Oak Ridge, despite current shipping limitations imposed on the DOE complex as WIPP works to improve underground ventilation.

CCP operations personnel at TWPC characterize the contact-handled waste containers through a variety of techniques. Data generated from these processes are passed to the CCP project office in Carlsbad for additional validation and verification that each drum meets WIPP waste acceptance criteria, including new requirements for chemical compatibility added in response to the 2014 fire and radiological events at WIPP.



Workers at the Transuranic Waste Processing Center in Oak Ridge load contact-handled transuranic waste drums into TRUPACT-II shipping containers for shipment to the Waste Isolation Pilot Plant.

CCP has worked to implement new requirements in the certified program at ORNL. Those requirements had to be in place before shipments could resume in August 2017. Since then, seven of the 25 CH-TRU ORNL waste streams have been approved for shipment. Most of those waste streams are small. The 10 largest ORNL waste streams make up about 90% of the center's inventory.

A large chunk of routine ORNL legacy TRU waste was disposed at WIPP in a previous CCP campaign prior to the most recent 100 shipments.

#### August

### Crews clean up reactor pool to prepare for facility demolition at ORNL

EM crews at ORNL removed highly radioactive components from a reactor pool in a facility slated for demolition.

The effort was a crucial step that allowed EM to drain the pool and move forward with demolishing the Bulk Shielding Reactor, also known as Building 3010 – an aging, contaminated facility that no longer supported DOE's research missions.

To remove the irradiated materials, UCOR moved a 6,100-pound waste transfer liner to a 21-foot depth in the pool. Workers placed the irradiated materials into the waste transfer liner and sealed it, lifted it from the pool, and placed it in a waste disposal liner. Workers then transferred that liner to an 88,000-pound transport cask, which was shipped safely for off-site disposal.

The Bulk Shielding Reactor was constructed in 1950 to lead groundbreaking aircraft radiation protection research as part of the federal government's aircraft nuclear propulsion program. The program was one of the earliest research and development initiatives to identify peaceful uses of atomic energy after World War II. Workers researched designs and configurations to protect crew members from radiation in a proposed nuclear-powered aircraft.

The facility also housed a low-power reactor used to train reactor operators and provide hands-on experience for college students until it was shut down in 1987.

The facility was one of more than a dozen research reactors constructed at ORNL over multiple decades. Each contributed to ORNL's reputation as a world leader in cutting-edge nuclear research and development. EM's current phase of cleanup at ORNL is focused on safely removing these excess contaminated facilities to eliminate risks and clear land for future research missions.

#### September

## Site of former Centrifuge Complex at ETTP cleared and ready for industrial development

It once housed one of the tallest, most visible buildings at East Tennessee Technology Park (ETTP), but now the site of the former Centrifuge Complex is cleared and ready for industrial development.

The complex was one of the final collections of buildings to be demolished last year as workers completed the first-ever cleanup of a former uranium enrichment complex.

Left behind from the cleanup was a large concrete slab spanning more than 5 acres. Workers with EM Oak Ridge cleanup contractor UCOR recently finished removing the slab and backfilling the site. The facility's footprint falls in the area of a proposed regional airport planned for ETTP.

UCOR used nearly 5,500 trucks to bring in approximately 65,000 cubic yards of backfill soil to complete restoration of the area. More than 30,000 cubic yards of the soil came from



An aerial view of the Centrifuge Complex before demolition. EM completed removal of the sprawling 235,000-square-foot complex at East Tennessee Technology Park in July 2020.

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another area of ETTP. Using that soil as backfill rather than purchasing it saved \$200,000. The site will remain a grassy field until it is redeveloped.

The complex was built in stages to develop, test, and demonstrate the capability of centrifuge technology for uranium enrichment. The last of these facilities ceased operation in the mid-1980s.

#### October



Oak Ridge workers remove mercury and mercury-contaminated solids from process pipes in the column exchange, or COLEX, equipment at the Alpha-4 facility at the Y-12 National Security Complex.

