



Many Voices Working for the Community

Oak Ridge Site Specific Advisory Board

Approved September 9, 2015 Meeting Minutes

The Oak Ridge Site Specific Advisory Board (ORSSAB) held its monthly meeting on Wednesday, September 9, 2015, at the DOE Information Center, 1 Science.gov Way, Oak Ridge, Tenn., beginning at 6 p.m. A video of the meeting was made and may be viewed by contacting the ORSSAB support offices at (865) 241-4583 or 241-4584. The presentation portion of the video is available on the board's YouTube site at www.youtube.com/user/ORSSAB/videos.

Members Present

Leon Baker

Alfreda Cook

Martha Deaderick

Mike Ford

Bob Hatcher

David Hemelright, Chair

Jan Lyons, Vice Chair

Donald Mei

Greg Paulus

Belinda Price

Scott Stout

Ed Trujillo

Dennis Wilson

Members Absent

Richard Burroughs¹

Lisa Hagy, Secretary

Howard Holmes

Jennifer Kasten¹

Mary Smalling

Coralie Staley¹

Wangfang Zhou¹

¹Second consecutive absence.

Liaisons, Deputy Designated Federal Officer, and Federal Coordinator Present

Kristof Czartoryski, Tennessee Department of Environment and Conservation (TDEC)

Susan Cange, Manager for Oak Ridge Environmental Management (EM) and ORSSAB Deputy Designated Federal Officer

Melyssa Noe, ORSSAB Federal Coordinator, Department of Energy – Oak Ridge Office (DOE-ORO)

Connie Jones, Environmental Protection Agency (EPA) Region 4.

Others Present

Claude Buttram, CH2M Hill

Sophia Cui, Student Representative

Jason Darby, DOE

Alana Joldersma, Student Representative

Laura Wilkerson, DOE

Pete Osborne, ORSSAB Support Office

Nineteen members of the public were present.

Liaison Comments

Ms. Cange – The topic for the October 14 meeting will be an update of progress made at East Tennessee Technology Park (ETTP). Ms. Cange said DOE plans to issue a proposed plan for soil remediation in Zone 1 at ETTP and the presentation would be made during the public comment period on the proposed plan. ORSSAB will have an opportunity to issue a recommendation on the proposed plan. A tour will be arranged so members can see the area. Mr. Paulus asked when the tour would be. Ms. Cange and Ms. Noe said that at the annual meeting it was decided that when a presentation on a topic is given at board meetings a tour, when possible, would be given of the site in question after the board meeting. The EM & Stewardship Committee meetings will be moved to the last Wednesday of the month. So a tour of Zone 1 will be arranged sometime between the board meeting on October 14 and the committee meeting on October 28.

Transite paneling is being removed from the exterior of the K-27 Building at ETTP. The building should be demolition ready in January 2016. K-27 is the last of the five gaseous diffusion buildings at ETTP to be demolished.

Ms. Jones – Ms. Jones said a DOE technical project team is looking at ways to prevent a similar release of contamination from ETTP like the one that occurred a few months ago when some technetium-99 escaped from the K-25 demolition project and made its way to a city of Oak Ridge sewage treatment plant. The project team is evaluating the installation of wells in groundwater plumes to capture contamination releases.

EPA and DOE are working on some minor issues in the proposed plan for the new waste disposal facility, the EM Disposal Facility. When those issues are resolved the proposed plan will be issued for public comment.

Mr. Czartoryski – no comments.

Public Comment

None.

Presentation

Mr. Darby's presentation was on the Proposed Plan for the Outfall 200 Mercury Treatment Facility at Y-12 National Security Complex. The main points of his presentation are in Attachment 1.

In the 1950s and early 1960s large quantities of mercury were used at Y-12 for nuclear weapons research and development. About 24 million pounds of mercury were brought to Y-12, but about 2 million pounds of that was spilled, lost, or otherwise unaccounted for. It's estimated that about 700,000 pounds was lost to the environment. About 428,000 pounds are in or under process buildings and surrounding soils at Y-12. Almost 240,000 pounds was released into Upper East Fork Poplar Creek (UEFPC), which daylights at Outfall 200 inside the plant boundaries.

