

Oak Ridge Site Specific Advisory Board Monthly Meeting



Wednesday, April 9, 2014

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

The mission of the Oak Ridge Site Specific Advisory Board (ORSSAB) is to provide informed advice and recommendations concerning site specific issues related to the Department of Energy's (DOE's) Environmental Management (EM) Program at the Oak Ridge Reservation. In order to provide unbiased evaluation and recommendations on the cleanup efforts related to the Oak Ridge site, the Board seeks opportunities for input through collaborative dialogue with the communities surrounding the Oak Ridge Reservation, governmental regulators, and other stakeholders.

CONTENTS

AGENDA

PRESENTATION MATERIALS – Development of Comprehensive Mercury Strategy
for the Oak Ridge Reservation – *to be distributed at meeting*

CALENDARS

1. April
2. May (*draft*)

BOARD MINUTES/RECOMMENDATIONS & MOTIONS

1. March 12, 2014, draft meeting minutes
2. Recommendations on Additional Off-site Groundwater Migration Studies
3. Recommendations on Additional Waste Disposal Capacity on the Oak Ridge Reservation
4. Recommendations on the FY 2016 DOE Oak Ridge Environmental Management Budget Request

REPORTS & MEMOS

1. Recommendation Tracking Chart
2. EM Projects Update
3. Abbreviations/Acronyms for EM Projects Update
4. Travel Opportunities



Oak Ridge Site Specific Advisory Board
Wednesday, April 9, 2014, 6:00 p.m.
DOE Information Center
1 Science.gov Way, Oak Ridge, Tenn.

AGENDA

- I. Welcome and Announcements (D. Hemelright) 6:00–6:05
 - A. Next Meeting: Wednesday, May 14. Presentation Topic: Update on the Transuranic Waste Processing Center
 - B. Presentation of Service Awards to Student Representatives (S. Cange)

- II. Comments from the Deputy Designated Federal Officer, and the DOE, EPA, and TDEC Liaisons (S. Cange, D. Adler, C. Jones, J. Owsley)..... 6:05–6:20

- III. Public Comment Period (J. Riley) 6:20–6:30

- IV. Presentation: Development of a Comprehensive Mercury Strategy for the Oak Ridge Reservation (Laura Wilkerson)..... 6:30–7:05
 - Question and Answer Period 7:05–7:20

- BREAK..... 7:20–7:30

- V. Call for Additions/Approval of Agenda 7:30

- VI. Motions 7:30–7:35
 - A. March 12, 2014, Meeting Minutes (L. Hagy)
 - B. Second Consecutive Absence: Bob Hatcher, Howard Holmes (D. Hemelright)
 - C. Recommendations on Additional Off-site Groundwater Migration Studies (J. Kasten)
 - D. Recommendations on Additional Waste Disposal Capacity on the Oak Ridge Reservation (C. Staley)
 - E. Recommendations on the FY 2016 DOE Oak Ridge Environmental Management Budget Request (D. Hemelright)

- VII. Responses to Recommendations & Comments (D. Adler)..... 7:35–7:40

- VIII. Committee Reports..... 7:40–7:50
 - A. Environmental Management/Stewardship (B. Hatcher/C. Staley)
 - B. Public Outreach (S. McKinney)
 - C. Executive (D. Hemelright)

- IX. Federal Coordinator’s Report (M. Noe) 7:50–7:55

- X. Additions to Agenda 7:55–8:00

- XI. Adjourn 8:00



Oak Ridge Site Specific Advisory Board

April 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9 Monthly SSAB meeting 6 p.m.	10	11	12
13	14	15	16 Environmental Management & Stewardship Committee 6 p.m.	17	18	19
20	21	22	23	24	25	26
		EM SSAB Chairs' Meeting Pasco, Wash.				Earth Day 11 a.m. - 4 p.m. Bissell Park
27	28	29 Public Outreach Committee 5:30 p.m. teleconference	30			

All Meetings will be held at the DOE Information Center, Office of Science and Technical Information, 1Science.gov Way, Oak Ridge unless noted otherwise.