### Crews deactivate COLEX equipment, advance mercury cleanup at Y-12

Crews deactivated the second of three collections of old, mercury-contaminated equipment surrounding the Alpha-4 facility at Y-12.

The project addressed potential environmental risks and moved EM a step closer to preparing one of Y-12's largest high-risk contaminated facilities for demolition.

The column exchange, or COLEX, structures connected to the four-story 500,000-square-foot Alpha-4 building, which was used for uranium separation from 1944 to 1945. Workers finished installing the COLEX equipment in 1955 for lithium separation, a process requiring large amounts of mercury. A significant amount of the mercury was lost into the equipment, buildings, and surrounding soils, and its cleanup was one of EM's top priorities.

In 2018, cleanup contractor UCOR demolished the COLEX equipment on the west end of the building after retrieving 4.6 tons of mercury. The effort prevented a possible significant release of mercury into the surrounding environment.

In April 2021, UCOR began deactivating the COLEX structures on the east end of the building.

Crews safely deactivated more than 2,500 linear feet of process piping, abated 300 feet of asbestos, and removed all

universal waste from East COLEX. The final portion of the COLEX equipment, located on the south side of Alpha-4, will be addressed in future years.

#### November

## Oak Ridge upgrades waste shipment tracking system, automated system streamlines process

OREM contractor UCOR transitioned to a new waste tracking system that improves how shipments are tracked from work sites to disposal locations.

The new system includes an upgraded radio frequency identification (RFID) tracking system for trucks and new hardware and software, allowing for a seamless, automated tracking operation that delivers up-to-the-minute waste disposal data.

Waste management is a major element of UCOR's cleanup operations. The contractor has completed more than 120,000 on-site and off-site shipments that account for 1.7 million cubic yards of waste, and UCOR has logged 7.6 million miles safely since it began work in Oak Ridge in 2011.

RFID technology is the linchpin of this modernization effort. Each truck is equipped with a unique card that identifies it in a database. As a vehicle moves between locations, the card logs those moves and registers data within the database. These unique identifiers streamline the process and save time at disposal sites by eliminating the need for manual identification and data input by waste management personnel.

The most significant physical upgrade was the installation of a truck scale at the Oak Ridge Reservation Landfill. It can accommodate full-size semi-trucks and complements the two existing scales at the EMWMF and the transportation hub at ETTP.



A truck loaded with waste shipments crosses the scale at the East Tennessee Technology Park at Oak Ridge.

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When linked with RFID technology, the scales deliver information directly to the database. The database accepts weight data collected at the scales and uses the associated RFID information to track trucks from empty to loaded as they cross the scale at a disposal location.

The database was the final piece of the upgrade. The custom-designed software consolidates eight legacy database and tracking functions, delivering a standardized data format that eliminates incompatibilities between systems. The new database also reduces the need for data to be transmitted manually, decreasing the potential for input error.

#### December



A land transfer agreement identifies large parcels of land located at and around the East Tennessee Technology Park that the Oak Ridge Office of Environmental Management will transfer to the Tennessee Wildlife Resources Agency.

#### Land transfer to protect environment, benefit Oak Ridge community

In December, OREM signed an agreement with the Tennessee Wildlife Resources Agency (TWRA) that lays the groundwork to transfer more than 3,500 acres of scenic land to the state.

Transferring this federally owned land moves EM closer to its ultimate vision for ETTP as an asset that benefits the community. The transfer will designate areas for greenspace and mixed-use recreational opportunities and put the land under the oversight of an agency whose mission is to preserve, conserve, manage, protect and enhance the fish and wildlife of the state and their habitats for the use and benefit of the public.

EM and TWRA will complete the transfer process under federal law, which requires regulatory approvals and generally takes one to three years to complete.

