



*Many Voices Working for the Community*

# Oak Ridge Site Specific Advisory Board

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## *Monthly Meeting of the Oak Ridge Site Specific Advisory Board*

### **Approved January 11, 2017, Meeting Minutes**

The Oak Ridge Site Specific Advisory Board (ORSSAB) held its monthly meeting on Wednesday, January 11, 2017, at the DOE Information Center, 1 Science.gov Way, Oak Ridge, Tennessee, beginning at 6 p.m. A video of the meeting was made and may be viewed by contacting ORSSAB support offices at (865) 241-4583 or (865) 241-4584. The presentation portion of the video is available on the board's YouTube site at [www.youtube.com/user/ORSSAB/videos](http://www.youtube.com/user/ORSSAB/videos).

#### **Members Present**

Leon Baker  
Kathryn Bales  
Christopher Beatty  
Martha Deaderick  
David Hemelright  
Eddie Holden  
Greg Paulus  
Belinda Price  
Fred Swindler  
Ed Trujillo

Rudy Weigel  
Phil Yager  
Dennis Wilson

#### **Members Absent**

Richard Burroughs<sup>1</sup>  
Mike Ford<sup>1</sup>  
Rosario Gonzalez  
Howard Holmes  
Elizabeth Ross  
Mary Smalling<sup>1</sup>  
Deni Sobek  
Venita Thomas<sup>1</sup>

<sup>1</sup>Second consecutive absence

#### **Liaisons, Deputy Designated Federal Officer, and Alternates Present**

Dave Adler, ORSSAB Alternate Deputy Designated Federal Officer (DDFO), Department of Energy, Oak Ridge Office of Environmental Management (DOE-OREM)  
Kristof Czartoryski, Tennessee Department of Environment and Conservation (TDEC)  
Jay Mullis, Deputy Manager for OREM and ORSSAB DDFO  
Melyssa Noe, ORSSAB Alternate DDFO, DOE-OREM

#### **Others Present**

Kendall Brady  
Spencer Gross, ORSSAB Support Office  
Dick Ketelle, UCOR  
Lara Manning, Student Representative  
Dennis Mayton, DOE  
Pete Osborne, ORSSAB Support Office  
Emily Strasser

24 members of the public were present.

**Liaison Comments**

**Mr. Mullis** – Mr. Mullis said the presentation for the evening on groundwater will inform the board about what has been done and is being done to protect onsite and offsite groundwater. He said much money has been spent on those efforts. He hoped the presentation will help the board and the public provide feedback to DOE on its groundwater work.

**Mr. Czartoryski** – Mr. Czartoryski reminded the board that TDEC does sampling and evaluation of groundwater. He said he would answer any questions about TDEC's work after the presentation.

**Public Comment**

Kendall Brady – Mr. Brady said he is one of several residents who live on Tuskegee Drive in Oak Ridge near the Y-12 National Security Complex who get their water from deep water wells. Mr. Adler and Brian Henry (DOE) had met with the residents, which he described as a 'comforting' meeting where they explained what DOE is doing and plans to do regarding monitoring those wells. He also thanked TDEC for sampling their wells and preliminary reports indicate the wells are safe to use.

Emily Strasser – Ms. Strasser is working on a book about her grandfather's career at Y-12. He was involved in the lithium separation process that resulted in large releases of mercury into the environment. She asked that anyone who had information about that time to contact her to provide additional information for her book ([emstrass@gmail.com](mailto:emstrass@gmail.com), 404-513-2975).

**Presentation**

Mr. Mayton appeared before the board in February 2016 and provided an update on groundwater strategy for the Oak Ridge Reservation (ORR), an offsite groundwater assessment, and development of a regional groundwater flow model. He said he had more information to provide at this meeting. The main points of his presentation are in Attachment 1.

Groundwater investigations in and around the ORR have been underway since the 1980s. The main sources of groundwater contamination have come from waste burial grounds and industrial spills (Attachment 1, page 2). There are almost 2,000 monitoring wells on and near the reservation. Each year almost 2,500 water samples are taken and almost 1,500 groundwater elevation readings are taken and reported in the Remediation Effectiveness Report.

Page 3 of Attachment 1 is a map that shows contaminated groundwater plumes on the ORR and the nine collection and treatment systems. He briefly described some of the plumes and their causes at East Tennessee Technology Park (ETTP), Oak Ridge National Lab (ORNL), and Y-12. The cost to install the treatment systems was about \$33 million, not including the investigational costs prior to installation. Annual surveillance and maintenance is about \$3.5 million.