ORSSAB Support Office: (865) 241-4583 or 241-4584 **DOE Information Center:** (865) 241-4780

Executive Committee will not meet in April.

Board member travel: A. Cook, B. Hatcher, D. Hemelright, B. Hicks, C. Staley – EM SSAB Chairs' Meeting, April 22-24, Pasco, Wash.

Board meetings on cable TV and YouTube	
Knoxville: Charter Channel 6, Comcast Channel 12	Sundays at 7 p.m.
Lenoir City: Charter Cable Channel 3	Wednesdays, 4 p.m.
Oak Ridge: Channel 12	Monday, April 21, 7 p.m.
Oak Ridge: Channel 15	Monday, Wednesday, Friday, 8 a.m. & noon
YouTube	http://www.youtube.com/user/ORSSAB



Oak Ridge Site Specific Advisory Board

May 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14 Monthly SSAB meeting 6 p.m.	15	16	17
18	19	20	21 Environmental Management & Stewardship Committee 6 p.m.	22	23	24
25	26 Memorial Day DOE/Staff Holiday	27 Public Outreach Committee 5:30 p.m. teleconference	28 Budget & Process Committee 5:30 Executive Committee 6 p.m.	29	30	31

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YouTube	http://www.youtube.com/user/ORSSAB

DRAFT

Many Voices Working for the Community



Oak Ridge Site Specific Advisory Board

Unapproved March 12, 2014, Meeting Minutes

The Oak Ridge Site Specific Advisory Board (ORSSAB) held its monthly meeting on Wednesday, March 12, 2014, 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

Jimmy Bell
Noel Berry
Alfreda Cook
David Hemelright, Chair
Jennifer Kasten

Jan Lyons
Fay Martin
Scott McKinney
Donald Mei
Belinda Price

Mary Smalling
Wanda Smith
Coralie Staley
Scott Stout

Members Absent

Carmen DeLong
Lisa Hagy, Secretary
Bob Hatcher¹
Bruce Hicks, Vice Chair
Howard Holmes¹
Greg Paulus

¹Second consecutive absence

Liaisons, Deputy Designated Federal Officer, and Federal Coordinator Present

Dave Adler, Department of Energy-Oak Ridge Office (DOE-ORO), Alternate Deputy Designated Federal Officer (DDFO)
Mark Whitney, (DOE-ORO) Manager for Environment Management (EM)
Connie Jones, Liaison, Environmental Protection Agency (EPA)
John Owsley, Liaison, Tennessee Department of Environment and Conservation (TDEC)
Melyssa Noe, ORSSAB Federal Coordinator, DOE-ORO

Others Present

Tammy Blaine, DOE
Susan Gawarecki
Spencer Gross, ORSSAB Support Office
Gracie Hall, Student Representative
Pete Osborne, ORSSAB Support Office

Ten members of the public were present.

Liaison Comments

Mr. Whitney – Mr. Whitney reported that the last load of debris from demolition of the K-25 Building at East Tennessee Technology Park (ETTP) was hauled away for disposal on March 10. He said completion of work at ETTP is a near-term goal and upcoming mid-term goals include the building of a mercury treatment facility at Y-12 National Security Complex, a sludge build-out facility, and an additional waste disposal facility. All of those projects will present challenges, he said, and one of those challenges is securing sufficient funding to do the work in a timely manner.

Mr. Whitney said Monica Regalbuto has been nominated by the President to be the new Assistant Secretary for EM. If her nomination is confirmed she will assume the position currently being managed by Dave Huizenga as Senior Advisor for EM.

Mr. Adler – Mr. Adler said planning is underway for the board's annual meeting. A recent poll of members favored having the meeting locally instead of a site away from Oak Ridge. An additional poll will go out soon to receive additional board member input on the annual meeting concept. One of the questions on the poll will be whether to have the meeting on a Saturday, as has been tradition, or to dedicate the regular Wednesday meeting night in August for the annual meeting. He said a Wednesday evening meeting would have to be very focused and shorter than previous meetings. Staff will send the survey after this meeting.

