

## DOE Provides Update on Status of Reservation-wide Groundwater Strategy Development

There are a number of groundwater monitoring wells strategically placed around the Oak Ridge Reservation (ORR) to detect contaminants that may be migrating from the reservation. Prior to 2013 some evidence of possible migration was found in some of the wells.

The Department of Energy (DOE), the Environmental Protection Agency (EPA), and the Tennessee Department of Environment and Conservation (TDEC) decided to conduct a series of workshops to better understand groundwater characteristics on the

June meeting. “The three agencies were committed to get their arms around the management of groundwater to ensure good decision making,” Bill McMillan, DOE Portfolio Federal Project Director, told the group. “There were six workshops in 2013, and we pulled together all of the available information about groundwater plumes associated with the three watersheds on the ORR,” said McMillan. “We took the information and utilized a modified hazard ranking system to rank the plumes and projects in the watersheds. A strategy was developed around what

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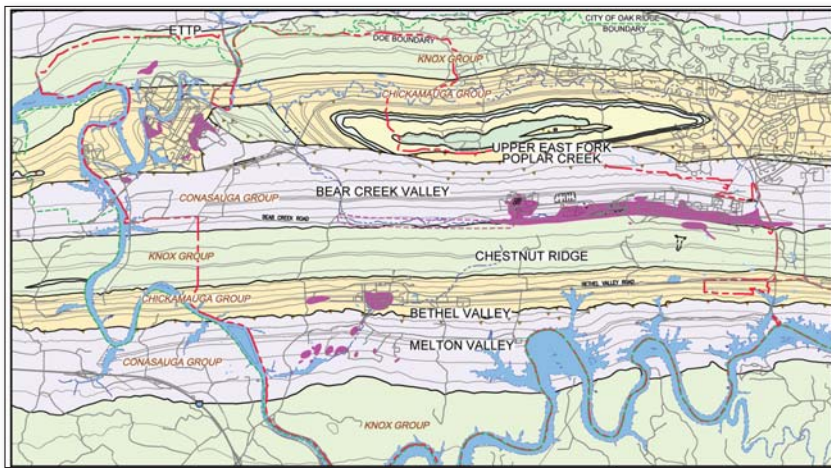
beneficial use where practicable; and achieve final cleanup.

Using the hazard ranking system 35 plumes on the ORR were identified as having contaminants of concern at various depths. Thirty-six projects were defined that focus on additional investigations to fill data gaps, undertake any early actions, or identify other projects based on findings.

“To manage the work we set up a program to implement the strategy to prioritize and investigate plumes and data gaps,” said McMillan. “The first priority was to perform an off-site groundwater assessment to address potential for off-site migration,” said McMillan. The study will look for migration from on-site that could go under the Clinch River to receptors on the west side. A final report on the assessment is due the first quarter of FY 2017.

Steve Cooke, DOE Project Manager, said DOE, EPA, and TDEC developed a Remedial Site Evaluation Work Plan for the off-site assessment. The purpose was to determine if there are hazardous substances in off-site groundwater and if they are related to ORR plumes.

(Continued on page 2)



This geologic map of the Oak Ridge Reservation shows a number of groundwater plumes in purple. Source: Lemiszki, P.J., Hatcher, R. D., Jr., and Ketelle, R. H., 2013.

ORR and develop a strategy for groundwater management. The Oak Ridge Site Specific Advisory Board (ORSSAB) endorsed the study in a recommendation submitted to DOE in 2014.

DOE updated ORSSAB on the status of the strategy development at its

the program was supposed to do and implement a path forward for managing groundwater challenges.”

McMillan said the objective of the strategy is to support decision making and identify actions to protect off-site human health and the environment; protect groundwater and restore it to

## DOE Provides Update on Groundwater Strategy

*(Continued from page 1)*

In the fall of 2014, DOE began talking with property owners at locations with potential for sampling. Agreements were made with a number of owners and sampling began in the winter. Cooke said 43 locations were sampled, 32 wells and 11 springs. Three of the sites exceeded EPA National Primary Drinking Water Standards. Exceeded levels were found for lead at one location, lead and gross alpha activity at another, and combined radium-226 and radium-228 at the third.

Although DOE and TDEC continue to evaluate these results, it is likely that the identified constituents are from natural origins. "There were other detections at very low levels," Cooke said. "As we go through this analysis process, and we're doing this in partnership with TDEC and the Tennessee Department of Health, it will inform the implementation of the next steps in the groundwater strategy."