Mr. Mayton reviewed the history of the groundwater strategy (Attachment 1, page 4), which began in 2013 with the convening of several workshops with DOE, EPA and TDEC representatives to develop a strategy to deal with legacy groundwater problems. The teams discussed all the plumes and the issues associated with them and developed a hazard ranking system. The ranking system evaluated the size of the plumes, the concentration of contaminants, if a plume was migrating, and especially if it had the potential of migrating offsite. The projects were divided into investigations to identify data gaps and engineered restorations to remediate the groundwater. The list had about 36 projects to deal with 35 groundwater plumes and was included in a groundwater strategy document that was issued in 2014.

During development of the groundwater strategy one of the projects that was to begin immediately was to create a regional groundwater flow model. The draft report for the model has been completed and is being reviewed by a technical advisory group. The model will help determine how groundwater behaves in certain areas.

Another project recommended to begin immediately was developing an offsite groundwater assessment (Attachment 1, page 5). The work, which began in 2014, tests for more than 100 contaminants in 49 locations. The map on page 5 shows the locations where sampling was done.

When Mr. Mayton addressed the board in February 2016 three rounds of sampling had been done, but results were available only for the first two rounds. The first 43 sampling events were done in the second quarter of 2015. The results of that sampling are noted on page 6 of Attachment 1. Mr. Mayton noted that the exceedences of EPA Drinking Water Standards could be naturally occurring, but perhaps also because of high suspended solids in the samples. Later sampling of just water and not suspended solids did not show any exceedences.

The second sampling was done in August of 2015 at 48 locations, and the third sampling was done in February of 2016. No exceedences of drinking water standards were found in those two sampling events. There were low concentration detections of contaminants that were sporadic and discontinuous.

In November 2016 DOE submitted the Offsite Remedial Evaluation Report (Attachment 1, page 7) to EPA and TDEC. After comments are received DOE, EPA, and TDEC will discuss the comments and revise the document.

Mr. Mayton noted that DOE and TDEC have been doing some co-sampling offsite at locations as far away as Maynardville and Rocky Top. The results of that sampling are not yet available.

DOE, EPA, and TDEC will make the first large-scale groundwater decisions at ETTP (Attachment 1, page 8). The map on page 8 notes the groundwater plumes at the site. A remedial investigation/feasibility study was done in the mid-2000s that looked at alternatives to treat groundwater at ETTP. One of the alternatives was in-situ thermal treatment that potentially could be used in the presence of dense non-aqueous phase liquids (DNAPL). DNAPL sinks in water and follows fractures in bedrock making it difficult to detect in sampling. In 2008 DOE began characterization work to detect DNAPL at ETTP. Five plumes were suspected as having DNAPL. A second phase of characterization is set to begin in March 2017. If characterization indicates the presence of DNAPL a pilot project of in-situ thermal treatment could begin in two to three years

To reach a final decision on groundwater at ETTP the remedial investigation/feasibility study must be updated, a proposed plan will be prepared, and a final site wide record of decision (ROD) submitted to address 11 plumes. The ROD is scheduled to be in place in 2023.

Mr. Mayton discussed some potential future groundwater projects for the ORR (Attachment 1, page 10). One is the Melton Valley/Bethel Valley Exit Pathway Investigation to fill data gaps on behavior of a hydrofracture site, waste burial grounds, and a site known as Corehole 8 in the central portion of ORNL. Another potential project is the 7000 Area Trichloroethylene Plume Remediation Project also at ORNL to restore groundwater.

The Exit Pathway Investigation would look at five plumes identified in the Groundwater Strategy to determine if the plumes are migrating offsite.

The 7000 Area project could build on a pilot study done earlier using bioremediation that has shown promising results. However, additional characterization of the area would be done to determine if other contaminants such as DNAPL are present that would render bioremediation ineffective.

Mr. Adler suggested the board and the EM & Stewardship Committee discuss how DOE should best use its resources for groundwater work.

After the presentation a number of questions were asked. Following are abridged questions and answers.

Mr. Hemelright – You mentioned some offsite work in Maynardville and Rocky Top. Could you elaborate? Mr. Mayton – Those are locations where we did some co-sampling with TDEC. These are background locations where we wouldn't expect to see groundwater flow coming from the area so they will provide some good representations for comparisons of results we got from the offsite groundwater assessment. Since we are sampling residential wells we don't know the depths so it is a bit difficult to compare because some of the wells may be at 200 feet and some may be 400 feet. If we start to see things at one location and not another it may be a good indication that some of the hits we saw during the offsite groundwater assessment were not related to flow off the reservation.