Mr. Adler said DOE headquarters has mandated that DOE Oak Ridge EM must manage funds provided for board operations. He said the board's Finance & Process Committee will be renamed the Budget & Process Committee and it will not meet as often. DOE will continue to accept recommendations on how DOE spends money on the board's behalf.

Mr. Adler said a haul road is being built to service excavation activities for building the Uranium Processing Facility at Y-12. In building the road, a cut was made into Pine Ridge where demolition debris contaminated with depleted uranium was exposed. The contamination levels do not pose health risks. Options are being considered on where to dispose of the debris. Mr. Adler said it was a relatively small volume of material.

With completion of demolition of the K-25 Building at ETTP, Mr. Adler said levels of contamination have been found in groundwater underneath the K-25 footprint and in conveyances that leave ETTP. Those conveyances are storm water drains, underground electrical conduits, and sewage pipes to a water treatment plant. Levels of technetium contamination have been found in each of the pipelines. He said that was not unexpected, and it is not considered a health threat. DOE continues to monitor and take any actions necessary to keep levels as low as possible. DOE orders call for meeting certain limits of radioactive levels, but if levels are still detectable then DOE must implement a policy of 'as low as reasonably achievable' to continue to find ways to reduce levels even more. All three of the conveyances have been closed to prevent additional contamination transfer through the lines. Mr. Adler said the sewer line eventually feeds the Big Turtle sewage treatment facility on the west of side of Oak Ridge. Samples were taken at that facility and levels of technetium contamination were detected in the sludge. About 5,000 gallons of sludge will be retrieved and returned to ETTP until disposition is determined and agreed to by TDEC.

Under a memorandum of agreement for historic interpretation at ETTP, DOE committed to preserving the slab of the K-25 Building to illustrate the size of the building. A portion of the slab is contaminated with technetium. A study will be done to see how much of the slab can be preserved and how it will be preserved. The study must be completed within 90 days of the completion of debris removal from the site. Mr. Adler said the results of the study will help determine how much of the slab can be left in place without modification, if some parts of the slab must be removed, or if other mitigative measures must be taken.

Ms. Cook asked if any water runoff from the slab could pick up technetium contamination. Mr. Adler said that was a possibility. Berms have been built to control water runoff and water is collected between the berms. He said lessons learned from the K-25 demolition will help control water runoff in future demolition projects.

Mr. Bell asked if very low levels of contamination can be detected, even they are low enough not to be hazardous. Mr. Adler said technetium is definitely being detected in the water leaving the site at very low levels. But he said DOE orders call for driving levels as far down as possible.

Mr. Adler said Cate Alexander has retired as the Designated Federal Officer for the EM SSAB. Until a permanent replacement is announced, David Borak at DOE Headquarters is the acting official.

Mr. Adler reported that there were no recommendations from the board that require DOE consideration.

Ms. Jones – Ms. Jones said she was pleased that the demolition of K-25 has been completed with the removal of debris from the site. Sampling has been underway at K-27 in preparation for that structure's demolition. Ms. Jones asked Mr. Crane for comments.

Mr. Crane – Mr. Crane met with DOE and TDEC officials earlier in the day reviewing budget planning for FY 2016. In general, he said all three agencies are in agreement for the priorities for the next several years. High priorities are mercury reduction at Y-12 and demolition of K-27 at ETTP. He said discussions are underway about accelerating the demolition of the K-31 Building at ETTP. Mr. Crane said if demolition K-31 is funded that will speed up the need for a second waste disposal facility. He said discussions about K-31 focused on making sure that adding that project to the work scope doesn't adversely affect addressing mercury control at Y-12.

Mr. Owsley – Mr. Owsley agreed with Mr. Crane that DOE, EPA, and TDEC are in agreement on the priorities of projects for the near future. He said available budgets will necessitate compromise among the agencies to achieve a balance between cleanup of media, such as mercury, and demolition of unneeded buildings.

Public Comment

None.