Once the transfer is complete, the community will have greater access to the region's abundant natural assets. The ultimate vision is to provide open spaces where residents and visitors can experience nature. The areas identified for transfer offer opportunities for fishing, hunting, boating, hiking, birding, mountain biking and wildlife viewing.

After nearly two decades of work that removed 500 dilapidated, contaminated structures, OREM completed major cleanup at ETTP in 2020. The effort transformed a former enrichment complex that presented a liability to the community into a marketable asset that is attracting new businesses and economic development.

The agreement, signed Dec. 15, is a component of a larger effort by OREM and UCOR to transform ETTP into a multi-use industrial park for the community. To date, EM has transferred nearly 1,300 acres to attract new economic development, constructed facilities to support historic preservation and set aside thousands of acres for conservation. The latter will be under the watch of TWRA through these future transfers.

DOE's Oak Ridge Reservation is located on approximately 32,000 acres in east Tennessee. It lies within the Great Appalachian Valley between the Cumberland and Great Smoky Mountains, bordered by the Clinch River that ultimately joins the Tennessee River.

## Key Issues

#### In FY 2021, ORSSAB sent the following locally generated recommendations to DOE.

Full text of the recommendations and responses is available on the ORSSAB website at energy.gov/orem/listings/orssab-recommendations-responses.

#### Recommendations on FY2023 OREM Budget

Each year the U.S. Department of Energy (DOE) Environmental Management (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 10, 2021, the Oak Ridge Environmental Management (OREM) program presented on its FY 2021 budget formulation process to the Oak Ridge Site Specific Advisory Board (ORSSAB). The meeting was attended by several EM portfolio project directors who gave specifics on their projects. This presentation provided content and discussions that ORSSAB. used to draft its recommendations. ORSSAB focused on general near-term and long-term cleanup priorities identified by OREM:

- **Complete ETTP cleanup** including all remedial action consistent with CERCLA agreements and fully implement reindustrialization and historic preservation activities at ETTP;
- Disposition ORNL uranium-233 inventory including uranium-233 direct disposition campaign, down-blending operations, and disposal of remaining uranium-233 inventory;
- **Disposition ORNL transuranic waste inventory** including disposition of transuranic debris waste, and complete construction of the Sludge Processing Facility;
- Address Y-12 mercury contamination including ensuring proper planning for future mercury cleanup and reducing mercury in surface water exiting Y-12.

#### Recommendations

ORSSAB supports OREM's Program Plan and recommends fully funding the activities that are currently supported by that Plan for FY 2023. In addition, ORSSAB has identified the following priorities for Oak Ridge Reservation cleanup.

The board recommends that the FY 2023 OREM budget request reflect adequate funding to maintain or accelerate these projects. In addition, when extra funds from suitable plus-ups and savings become available, we recommend that these funds be targeted for the following projects:

- 1. Complete transfer of all applicable land parcels at ETTP for productive purposes. Continue working with community partners to fully realize the economic development potential of reindustrialization after transfer.
- 2. Provide adequate funding to construct and operate the urgently needed new onsite disposition facility to allow uninterrupted cleanup progress at Oak Ridge National Laboratory (ORNL) and Y-12 National Security Complex (Y-12).
- 3. Increase funding where possible to ensure the Mercury Treatment Facility meets the operational date of 2025 as presented to the community and ORSSAB. In addition, consider using plus-ups or surplus funds to upgrade equipment and technology that may have improved since the original schedule was developed.
- 4. The expansion of ORNL's Aquatic Ecology Laboratory provides a vital resource to the EM complex. Future requests should continue funding support for research into mercury and methyl-mercury pollution and prioritize designing and testing new and improved remediation technologies.
- 5. Provide adequate funds to maintain or upgrade infrastructure to ensure safe transportation of waste from cleanup projects to disposal.