Another part of the groundwater strategy is the development of a groundwater model for the ORR. Steve Haase, Senior Hydrogeologist for Restoration Services, Inc., said a groundwater model would be a "powerful tool for planning and decision making."

The model will be used on a regional scale to investigate groundwater conditions in the area of the ORR.

Haase said the model is in its first stages, but will ultimately serve as an "excellent platform to answer 'what if' questions and to address site specific questions as remediation decisions are evaluated."

Haase said a regional model area has been identified that encompasses the ORR and surrounding area, an area of about 250 square miles. A software program called Earth Vision has been selected to develop the geologic framework for the model. "One of the most difficult things in Oak Ridge is getting a handle on the complex geology," said Haase. Earth Vision uses data collected over 40 years to visualize and develop layers, which can be put into the groundwater model. "Without Earth Vision we would never be able to successfully do the model," he said.


Also being used is a U.S. Geological Survey numeric flow model called MODFLOW-USG. Haase said MODFLOW is an industry standard for groundwater modeling. The most recent MODFLOW-USG provides the capability of dealing with the complex geology. Haase said Oak Ridge is one of the first sites in the world to use MODFLOW-USG with a geology as complex as Oak Ridge.

The question was would MODFLOW in combination with Earth Vision work? A test case model was completed using the geology of Y-12 National Security Complex

and Bear Creek Valley, which has a large amount of available geologic data. The test was successful, and the geologic model has been expanded to the 250-square mile modeling area. The numeric flow model will also be expanded to the regional scale.

Haase said a working model will provide a good basis for modeling groundwater. "With the model working we'll be in a position to do a number of scenarios," he said. "We can use it to help us place off-site monitoring locations. We can use it to evaluate various options of the kinds of remedial actions to take. It can be a very powerful tool for planning future remediation."

McMillan said the next steps include an FY 2018 milestone for the Remedial Investigation Work Plan, which is a placeholder for the next priority project to be determined, such as a project to install or sample wells in Melton Valley or Bear Creek Valley to better understand contaminant plumes and reduce data gaps. He said the selection of the project will be dependent upon the results of off-site assessments and plume rankings.

"This activity with the modeling effort, the groundwater plumes, and the understanding and filling of data gaps will support identifying early actions that may be needed and developing strategies for reaching final records of decision for cleanup of the ORR." 

## DOE Hosts Public Workshop on Near-term Priorities for Funding

In April the DOE Oak Ridge Office of Environmental Management (EM) held a public workshop to present its near-term priorities for funding and to gather input from several stakeholders' groups. The meeting, held in Pollard Auditorium at Oak Ridge Associated Universities, was a prelude to DOE Oak Ridge EM submitting a budget request to DOE Headquarters for FY 2017.

Deputy EM Manager Jay Mullis presented DOE's list of near-term priorities for FY 2017 funding:

- Complete demolition of gaseous diffusion plants and support facilities at the East Tennessee Technology Park (ETTP);
- Complete direct disposition of the Uranium-233 material and plan the processing campaign;
- Complete contact- and remote-handled transuranic (TRU) debris processing;
- Construct and operate the TRU sludge mock test facility;
- Begin construction of the Outfall 200 Mercury Treatment Facility at Y-12;
- Complete design of the new EM Disposal Facility.

Mullis said completion of work at ETTP is important because it represents a long-term success and frees up land for reindustrialization.

The presence of U-233 at Oak Ridge National Lab sets the security posture for the site and disposition of the material would ease restrictions and

*(Continued on page 3)*

## ORSSAB Hears Views From Oak Ridge City Manager on EM Activities

ORSSAB had a different kind of meeting in May. Instead of meeting at the DOE Information Center, the board met at Shoney's Restaurant in Oak Ridge and invited Oak Ridge City Manager Mark Watson to talk to the group about the city's perspectives on DOE EM activities.

Most of Watson's comments were about the proposed second waste disposal facility in Bear Creek Valley near Y-12 National Security Complex.

He said the city is interested in a number of issues related to the landfill known as the EM Disposal Facility:

- What will be the impact on the community especially nearby residential areas?
- What are the long-term costs?

- What are the long-term benefits, such as employees to monitor the site for decades?
  - What are the cost comparisons of on-site disposal opposed to shipping waste off-site?
- Watson said in looking at community impact the city wants to

make sure it wasn't focusing solely on DOE's needs but the community interest as well. An independent study was done that posed some questions about the geology of the site, the effects on nearby residents, and property values. "How do we address this so it's a win-win for everyone and not a detriment to the community," he said.