The purpose of the Mercury Treatment Facility is to capture mercury leaving the storm sewer system at Y-12 and getting into UEFPC, which leaves Y-12 at Station 17 near Scarboro Road, becoming East Fork Poplar Creek that runs through the city of Oak Ridge and eventually empties into the Clinch River near ETTP.

Mr. Darby said the development of the proposed plan with a preferred alternative was a collaborative effort involving much discussion and negotiation among DOE, EPA, and TDEC. The proposed plan is not final. It was released for public comment in mid-August. The public comment period will end in mid-October. Comments and recommendations coming from the public comment

period will be considered and a final decision for an alternative will be documented in a record of decision (ROD).

Mr. Darby explained that most of the mercury was lost in an area known as the West End Mercury Area (WEMA) around process buildings Alpha 4, Alpha 5, and Beta 4 (Attachment 1, page 3). A storm sewer under the area is the primary pathway for mercury to move to UEFPC. Secondary sources of mercury come from Alpha 2, a couple of pilot plants, the Mercury Dumping Shed, and the 81-10 area.

Mr. Darby showed a chronology of mercury actions taken at Y-12 (Attachment 1, page 5). He showed this to illustrate that the proposed Mercury Treatment Facility is another step in an overall strategy to mitigate mercury contamination at Y-12 and in UEFPC. He explained that the proposed plan for the Mercury Treatment Facility is an amendment to a 2002 ROD.

The chart on page 7 of Attachment 1 shows how previous actions have reduced the amount of mercury in UEFPC since 1988. However, mercury levels in water and fish tissue continue to exceed target levels. The spike in mercury levels between 2010 and 2014 was the result of some cleanup work in WEMA funded by the American Recovery and Reinvestment Act of 2009. While levels of mercury have gone back down, additional actions need to be taken to reach target levels. Mr. Darby said that future demolition of buildings with associated mercury will likely cause releases of mercury. The proposed Mercury Treatment Facility will be a backup system to capture mercury releases during demolition.

The alternatives considered in the proposed plan are listed on page 8 of Attachment 1. The preferred alternative is 2c:

- Treatment capacity of 3,000 gallons per minute and a 2 million gallon storm water storage,
- A mercury flux reduction goal of 84 percent,
- Construction cost of \$146 million.

Mr. Darby explained that a No Action alternative is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as a baseline to compare other alternatives. A no action would not help meet existing regulatory requirements for mercury.

Additional details on Alternative 2c are listed on page 9 of Attachment 1. The two-stage headworks will capture up to 3,000 gallons of water a minute. Anything over 3,000 gallons would go to the storm water storage tank.

Mr. Darby said the 3,000 gallons per minute is in the 95th percentile of UEFPC flow at Outfall 200, meaning that the facility will capture 100 percent of the water 95 percent of the time.

The 2 million gallon storm water storage tank is designed to capture storm water runoff in the first 60 minutes of a storm event and would capture mercury in this 'first flush' runoff.

The operation of the plant is designed to reduce mercury concentrations in UEFPC to a goal of 51 parts per trillion and reduce mercury flux at Outfall 200 by 84 percent.

The modular design of the facility will allow any needed modifications in the future to meet goals.

Operations and maintenance costs are estimated at \$3.1 million per year.

Mr. Darby showed a map of the location of the treatment facility (Attachment 1, page 10). At Outfall 200 will be the headworks where the 3,000 gallons of water per minutes will be captured and grit removed. Any storm water will be captured and stored there. From the headworks the water

will be pipelined to the treatment plant about 3,500 feet farther downstream.

Mr. Darby then explained the steps in the treatment process using a schematic on page 11 of Attachment 1.

Mr. Darby concluded his presentation by enumerating the benefits of the Mercury Treatment Facility:

- Immediate reduction in mercury releases to UEFPC and make progress toward regulatory compliance;
- Control potential increases in mercury releases resulting from future demolition of mercury-use buildings;
- Supplement other response actions underway or planned to achieve goal of eliminating fish advisories and use restrictions in East Fork Poplar Creek.