## Members & Liaisons



Leon Baker

Leon Baker works in industrial hygiene with Value Added Solutions, which provides professional services to support the cleanup and reindustrialization efforts at ETTP. He was previously a health physicist with ARS, Inc. Leon received an A.A.S. in Mechanical Engineering Technology from Pellissippi State Community College, an A.A.S. in Environmental Health Technology

from Roane State, a B.S. in Healthcare Management from Southern Illinois University, an M.Ed. in Education from South College, and an M.B.A. in Business Administration from Brenau University. Leon is a member of the Tennessee Valley Section-American Industrial Hygiene Association, the East Tennessee Health Physics Society, the Knoxville Area Rescue Mission, and Habitat for Humanity. He is a resident of Oak Ridge.



Andrea Browning is an HR business partner with ORNL Federal Credit Union, which is an East Tennessee credit union founded as a financial institution for ORNL employees that has since expanded to serve a broader audience. She has been in that position since October of 2013. She received a master's degree in industrial/organizational

Andrea Browning

psychology from Clemson University and a bachelor's in psychology from Millsaps College. She is a member of the Tennessee Valley Human Resources Association as well as a member and outgoing president of the Oak Ridge Human Resources Association. Andrea is interested in civic and environmental issues. She lives in Lenoir City.



**Richard Burroughs** 

County, Tennessee, Mayor's office since 2012. Prior to that post, his professional experience included working as a registered professional geologist on aquifer characterizations and remediation in soil and groundwater environments. His employment history includes 25 vears working primarily with RCRA and CERCLA projects

Richard Burroughs most recently

served as chief of staff for Anderson

in various states. Richard received a B.S. in Geology from Southern Illinois University and an M.S. in Geology from the University of Arkansas. Richard lives in Oak Ridge and has an interest in environmental issues.



Thomas Geissberger is a recent college graduate who works at the Knoxville Area Rescue Mission and was previously employed as a team director for the Tennessee Clean Water Network nonprofit since 2019. He graduated with a B.S. in Geology and Environmental Studies from the University of Tennessee in 2020 and received an A.A. in General

Thomas Geissberger

Studies from Pellissippi State Community College. He is a member of the Phi Sigma Theta National Honor Society and Phi Kappi Phi Honor Society, completed the tnAchieves Program, and was selected for the Oak Ride Associated Universities Higher Education Research Experience Program during his time as a student. He is interested in environmental and public health issues and lives in Knoxville.



Chris Hampel owns and operates a small business, Pressure Washing Solutions, which he formed in 2016. He previously worked at Energy Solutions, which is a contractor to DOE in Oak Ridge. He has a high school education and trade skill training related to his work experience. He is interested in minority and business issues. He lives in Kingston.

Chris Hampel



Lorna Hollowell has served as the assistant director of education and development in the Office of Equity and Diversity at the University of Tennessee, Knoxville since September 2019. She holds an M.S. in education from the University of Minnesota, Duluth and a B.S. in Organizational Management from Oakland City University. She is currently

Lorna Hollowell

pursuing a Ph.D. in Higher Education Administration from the University of Tennessee and expects to graduate in 2026. She is interested in educational issues and minority issues. She lives in Knoxville.



Amy Jones

Amy Jones is the national business manager of InvoPeo, a workers' compensation and payroll service, and she is also a licensed insurance agent for Madison Insurance Group and a real estate agent at Stephenson Realty & Auction. She also owned her own business, Double J Enterprises of TN, in Rocky Top, Tennessee until mid-2018.