Watson said the city council will consider all the options and make comments to DOE on the landfill.

Watson also talked about impacts to the area if DOE pulls support of Clark Center Park and the American Museum of Science and Energy. "There is not a lot of city money available to have the kind of community citizens are accustomed to if DOE no longer operated Clark Center Park or the museum."



*Oak Ridge City Manager Mark Watson talks to ORSSAB members about the city's perspective on DOE EM work on the ORR.*

## Workshop Presented Near-term Priorities for Budgeting

*(Continued from page 2)*

eliminate the amount of curies stored at the lab.

Completion of contact- and remote-handled TRU debris processing will get most of the TRU waste out of Oak Ridge and building the mock test facility will help eliminate all of the TRU waste.

Construction of the Outfall 200 facility will reduce mercury concentrations leaving Y-12 and a new waste disposal facility is needed to handle additional waste as a result of increased cleanup scope for EM since the first waste facility was built.

Prior to the meeting DOE provided DOE's list of projects to ORSSAB and asked each member to rank the projects.

Dave Hemelright, ORSSAB chair, presented the list and how those projects were ranked:

1. Complete demolition of the gaseous diffusion buildings and support facilities at ETTP;

2. Complete the direct disposition of the U-233 material and initiate processing campaign;
3. Complete design of the new EM Disposal Facility;
4. Begin construction of the Outfall 200 Mercury Treatment Facility at Y-12;
5. Complete contact- and remote-handled TRU debris processing;
6. Construct and operate the TRU sludge mock test facility.

Some board members offered suggestions they thought should be considered high priority beyond the list DOE provided, including addressing contaminated groundwater and off-site contaminant migration and sufficient funding to do the work, and cleaning up and demolishing other EM facilities that are viewed as deteriorating and a continuing source contamination.

Representatives of the City of Oak Ridge, Anderson and Roane Counties, and the Oak Ridge Reservation Communities Alliance Partnership also made presentations and had suggestions for DOE to consider for funding.

In several instances those entities agreed with DOE's list of priorities, but other projects were submitted, such as demolishing centrifuge buildings at ETTP to allow construction of a general aviation airport, turn over utility and roadway infrastructure to appropriate public entities, clean up remaining contaminated areas of Poplar Creek, and accelerate historic preservation activities at ETTP.

Susan Cange, DOE Oak Ridge EM Manager, said her division will consider all the suggestions in formulating a budget request for FY 2017 funding.

## Reservation Update

### Agreement Reached on Mercury Treatment Plant

DOE, EPA, and TDEC have reached an agreement on the planned Outfall 200 Mercury Treatment Facility at Y-12. “Resolution of this dispute with EPA and TDEC settles matters related to the size and performance expectations for the facility, and allows us to proceed with design activities for the facility,” said Mike Koentop, DOE Oak Ridge EM Executive Officer.

The purpose of the plant is to remove mercury in water leaving Outfall 200, the headwaters of Upper East Fork Poplar Creek at Y-12. Mercury has been making its way into the creek for decades as a result of spillage in the late 1950s and ‘60s.

The agreement states that the treatment facility will have the capacity to treat 3,000 gallons of water per minute and have a stormwater storage capacity of 2 million gallons.

The dispute was related to DOE’s request for an interim waiver from the Tennessee Ambient Water Quality Criteria for mercury during construction and operation of the treatment facility.

The mercury standard of 51 parts per trillion does not change, but if after two years of operation of the facility the creek still fails to meet the standard then the three parties will work on other actions that could include modifications to the treatment facility.

### Work Begins on Leaking Reactor Pool

Work has begun at the Oak Ridge Research Reactor where a leak was detected several months ago.

UCOR, DOE’s prime cleanup contractor in Oak Ridge, has subcontracted AREVA to remove components in the pool, drain the pool, and then cap it until it can be demolished sometime in the 2030s.

Some of the components left in the pool have high activity levels. They will be removed and disposed at a site in Texas. Less active components will remain under the cap.

The estimated cost to do the work is about \$8 million.

### K-31 Is History

The last remaining portion of the K-31 Gaseous Diffusion Building at ETTP was knocked down during a



*Demolition of K-31 nears completion in June.*

June 26 celebration of the successful demolition of the structure.

K-31 was the fourth of the five gaseous diffusion buildings at the site to be razed.

Only K-27 remains and its preparation for demolition is nearing completion. It is expected to be demolished in 2016.