Mr. Wilson – Back on page 5 you show a shaded area near the Tennessee River. Could you explain more about that and do you plan to do any sampling there? Mr. Kettle – That is an area where we had a couple of residential wells that were included in the offsite groundwater assessment project. We were looking for voluntary participation in the sampling campaign and some people that lived there volunteered.

Mr. Trujillo – Was any sampling done on the east side of the reservation (page 5 map)? Mr. Mayton – No, the study area was determined to be in area indicated. Mr. Trujillo – Was it because no progress of the plume that way? Mr. Mayton – (referencing map on page 10) We have some wells that we sample on a regular basis in the east end of the reservation as part of the collection system for the east end volatile organic compounds (VOCs). Mr. Adler – Most of the burial grounds are on the west side of the reservation and the groundwater generally flows west from there. The focus was on whether that westward flow presented any public health problems off the reservation. The plume that heads east from the Y-12 Plant was one of the earliest projects we focused on and resulted in the installation of some containment wells that we set up to try to make the plume behave. We thought while we couldn't restore it we could keep it from migrating offsite. Some of the wells Mr. Mayton mentioned before are well to the east and north. Those are wells that we hope are so far away from the site and so far up gradient that they couldn't have possibly been impacted by operations on the ORR. To the west we've been seeing inconsistent, sporadic and very low concentration detections of contamination. We've wrestled with whether that is true contamination and a consequence of migration from the reservation or if there is some other phenomena that might explain it. We are at low measurement levels that it is possible that some of these levels could be explained by things like laboratory error or atmospheric fallout. We trying to sort that out. If we see similar patterns 10-12 miles up gradient from the reservation that lends some credence to the notion that indications to the west can be explained by something other than ORR activities.

Mr. Trujillo – Are there VOCs in that area? Mr. Adler – We have found them in many locations. The VOCs we're finding are very common solvents. If you sample 100 wells in a populated area you'll find trace levels of VOCs. But DNAPLs occur when you dispose of large volumes of dense solvents in one location that flow into the ground and into groundwater. But we have not had DNAPL concentrations in offsite monitoring wells.

Mr. Trujillo – When we do these future projects related to groundwater, it will follow the groundwater strategy, correct? Mr. Mayton – The strategy has a ranking system but some of the rankings pertain to investigation-type projects and some pertain to remediation projects. The top priority is to deal with

anything that impacts offsite of the reservation. Mr. Adler – In addition to how to prioritize groundwater work you have to think about groundwater within the larger context of the whole cleanup program. We are in the process of building a mercury treatment plant for surface water that we know that carries contaminants and flows off the reservation. We are dealing with contaminated buildings above ground that are in the midst of our population. When we decide what to do with money we get from Congress we're not just thinking about how the highest priority groundwater project but how much we allocate to groundwater versus building demolition versus uranium materials and so on.

Mr. Weigel – Has the pump and treat plant at the east end of Y-12 reduced the amount of VOCs migrating offsite? Mr. Mayton – Yes, we have seen reductions of concentrations offsite. Mr. Weigel – There was another project at Solid Waste Storage Area 4 at ORNL to reduce groundwater and storm water infiltration in the storage area. Has that project reduced contamination? Mr. Mayton – Yes, that project was to draw the water down and we've seen good reduction in groundwater levels under the burial grounds in that area. Mr. Adler – That project is unique. Rather than trying to pull up contaminated groundwater and treat it, we're trying to get the water out of the waste. In that project we're trying to depress the water table and minimize the infiltration of water through the waste. It's been a very successful project. The isolation of waste from the water has resulted in significant reductions of strontium and cesium in the water in down gradient areas.

Mr. Czartoryski – I compliment DOE in its offsite groundwater monitoring efforts. Did you say this project is complete? Mr. Mayton – The report is complete; that is not to say there won't be some follow-up work based on evaluation in the report. The work plan identified that we'd do three sampling events and those events are complete. When we submitted the report one of the recommendations was that we'd sample a smaller number of wells for the next three years to have a comparison to these results. Mr. Czartoryski – I'd like to clarify the statement about the groundwater flow model. My understanding is the model is still undergoing development. Is the development dealing with improvements in predictions, data, etc? So far my understanding is this is a static model and is not ready yet to predict any flow and concentrations downstream. Mr. Mayton – The draft report is being reviewed by the technical advisory group, and they will determine if any changes need to be made. But it will need to be developed more as we get into individual areas.