(Continued on page 15)

A high school graduate, Amy has also received her real estate license and insurance license. She is active in a variety of community organizations, including serving as vice chair for: the Anderson County Republican Party, the Anderson County Headstart Policy Council, and Chairman for the State of Tennessee Order of Amaranth Diabetes Charity. She is a committeewoman on the State Executive Committee for the Tennessee Republican Party, chair of the Women's Ministry Banquet at Main Street Baptist, and president of two groups in the Order of the Eastern Star. Amy is interested in environmental and economic development issues. She lives in Briceville.



and electromechanical devices. Prior to that he was a radiological instrumentation specialist with Perma-fix Environmental Services. Mr. Keebler received an A.S. in Electrical Engineering from Roane State Community College. He holds a certification in Instrumentation

Noah Keebler is a nuclear electronics

manufacturer of electronic instruments

technician with Ametek, which is a

Noah Keebler

from Ludlum Measurements and several other work-related certifications. Noah has Occupational Safety and Health Administration training, electrical safety experience and radiation worker training and is a member of the East Tennessee Chapter of the Health Physics Society. He has an interest in environmental issues. He lives in Knoxville.



Michelle (Shell) Lohmann is the human resources director for U.S. Cellular. Previously, she was the program manager for the University Recruiting and Graduate Education Programs for Oak Ridge National Laboratory/University of Tennessee in Knoxville. Shell is a member of the United Way of Greater Knoxville and has an interest in labor and

Shell Lohmann

environmental issues. A high school graduate, Shell lives in Lenoir City.



**Gregory (Greg) Malone** is retired medical products development consultant. He operated Malone & Associates independent consulting firm until 2018. He received a B.S. in engineering with a welding and manufacturing concentration from The Ohio State University. He is a member of the Oak Ridge Sportsmen's association and a volunteer for the Great Smoky Mountains National Park. He is

interested in environmental and economic development issues. He lives in Rockwood.



Thomas McCormick is the city manager for the Town of Oliver Springs, which includes portions of Anderson, Roane, and Morgan counties. He received a B.S. in political science from Middle Tennessee State University. He also has numerous certifications from the State of Tennessee, including as a water and wastewater treatment plant operator.

Thomas McCormick

He lives in Oliver Springs and is interested in city/county government and environmental issues.



Ann (Harriett) McCurdy retired in 2014 after more than 40 years as a teacher for middle- and high-school students both in the United States and abroad, with a focus on the sciences. Most recently she served as a teacher of science and biology for grades 6-10 at Yangon Academy in Yangon, Myanmar. Prior to that, she taught a variety of science courses and

Harriett McCurdy

environmental studies courses in China, Morocco, Kuwait, and Ecuador. Harriett received an M.A. in teaching biology and her teaching certificate from Washington University and a B.A. in biology from Earlham College. She is president of the Oak Ridge League of Women Voters and a member of Tennessee Citizens for Wilderness Planning, which is dedicated to achieving and perpetuating protection of natural lands and waters by means of public ownership, legislation, or cooperation of the private sector with a focus on the Cumberland and Appalachian regions of Tennessee. Harriett lives in Oak Ridge and is interested in educational and environmental issues.



Marité Pérez is a mortgage loan officer at First Community Mortgage. Previously, she worked with Latin and Haitian communities in the Dominican Republic as a Community Economic Development Advisor through the Peace Corps. She has also worked a Business Development Manager for a solar firm. Marité is a volunteer with Centro Hispano of

Marité Pérez

East Tennessee, which promotes empowerment and civic participation of the multicultural community. She has a B.A. in International Affairs/International Business from Florida State University and an M.B.A. in Global Social Sustainable Enterprise from Colorado State University. Marité lives in Knoxville.



Michael Sharpe is a SharePoint administrator and performs other technology- and web-based tasks for Oak Ridge Associated Universities, which manages the Oak Ridge Institute for Science and Education for DOE. It provides science, education, workforce development, and health services that include some OREM areas such as

Michael Sharpe

decontamination verifications to support cleanup. He received an A.S. in computer programming from ITT Technical Institute and is pursuing a B.S. in business administration. He is interested in civic and environmental issues and lives in Lenoir City.