CH2M Hill is a subcontractor to UCOR, DOE's prime cleanup contractor in Oak Ridge. CH2M Hill is designing the headworks. Mr. Buttram presented a 3D illustration of the headworks showing different views of the facility (Attachment 2) and explained how water would move through the headworks and storm water storage tank.

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

Ms. Price – What is the chemical composition of the solids that are removed; how inert is it; what kind of volume are you expecting; where is it going to go? Mr. Darby – The hazardous constituent is mercury. There is some uranium in the water, but it is in very low concentrations. It will be disposed in a facility where it meets the waste acceptance criteria and is compliant with Resource Conservation Recovery Act land disposal restrictions. There is potential that the filter cake will bind with the mercury enough that it meets landfill restrictions and that it would not fail the toxicity characteristic leaching procedure (TCLP) tests. If it doesn't meet TCLP limits it will be treated so that it does. One waste disposal option is at the Chestnut Ridge landfill just south of Y-12. Another is the Environmental Management Waste Management Facility. If it can't go in either of those we'd be looking at off-site alternatives, possibly out west. As far as volume of material, we don't have a good handle on that at this time. During the first year of operation we'll be getting a handle on waste volumes and specific concentrations. Mr. Buttram – To begin we might produce 1 to 5 roll off bins a week; a roll off bin might have 20 cubic yards of waste. Regarding the form of the mercury, we're forming a mercury precipitant using an organosulfide polymer. The sulfur forms a very stable compound with mercury. In treatability tests it all passed TCLP tests.

Mr. Paulus – How confident are you of the \$146 million cost estimate without a final design? Ms. Wilkerson – Within DOE we have a process called the 413.3 process. It's a process we follow to get critical decisions for every step of a project. The first step is to establish a conceptual design and a cost range and that's where we are at this point. The cost range is \$120-240 million. Mr. Paulus – The presentation was a cost estimate of \$146 million, with a \$3.1 million operating cost. Is that a target number or maximum number or is that what you're hoping for? Ms. Wilkerson – That's a point estimate based on CERCLA cost estimating of related practices. Right now the range is about \$126 million, but there are risks because we are in an early stage of design. We have to account for those risks and place contingencies on them. When we get to final design we'll have a baseline with a point estimate that includes the contingencies, and then we will know more what the baseline for the project will be in terms of schedule and costs.

Mr. Hatcher – It's not clear what the state of the mercury is that comes in and is ultimately separated. From the density of mercury it appears much of it comes out as solid. Is there a significant portion of it in solution? Mr. Buttram – Over the years we've taken samples from the creek at Outfall 200 under dry weather and storm conditions. We did a series of treatability tests

and a number of characterization studies. There is a lot of mercury in the solids. It can be from 5 to 30 percent. We did treatability studies on the solids that had not been through the treatment process and those passed TCLP tests. The other 70 to 95 percent of the flow is dissolved mercury. In the treatability studies on that we got excellent removal efficiencies, more than 99 percent. Now that was in a lab; field conditions will be different. But we were pleased with the process development results.

Ms. Joldersma – What happens to the water in the big storage tank? Mr. Darby – It's stored because during a storm the flow is exceeding the capacity of the treatment plant. As the storm passes and the flow goes down and there is extra capacity at the plant, we gradually release water from the tank to the pipeline that goes to the treatment plant and it's treated there. We want to empty it as quickly as possible because sometimes there are back-to-back storms and we want to be ready to catch the next storm flow. Ms. Joldersma – At some point when the mercury levels diminish would the plant no longer be needed? Mr. Darby – The goal is that it doesn't operate forever. It costs more than \$3 million a year to operate it. It's needed now, but in time the sources that are releasing mercury will be eliminated. There should be a point where we don't need the treatment plant and it would be decommissioned and demolished like other buildings in that part of Y-12.