Mr. Hatcher – Regarding thermal remediation do we know how efficient this process is in highly fractured rock? Mr. Mayton – Work has been done in a few places in Kentucky and Tennessee. There haven't been a lot of results but there are places where it has been effective. It depends a lot on geology. That goes back to why we want to do a lot of tests. One thing that can make it difficult to do thermal treatment is if you have an influx of water, which makes it almost impossible to heat up. There's a chance it won't work. That's why we want to do a study first.

Ms. Strasser – Will the results be available to the public on the three sampling events? Mr. Mayton – The report will be available at the DOE Information Center.

Mr. Brady – We on Tuskegee Drive occasionally see people sampling Mill Branch. Is that part of what you are doing? Mr. Kettle – Mill Branch is being sampled as part of the Lower East Fork Mercury Investigations by the ORNL Environmental Sciences Division. Mr. Czartoryski – TDEC also has a presence in sampling those streams.

Ms. Price advised board members to review the Groundwater Strategy Document prior to the EM & Stewardship Committee meeting on January 25 when this topic will be discussed in more detail.

## **Committee Reports**

### **EM & Stewardship**

Mr. Trujillo reported that the committee discussed excess facilities at the November meeting. He said the related site tour was excellent and complimented DOE and UCOR for doing a good job with tours. He said the issue managers for the topic will work on ideas about a possible recommendation on excess facilities.

### **Executive**

Mr. Wilson said the committee reviewed the agenda for this meeting and received a report from Mr. Trujillo on the excess facilities topic.

Mr. Wilson said he learned how correspondence is received and archived and how correspondence on various issues is available for board members to review.

The Spring 2017 EM SSAB Chairs' meeting is scheduled for May 9-11 in Paducah, Ky. Ms. Price reminded members that if they have any topics or issues they would like for the EM SSAB to consider as a possible recommendation to DOE to let her know.

## **Open Discussion**

Mr. Weigel suggested a presentation to the board about the successes that DOE has had regarding environmental cleanup. Ms. Price said that was a previous topic of discussion at an EM SSAB Chairs' meeting about how to communicate success stories not only to the EM SSAB, but to the general public. She said that may be a topic of discussion again at the May meeting. Mr. Paulus noted that Mr. Adler had done a review of all the work being done at EM SSAB sites around the country. He suggested a presentation on successes at those sites. Mr. Trujillo noted that board members receive the 'Tuesday Newsday' that reports on activities around the DOE complex. He thought perhaps it could be expanded to include more news about Oak Ridge.

Ms. Price suggested an update about what's happening at DOE Headquarters. Mr. Mullis said it would be a few weeks before more is known about assignments and confirmations.

Mr. Hemelright asked about the status of the Waste Isolation Pilot Plant in New Mexico that has been closed since February 2014. OREM had been sending some transuranic (TRU) waste to the facility before it was closed as a result of a couple of incidents. Mr. Mullis said the first new waste since closure has been placed. A TRU Corporate Board meeting will be held soon that will discuss the schedule for resuming shipments. There is some waste that needs to be placed first before Oak Ridge can resume shipments.

## **Announcements and Other Board Business**

ORSSAB's next meeting will be Wednesday, February 8, 2017, at 6 p.m. at the DOE Information Center.

### **Alternate DDFO Report**

Ms. Noe said OREM has responded to the board's Recommendation 233: Recommendations on the Proposed Environmental Management Disposal Facility. The response was provided to the board earlier and is on the EM & Stewardship Committee agenda for January 25 to review for acceptance.

No other recommendations are outstanding.

A recruitment campaign is underway for new members. Ms. Noe asked members to think about people they know who may be interested in becoming a member and have them contact her or staff for an

application. Applications are also online at <https://www.energy.gov/oreem/downloads/orssab-membership-application-form>.

Ms. Price asked about a tour related to this evening's groundwater presentation. Ms. Noe said Mr. Mayton and Mr. Adler will discuss possible dates and sites and advise members. The tour will be scheduled prior to the EM & Stewardship Committee meeting on January 25.

**Motions**

**1/11/17.1**

Mr. Hemelright moved to approve the minutes of the November 9, 2016, board meeting. Mr. Paulus seconded and the motion passed **unanimously**.

**Action Items**

*Open Action Items*

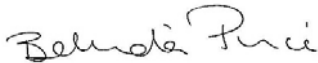
None.

The meeting adjourned at 7:23 p.m.

Attachments (1) to these minutes are available upon request from the ORSSAB support office.

I certify that these minutes are an accurate account of the January 11, 2017, meeting of the Oak Ridge Site Specific Advisory Board.

Dave Hemelright, Secretary



Belinda Price, Chair  
Oak Ridge Site Specific Advisory Board  
BP/rsg

February 9, 2017