Leon Shields is the supervisor for field operations for the Lenoir City Utilities Board. He is also the owner of Instructional Concepts, which provides training in industrial, public, and private application of firearms, explosives, vehicle extrication, and rescue operations. He is a firearms instructor/deputy for the Loudon County Sheriff's Office, an

Leon Shields

instructor/third party examiner for the State of Tennessee, a firefighter director with Loudon County Fire Rescue, Chairman of the Lenoir City Planning Commission/Board of Zoning Appeals, a Commissioner with the Lenoir City Housing Authority/Rural Development, and a Commissioner with the Loudon County Regional Planning Commission. A high school graduate, Leon is a member of a number of civic organizations, including the Boys and Girls Clubs of Tennessee Valley, Lenoir City High School Technical Advisory Board, the local chamber of commerce, and others. Leon lives in Lenoir City and has an interest in civic issues.

Georgette Samaras is director of

community outreach for the local

hospital system Covenant Health. She

has also served as an adjunct instructor of

Psychology at Pellissippi State Technical

is pursuing a Doctorate in Educational

Leadership and Organizational

Community College since mid-2018. She



Georgette Samaras

Development, received an M.S. in Behavioral Psychology from Walden University, and a B.S. in Molecular, Cellular, and Developmental Psychology from the University of Colorado. She is also a certified mind-body instructor through the Center for Mind Body Medicine. She is a volunteer with the USA Track and Field Federation and the Cancer Support Community. She is interested in environmental issue and lives in Clinton.



Bonnie Shoemaker retired in 2008 after 34 years at the DOE East Tennessee Technology Park and ORNL working in a variety of capacities, including chemical laboratory analyst, environmental compliance specialist, plant shift superintendent, emergency management specialist, and engineering technician. She is the recipient of two

Bonnie Shoemaker

awards for operations and technical support in environmental compliance and emergency management. Bonnie received her B.S. in Biology from UT. She has an interest in environmental and public health issues. Bonnie lives in Clinton. She was appointed to the board in June 2017.



Fredric (Fred) Swindler retired as a vice president and consultant for quality assurance and regulatory affairs with IsoRay Medical, Inc. in Richland, Washington. He was previously employed as a vice president for quality assurance and regulatory affairs with two other medical manufacturing companies. Fred received a B.S. in Biomedical Engineering

Fred Swindler

from Rose Hulman Institute of Technology in Terre Haute, Indiana, and an M.B.A. from the University of Evansville, Indiana. He is a senior member of the American Society for Quality and has an interest in environmental and public health issues. Fred lives in Rockwood.



John Tapp is a civil and environmental engineer with nearly 50 years of experience in all areas of environmental protection and restoration, including private and public utility management, civil and environmental engineering, strategic planning, budgeting, and project development. John has recently worked as a Technical Assistance Consultant for

John Tapp

FEMA in the water and wastewater field with deployments to the US Virgin Islands and the California Camp Wildfire. Prior work included HDR-ICA Engineering, where he provided consulting in a broad range of areas, including environmental permitting and interaction with state and federal regulatory agencies, and work with the Kentucky Infrastructure Authority, where he managed the statewide planning effort for the Authority. He spent the majority of his career as a founding partner in Commonwealth Technology, an environmental and engineering consulting firm, and previously worked with the Kentucky Division of Water, the EPA, and the U.S. Public Health Service. John received his B.S. and M.S. degrees in Civil Engineering and his Ph.D. in Agricultural Engineering from the University of Kentucky. He has published more than 50 publications and papers. John (Continued on page 17) has an interest in environmental and economic development issues. He is a member and past president of the Kentucky-Tennessee Water Environment Association, and a member of the Water Environment Federation, the Karns Community Club, and the Enhance Powell Committee. John lives in Powell.



Thomas Tuck is a banking executive with TNBank. He served as president of the bank since 1995 and in March of 2020 transitioned to part-time employment as part of a leadership transition/retirement. He received a B.S. in business and marketing from the University of Tennessee and is a Certified Banker through the School of

Banking of the South. He is a member of boards of directors for local organizations including the Oak Ridge Chamber of Commerce, Oak Ridge Heritage & Preservation Association, and the East Tennessee Economic Council. He is a member of the Y-12 Community Relations Council. He is interested in civic issues and economic development. He lives in Knoxville.