### DOE Awards Contract for TWPC Sludge Buildout Design

DOE Oak Ridge EM has awarded a \$1.5 million architect-engineering contract to CH2M Hill for the Sludge

Processing Facility Buildouts Project at the Transuranic Waste Processing Center (TWPC).

The contract awarded to CH2M Hill, with partners Merrick and Navarro Inc., covers the final design of a mock test facility to test large-scale technology to treat and process transuranic sludge. The design is to be completed by the end of this year.

The waste currently being processed at the TWPC comprises contact-handled waste, which has lower radioactivity and can be manually sorted and repackaged by workers, and remote-handled waste, which has higher radioactivity and is processed in hot cells with manipulators.


EM’s Koentop said that 97 percent of the contact-handled waste and more than of 80 percent of the remote-handled waste has been treated. Processing of those waste streams is expected to be completed around 2018.

Shipments of the material for disposition are currently on hold until the Waste Isolation Pilot Plant in New Mexico is operative again. The plant was shut down last year as a result of a fire and a later unrelated rupture of a waste container and subsequent release of radioactivity.

### Scarboro Residents Petition Against Building Waste Disposal Facility

More than 250 residents of the Scarboro Community adjacent to Y-12 have signed a petition asking that the proposed EM Disposal Facility not be built at the suggested location.

DOE proposes to build the facility just to the east of the current EM Waste Management Facility in Bear Creek Valley. Scarboro is just over Pine Ridge from the proposed site.

A representative group of Scarboro residents presented the petition and made their case at a recent Oak Ridge City Council meeting. 

## ORSSAB Secretary Says the Board Is An Important Link Between the Public and DOE Oak Ridge EM

Heritage has something to do with Lisa Hagy's interest in ORSSAB. "I'm part American Indian, and Indian culture teaches every living thing has a purpose. One of the things that got me interested in ORSSAB was returning as much as we can to the condition we found it; to respect Mother Earth and all things within it."

Lisa is a native of South Carolina growing up in Beaufort. The family moved to the Florida Keys and as a young adult she went to work for a hospital in marketing and public relations. "I did that seven years, working with the medical staff and the board of trustees," she said. "It was interesting and never a dull moment."

One of the hospital trustees was a bank president, and he offered her a job as the bank's marketing director. She later took a job at another bank doing merchant services.

But Florida's stormy weather blew Lisa and her husband inland to Tennessee. The breaking point was Hurricane Wilma in 2005. "We had 2 feet of salt water in our home. We had just moved in a couple months earlier and it had new cabinets and furniture. It was a mess. After 16 years of numerous evacuations we'd had enough."

Husband Dan had been hired by Allstate Insurance to open an office in the Knoxville area. Lisa also got an insurance license and worked a couple of years for Mutual of Omaha. But she got back into banking with First Tennessee Bank in insurance sales and later as a financial services rep for five years.

"Since January I've been in customer solutions," she said. "We are the only bank in the area that has a department


like ours. We deal with customer complaints, everything from credit bureau disputes to checks sticking together. We are the only bank that has a department dedicated to logging customer complaints and tracking them for root cause analysis and processing whatever resources are necessary to identify the problem."

Still Lisa wanted to do more for the community. She had been active in Florida in the Chamber of Commerce, the Florida Business and Professional Women's Club, and

the Domestic Abuse Shelter. "But I wanted to get involved in something I didn't have any experience in; I wanted to learn something new." She saw an ad in the newspaper about ORSSAB recruiting members and made an application. "It was a good choice."

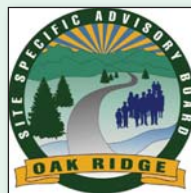
Lisa says the board is an important link between the community and DOE. "I would like to see more participation on the public level, but one thing I've learned about volunteering is that you can't make people have an interest. The best we can do is publicize our meetings as much as we can, make the meetings as open as we can, and encourage participation."

Lisa came on the board in January 2012 and is completing her second term as board secretary.

She and Dan and daughter Alyssa like hiking and spending time on the water boating and canoeing. "I haven't tried paddleboarding. I'd like to do that." 