Mr. Trujillo – I was impressed with the adaptive management approach to make changes as needed. Will money be available to make any changes? Ms. Cange – Adaptive management is a component of the plan for overall cleanup at Y-12. The treatment system is to be built in a modular and treatable way. What we have agreed to with EPA and TDEC is that we will construct the treatment system, assuming the preferred alternative is selected, and operate it for up to two years to measure its performance to see if we can achieve the ambient water quality criteria of 51 parts per trillion. If we are not successful we have various options available to us. We could modify the system, for example add a polishing step to further reduce the effluent of the system. Or we could do other things at the site that may help reduce the concentration of the mercury in the water in addition to the system operating as it is. An example would be stabilization of the creek bank. So we will adapt as we learn more about the performance of the system and we learn more about the options we should be evaluating to determine what the next best approach is. We have an annual appropriation process where we build a budget two years in advance. We then go through a fairly lengthy process where we finally have an appropriation bill from Congress. We are careful to build in requests for funding, not only for what we have started, like this project, but also in our baseline for cleanup. As we complete cleanup of ETTP the funding at that location will be going down and we anticipate funding will go up for Y-12. We anticipate level funding overall for the program and our request would include funding for Y-12.

Mr. Trujillo – There was mention of some excavation of about 35 feet. How big of an area will that be? Mr. Buttram – It will be approximately a quarter acre, about 10,000 square feet. Work is being done to collect geotechnical information so we can design the foundation for the structure. Mr. Trujillo – My concern is what you may find when you excavate knowing the age of the plant and the things that have been built there. Will you do in exploratory work? Mr. Buttram – Absolutely. Mr. Darby is the project manager for the characterization work at the headworks and at the treatment plant site. We're going to get environmental characterization data on radioactive and chemical contamination in the area. We'll also get geotechnical data. We'll do a number of borings to help us design the foundation and understand what the subsurface conditions are like. Ms. Cange – The other part of that is each of the sites on the Oak Ridge Reservation has excavation and penetration permit processes that have to be done to make sure we're not hitting utility lines and things of that nature.

Mr. Wilson – You mentioned that 1.2 million pounds of mercury are unaccounted for. Will there be characterization of the different materials so you can get an estimate of what you're actually removing and narrow down the unaccounted for mercury? Mr. Darby – That material, whether filter

cake or solids from the grit chamber, will have to be sampled extensively to determine if it meets the waste acceptance criteria for disposal facilities. We'll have a handle on what's in the material and we'll have the volume that we're generating. We'll have an idea of the grams of mercury we're removing from the system. Mr. Buttram – As far as the treatment plant goes, over the past year we've developed a model after looking at data of the past 20 years of mercury flux in UEFPC. That's how we are able to estimate 80 to 85 percent mercury reduction. That's a combination of soluble mercury that will be taken out by the treatment process as well as mercury that might be in solids removed by the grit chamber.

Committee Reports

EM & Stewardship – Mr. Hatcher said the committee had a follow up discussion from the July ORSSAB meeting on the status of the Oak Ridge Research Reactor pool leak. He said the process of having a general board discussion and a follow up discussion at the committee meeting worked well and will be a good model for FY 2016.

He said the committee will have a follow up discussion on this evening's presentation on the preferred alternative for the proposed plan for a Mercury Treatment Facility at its September 16 meeting. The committee will discuss a draft recommendation on the proposed plan and preferred alternative.

Executive – Mr. Hemelright reported that Corkie Staley has been the ORSSAB representative on the advisory committee for the Center for Oak Ridge Oral History. She wishes to relinquish that position, so Mr. Hemelright asked if anyone was interested in taking that role should contact him or ORSSAB staff.

Mr. Hemelright said that at the annual meeting in August those in attendance agreed on having presentations at board meetings be general in nature and following questions should not be too technical. More detailed and technical discussions could take place at the EM & Stewardship Committee meetings. It was decided that when possible tours of areas discussed at board meetings should be set up between the board meeting and the EM & Stewardship Committee meeting. In order to accommodate tours, the EM & Stewardship Committee meetings will be moved to the fourth Wednesday of the month. The Executive Committee meetings will move to the first Wednesday of the month. Those changes will take effect in October.