Rudolf (Rudy) Weigel is a retired industrial hygienist who most recently worked for Concurrent Technologies Corporation in Arlington, Virginia, conducting industrial hygiene surveys at various Army installations in support of the Army Public Health Command until 2015. From 2002 to 2011 he served as a senior industrial hygienist/safety

Rudy Weigel

and health representative with Bechtel Jacobs Company in Oak Ridge. His 36-year career has included work as a bioenvironmental engineer, environmental scientist, and hazardous waste program coordinator. Rudy received a B.S. in Occupational Health and Safety from Utah State University, and an M.S. from East Tennessee State University. He was a member of the American Conference of Governmental Industrial Hygienists. He has an interest in environmental and decontamination and decommissioning issues. Rudy lives in Oak Ridge.



Robert Whitaker is currently a subsidy specialist in the Tennessee Department of Children's Services, where he has worked since 2001. He received a B.S. in Health Science/Physical Education from Carson Newman University. He has an interest in civic and business issues. Robert lives in Oak Ridge.

Robert Whitaker



Zachary Wilkins



Zachary Wilkins is a senior industrial hygiene technician with Value Added Solutions, which provides professional services to support the cleanup and reindustrialization efforts at Oak Ridge. He received an A.S. in environmental health from Roane State Community College. He is interested in environmental issues and lives in Wartburg.

**Dennis Wilson** is a retired technology manager who most recently was employed by Johnson Diversey Products (now Sealed Air) as the director of technology and intellectual property until 2009. While much of his 39-year career was focused on technology and intellectual property management, his early career included work as a resin and polymer

Dennis Wilson

chemist, for which he was awarded seven global patents. He received a B.S. in Chemistry from the University of Wisconsin in Parkside, an M.S. and Ph.D. in Material Science from the University of Connecticut, and certifications in a wide range of technology and management courses. Dennis has an interest in economic development and environmental issues. Dennis lives in Rockwood.

#### **Agency Liaisons**

These individuals serve as points of contact between the board and their respective agencies. A DOE liaison must be present at all board meetings. TDEC and EPA liaisons are often on hand to contribute to discussion and answer board member questions.



Laura Wilkerson



Jay Mullis



David Adler



Melyssa Noe

Laura Wilkerson is the Acting Manager of the Department of Energy's Oak Ridge Office of Environmental Management (OREM). She was selected to this position in October 2021. She is responsible for safely executing the environmental cleanup of the 32,400-acre Oak Ridge Reservation.

John Arthur (Jay) Mullis II served as the Manager of the Department of Energy's Oak Ridge Office of Environmental Management (OREM) through October 31, 2021. He was selected to this position in November 2017. He was responsible for safely executing the environmental cleanup of the 32,400-acre Oak Ridge Reservation.

David Adler serves as the Deputy Designated Federal Officer for ORSSAB. He is director of the Quality and Mission Support Division for the Oak Ridge Office of Environmental Management.

**Melyssa Noe** serves as the board's Alternate Deputy Designated Federal Officer. She is branch chief of program support in the Quality and Mission Support Division for OREM.

Constance (Connie) Jones represents the Environmental Protection Agency. She is part of the Superfund Division in the agency's Region 4 Office, which covers the Southeast.

Connie Jones EPA



Samantha Urquhart-Foster represents the Environmental Protection Agency. She is part of the Superfund Division in the agency's Region 4 Office, which covers the Southeast.

Samantha Urquhart-Foster, EPA



Kristof Czartoryski is an environmental consultant with the Tennessee Department of Environment and Conservation. He is part of the agency's Division of Remediation in Oak Ridge.

Kristof Czartoryski TDEC