*Board secretary Lisa Hagy's heritage played a role in her interest in becoming a part of ORSSAB.*



### ORSSAB Marks 20 Years of Providing Independent Advice and Recommendations to DOE EM

**The Oak Ridge Site Specific Advisory Board was established in 1995 to provide independent advice and recommendations to the Department of Energy's Oak Ridge Office of Environmental Management on its cleanup of the Oak Ridge Reservation of radioactive and hazardous wastes.**

**Since its establishment ORSSAB has provided more than 225 recommendations to DOE. The board has also been active in monitoring stewardship activities where waste has been remediated and protected in place and has provided input regarding historic preservation of events that led to the creation of the Oak Ridge Reservation.**

**Be watching for additional information regarding recognition of ORSSAB's 20 years of service to the community.**

## EM SSAB Representatives Gather in Augusta for Semiannual Meeting

The semiannual EM SSAB chairs' meetings provide representatives from the eight local SSABs across the DOE complex an opportunity to get updates from DOE-Headquarters on cleanup-related topics, share common issues of concern, and develop joint recommendations about those concerns.

The meetings rotate among the eight SSAB sites, and this spring the hosting duties were performed by the Savannah River Site board, which held the meeting on April 21-23 in Augusta, Ga.

Oak Ridge attendees included ORSSAB Chair Dave Hemelright and member Alfreda Cook, who represented ORSSAB during meeting discussions; member Bob Hatcher; and Melyssa Noe, ORSSAB's Federal Coordinator.

Copies of all meeting presentations are available on the EM SSAB chairs' website maintained by DOE Headquarters at <http://energy.gov/em/downloads/chairs-meeting-april-2015>.

The first day of the meeting featured:

- A presentation by Acting Assistant Secretary for EM Mark Whitney;
- A round robin presentation of the eight SSABs' topics, activities, or accomplishments;
- An update on the EM budget by Connie Flohr, Acting Deputy Assistant Secretary for Program Planning and Budget;
- A preliminary discussion of a chairs' recommendation on the budget; and
- A roundtable discussion on DOE communication strategies, led by Candice Trummell, Director of the DOE Office of External Affairs.

Whitney spoke on a variety of topics, including EM progress to date, the continuing investigation and recovery of the Waste Isolation Pilot Plant (WIPP),

and recent personnel changes at EM Headquarters. He talked at length about what was going on at each of the EM sites represented at the meeting, and given that he never seemed to refer to notes during his presentation or the Q&A afterward, his knowledge about the details of the many projects at the sites was very impressive.



*ORSSAB members Dave Hemelright, chair (left), Bob Hatcher and Alfreda Cook attended the Spring EM SSAB Chairs' meeting in Augusta, Ga.*

Flohr went over EM's FY 2016 budget, which reflected current priorities:

- Continue recovery of waste disposal operations at WIPP;
- Continue construction of the Low Activity Lab, and Balance of Facilities at Waste Treatment and Immobilization Facility, and design of the Low Activity Waste Pretreatment System at Hanford;
- Continue Defense Waste Processing Facility liquid waste processing and support construction and commissioning of Salt Waste Processing Facility at Savannah River Site;
- Complete major facility cleanout and demolition projects;

- Address key infrastructure needs across the complex.

Of particular significance to Oak Ridge on day two of the meeting was Frank Marcinowski's overview of recent events at WIPP, focusing on the continuing investigation and recovery of the facility. The bottlenecks occurring across the complex are being managed, but the longer it takes to get WIPP back open, the greater the problems will be.


Several proposed recommendations were debated during the meeting:

"Best Practices for Informed Budget Advice/Recommendations"—The group decided to add a statement of purpose and turn it into a white paper, rather than a recommendation. It will be presented again at the fall chairs' meeting.

"Supplemental Environmental Projects"—The recommendation was tabled because some of the participants thought it was too specific to just New Mexico. Most thought it a worthwhile topic, though, that has applicability across

the complex, so discussion of the issue will be added to the fall chairs' meeting agenda.

"Additional Surface Storage at WIPP" and "Identification and Preparation of Interim Disposition Site(s)"—The decision was made to combine these into one recommendation since they addressed essentially the same issue. The resulting product, "Draft Recommendation on Additional Surface Storage at WIPP," will now go before the eight boards for approval.

The next chairs' meeting will be hosted by the Northern New Mexico board on September 1-3. 

## ORSSAB Seats Two New High School Student Representatives for FY 2015-16

Alana Joldersma of Oak Ridge High School and Sophia Cui of Hardin Valley Academy are the two new student representatives for ORSSAB through April 2016.




*Alana Joldersma, left, Oak Ridge High School, and Sophia Cui, Hardin Valley Academy, are the new student representatives for ORSSAB.*

Alana was the co-project manager for Oak Ridge High School's robotics team. She is interested in film production and has worked on a documentary about the conflict in Israel and Palestine.