Presentation

Ms. Blaine provided the presentation on the FY 2016 DOE-Oak Ridge Environmental Management Program Budget and Prioritization. The main points of her presentation are in Attachment 1.

She began by saying that at any given time DOE is working on three fiscal years budgets at the same time – the current fiscal year and fiscal years +1 and +2. The appropriation of \$430 million for FY 2014 was provided in January. In early March, the President announced his budget to Congress for FY 2015, which included a request for the DOE Oak Ridge EM program of \$385 million. Currently, the process is underway to develop the Oak Ridge EM budget request to DOE Headquarters for FY 2016.

Ms. Blaine explained the budget request development process. Meetings are underway now to set priorities and milestones. During March and April comments will be taken from EPA, TDEC, and ORSSAB on those priorities. In the April/May timeframe the budget request is submitted to DOE Headquarters. Once the request is submitted it is embargoed and no information on the budget request is shared outside of DOE. During the summer months, the budget request is considered by

DOE Headquarters and a final budget is submitted to the Office of Management and Budget (OMB) in September.

Ms. Blaine said OMB will provide a 'passback' to DOE indicating what it believes is a reasonable request. That usually requires additional work on the budget to bring it in line with OMB's input. A final budget request is submitted to the President, who usually sends the national budget to Congress for approval in February. In the spring Congress will consider the budget and provide House and Senates 'marks' indicating what each house will fund. That usually requires a conference between the two houses to agree on a final national budget.

Ideally, Congress agrees on a budget and announces appropriations in October, the start of the fiscal year. However, often there is no agreement by that time and the government must function on a continuing resolution by operating on the previous year's budget request.

For FY 2014, the President's budget request was \$413 million for the Oak Ridge EM program; however, Congress appropriated \$430 million (Attachment 1, page 3). The FY 14 appropriation included \$4 million of remaining Recovery Act funds for projects that were to be finished by the end of March. Ms. Blaine said those remaining projects were completed and required paperwork was being prepared.

Ms. Blaine showed a comparison of the FY 2013 and FY 2014 appropriation (Attachment 1, page 4). The Oak Ridge EM budget comes in two accounts – defense funding and ETTP cleanup. The increases in the FY 14 budget are all in the defense account. There was a \$4 million decrease in the ETTP cleanup account.

Ms. Blaine reviewed DOE's principles for setting project prioritization (Attachment 1, page 5).

She then reviewed DOE's near term priorities for FY 2014-16 (Attachment 1, page 6) and mid-term and long-term priorities for FY 2017-26 and FY 2027-43 (Attachment 1, page 7).

Ms. Blaine said the path forward now is to evaluate the President's FY 2014 budget. She details are to come on how the money is to be spent. A public workshop will be conducted on the FY 2016 budget development as has been done previously. The details of the workshop have not been completed. DOE will receive input on the FY 16 budget from EPA, TDEC, and ORSSAB and a final budget request will be submitted to DOE Headquarters (Attachment 1, page 8).

Page 9 of Attachment is a graphic of the timeline to finish all the projects in Oak Ridge and the amounts of money needed to complete the projects within the timeline.

After Ms. Blaine's presentation, a number of questions were asked. Following are abridged questions and answers.

Ms. Gawarecki – Regarding [page 9 of Attachment 1], have you done any more realistic projections considering DOE has not been able to receive budgets approaching \$500 million a year for the last several years? Where would we end up if we're receiving \$400-\$450 million a year? Ms. Blaine – We're starting that process because the FY 15 budget is \$385 million. We're going to start talking about what our priorities would be. That's where input from ORSSAB, EPA, and TDEC is important on how that budget will impact this work. Mr. Adler – Regarding that page, much of the uptick in the annual budgets is not explained by us getting more spending power; it's explained by escalation. Most of the uptick in the out years is based on us sustaining spending power, but we escalate the dollars to preserve the spending power. Ms. Gawarecki – What is DOE Oak Ridge doing to raise this site's priorities to headquarters? We fail when we come to competition with other