The Executive Committee also discussed development of a work plan for FY 2016 that will incorporate topics suggested by DOE, EPA, and TDEC at the annual meeting. Those topics are being scheduled for monthly presentations.

Mr. Hemelright said the committee discussed two different agenda formats for FY 2016 and the committee decided on a 90-minute agenda with no mid-meeting break.

Mr. Hemelright reported on the EM SSAB Chairs' meeting that was held September 1-3 in Santa Fe, N.M. One of the things discussed was a white paper on engaging the public in the discussion of DOE EM budget request development. The white paper was drafted by Ms. Cook and was well received at the chairs' meeting.

There were updates on waste and waste disposition at the various sites. There was a report on the status of the Waste Isolation Pilot Plant, which is currently closed. Mr. Hemelright said he didn't expect the plant to reopen before fall of 2016.

Monica Regalbuto has been confirmed by the Senate as the new DOE Assistant Secretary for EM.

The chairs discussed a recommendation on Supplemental Environmental Projects (SEPs). SEPs are

ways for DOE to compensate for missed regulatory milestones by doing something that would benefit the environment or related communities instead of paying fines to regulators. The draft recommendation will come to ORSSAB for consideration. Mr. Czartoryski asked if funding for the SEPs would come from site budgets or if it would be money from DOE Headquarters. Mr. Hemelright said the money would come from site budgets. Mr. Czartoryski said the regulators work closely with DOE to avoid missing milestones.

ORSSAB will host the next chairs' meeting April 19-21, 2016 at the DoubleTree Hotel in Oak Ridge.

Announcements and Other Board Business

ORSSAB's next scheduled meeting will be Wednesday, October 14 at 6 p.m. at the DOE Information Center. The topic will be an update of progress made at ETTP.

Ms. Lyons was recognized for her service to the board.

The minutes of the June 10 meeting were approved.

Belinda Price, Alfreda Cook, and Dave Hemelright were elected chair, vice chair, and secretary respectively for FY 2016.

Federal Coordinator Report

Ms. Noe reiterated Mr. Hemelright's comments that topics for board presentations were being scheduled and put in a draft work plan that will be provided at the next Executive Committee. Ms. Noe said the draft will have to be reviewed by DOE Headquarters first.

Motions

9/9/15.1

Mr. Baker moved to approve the minutes of the June 10 meeting. Mr. Paulus seconded and motion passed **unanimously**.

9/9/15.2

Ms. Lyons presented the slate of candidates for board officers for FY 2016 submitted by the Nominating Committee at the board's annual meeting in August. The slate included Ms. Price, Ms. Smalling, and Mr. Hemelright for chair, vice chair, and secretary respectively. Ms. Lyons noted that Ms. Smalling had requested her name be removed from the slate. Ms. Lyons asked for nominations for vice chair from the floor. Mr. Paulus nominated Mr. Wilson. Mr. Baker nominated Ms. Cook. There were no other nominations and Ms. Price moved that nominations close. Mr. Baker seconded. The motion to close nominations was **approved** unanimously.

Ms. Lyons called for a vote on the nominations for vice chair. Ms. Cook received 6 votes. Mr. Wilson received 5 votes. Mr. Hemelright and Ms. Lyons abstained. Ms. Cook was elected to replace Ms. Smalling as candidate for vice chair.

Mr. Hatcher moved to accept the new slate of candidates for ORSSAB officers for FY 2016. Mr. Baker seconded. The motion was **approved** with 12 members voting 'yea' and 1 abstention (Mr. Hemelright).

Ms. Price will be chair, Ms. Cook vice chair, and Mr. Hemelright secretary for FY 2016.

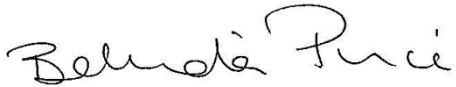
Action items

None.

The meeting adjourned at 7:34 p.m.

Attachments (2) to these minutes are available on request from the ORSSAB support office.

I certify that these minutes are an accurate account of the September 9, 2015, meeting of the Oak Ridge Site Specific Advisory Board.



Dave Hemelright, Secretary

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

10-15-15