After high school she plans to study film production with perhaps a minor in environmental science.

Sophia has been a member of Hardin Valley's tennis team for three years, but she is planning a career in medicine.

She is the president of the school's American Red Cross Club and is vice president of the Health Occupations Students of America. 

## Snapshot in History

May - August 1944

*It became clear to Gen. Groves that additional Y-12 racetracks would be required to process the only slightly enriched uranium being produced by K-25. All effort was focused on a completely new type of 30-beam source calutron and the construction of the S-50 thermal diffusion plant near K-25.*

*Two plutonium bomb models were developed and tested: Thin Man, named for President Roosevelt, utilized the gun design; Fat Man, named for Winston Churchill, was an implosion device. However, plutonium contamination problems led to Thin Man being abandoned, eliminating an anticipated shortcut to a nuclear weapon.*


*Gen. Marshall was informed that small implosion weapons, either uranium or plutonium, would be available by June 1945 and a uranium gun bomb would almost certainly be ready by Aug. 1, 1945.*

## ORSSAB/DOE Recognize Outgoing Members

Jimmy Bell and Fay Martin were recognized for their service to ORSSAB at the June meeting. Both were appointed to the board in 2011. They served two terms, but chose not pursue a third.

"I'm saddened with the departure of these two members from the SSAB," said Sue Cange, ORSSAB's Deputy Designated Federal Officer. "I know the rest of the board will join me in thanking you for your contributions to the board. You have absolutely made a significant contribution. On behalf of DOE I thank you for your four years of service."

"I, too, thank you for your service," said Chair Dave Hemelright. "You will be greatly missed. I have learned a great deal from both of you."

Three new members are due to be seated on the board in July. 



*Board members Jimmy Bell and Fay Martin, right, were presented plaques for their four years of service at the June meeting by Sue Cange, ORSSAB's Deputy Designated Federal Officer.*

## ORSSAB Approves Two Recommendations at June Meeting

At its June meeting ORSSAB approved two recommendation - one at the local level and one generated by the EM SSAB chairs.

Each year, DOE Oak Ridge EM asks ORSSAB for input on the EM budget request for the fiscal year two years out, in this case FY 2017.

In March DOE briefed ORSSAB on the current budget picture and described near-term and long-term priorities. Those same priorities were provided at the April public workshop on the budget request (see page 2).

ORSSAB members were asked to prioritize those projects, which DOE would use in its budget request to headquarters.

Additional suggestions were provided by board members for

consideration: continued investigation of groundwater and possible off-site migration of contamination, consideration of more deteriorated facilities added to the EM scope, such as Alpha 5 at Y-12, and focusing on completing current projects before beginning new ones.

The ranked priorities and additional suggestions were included in a recommendation for DOE to consider in its budget development.


The board also approved a recommendation drafted by the EM SSAB chairs at the Spring 2015 meeting (see page 6).

The recommendation is related to the Waste Isolation Pilot Plant in New Mexico, which was shut

down temporarily after a fire and an unrelated contamination release.

The chairs recommend creating a timetable as to when the plant will be reopened, identifying alternatives for waste storage at generating sites until the plant is reopened, and implementing the best of those alternatives to deal with the current closure and for use in the future if a similar closure occurs.

Each of the eight SSABs around the country will review the recommendation and vote on it. If a majority of the boards approve it it will be sent to DOE EM Headquarters.

The text of the ORSSAB budget recommendation is available at: <http://energy.gov/orem/listings/orssab-recommendations-responses>. 



### Oak Ridge Site Specific Advisory Board

P.O. Box 2001, EM-90  
Oak Ridge, Tennessee 37831

#### UPCOMING MEETINGS

##### ORSSAB Board meetings

July — no meeting.

August Annual Meeting — August 22, 8 a.m., Tremont Lodge, Townsend, Tenn.

Sept. 9, 6 p.m., DOE Information Center, 1 Science.gov Way, Oak Ridge.

##### Committee Meetings

EM & Stewardship — July 15, 6 p.m., DOE Information Center

#### ABBREVIATIONS

DOE — Department of Energy

EM — Environmental Management

EPA — Environmental Protection Agency

ETTP — East Tennessee Technology Park

ORR — Oak Ridge Reservation

ORSSAB — Oak Ridge Site Specific Advisory Board

TDEC — Tennessee Dept. of Environment and Conservation

Y-12 — Y-12 National Security Complex