sites like Hanford and Savannah River Site. Mr. Adler – The answer we've always given to that question is to execute work well. The best thing we can do is get jobs done safely and within scheduled budget. Getting that done requires that we have consensus on priorities and a plan for getting work done. The entire federal sector is under the same pressures we are. We always ask for healthy amounts and we're allowed to ask for above target spending. We make sure headquarters knows what we can do if we get more money. But the President and OMB tell us what we are going to get. Ms. Gawarecki – But what are you doing to change the priorities at headquarters? That's the list that put decontamination and decommissioning (D&D) so far down. Part of the problem is we can't get to soil and groundwater until that D&D is done. I don't think Oak Ridge has done a good job of selling that to headquarters based on the risk this site poses to the community surrounding the site. Mr. Whitney – If you look at the increase in the FY 2014 appropriation from the FY 2013 appropriation that's one of the highest increases across the DOE complex. While the FY 2015 figure is disappointing we're going to have to work with that. When we go to Washington and when we talk to our representative here we talk about the success we're having on our projects. We talk about Oak Ridge being a unique site. We talk about the fact that we're within the city limits of Oak Ridge. There is a large population that lives or works near the site. But I can't say the problems at other sites are any less important than the ones we have here. We'd like to get \$500 million a year, but in this budget environment it's not going to happen. But I do spend a lot of time trying to advance budgets for the priorities we share with the regulators and ORSSAB. The FY 2015 budget announcement for EM was down overall, but for individual sites, some were up and some were down.

Mr. Bell – I think a reason Oak Ridge is not a higher priority is because of the waste we have here compared to Savannah River or Hanford is so much lower on the radioactive scale. Those places dealt with plutonium recovery from spent fuel. All of that waste is phenomenal compared to what we deal with in Oak Ridge. Regarding the \$385 million for FY 2015, considering the mercury problem at Y-12, would you consider dropping demolition of K-31 to be able to adequately address mercury at Y-12? Mr. Whitney – If we can afford to do it, sequencing K-31 between K-25 and K-27 will allow us to put money on priorities and our timeline for the Outfall 200 Mercury Treatment Facility. By putting K-31 between K-25 and K-27 we can potentially accelerate that schedule at ETTP and finish that job much sooner then focus to get the mercury treatment plant operating in 2019 and begin taking the process buildings down at Y-12 in the early 2020s.

Ms. Hall – On the graph, why is there a spike around 2034? Mr. Adler – Projects come in chunks, so there is something in that timeframe, probably taking down a big facility that causes a large spike to appear at Oak Ridge National Lab.

Mr. Hemelright – I have a question, but not related to budget. With the situation at the Waste Isolation Pilot Plant (WIPP) how is that going to affect our D&D and transuranic (TRU) waste removal? Mr. Whitney – On February 5 there was a fire in WIPP where DOE sends all of its transuranic wastes. On February 14 there was a separate, unrelated radiation release. This happened late on a Friday evening and there were no workers in the mine. No one has entered WIPP since February 14. There were some elevated readings on the surface but were below regulatory levels. There were 13 workers that received a low-level dose that doesn't appear to present any health risks to them. The department has put together two accident investigation teams, one for the fire and one for the radiation release. A couple of people from Oak Ridge are participating on those teams. A re-entry plan is being worked on and a team will probably go in the mine within the next week. Instrumentation below ground has not detected levels that would not normally be detected in the mine. In Oak Ridge we are planning to re-initiate our shipments of TRU waste to WIPP. But right now WIPP is not receiving any waste. So there could be impacts to us depending on what they find. I hope we'll have a better idea soon of what happened and when they will start taking waste again.

Mr. Bell – I couldn't tell from reports what the fire was and what would be down there that is flammable that's not contained. And I also couldn't tell if it happened near where the waste is stored. Mr. Whitney – The fire was a truck fire in the engine that had nothing to do with waste in the mine. As far as the radiation release, we don't know have any details.

Ms. Cook – Do we have storage capacity here so that treatment of TRU waste could continue? Mr. Whitney – We're looking at options. Storage may be an option for the contact-handled waste. I'm not sure about remote-handled waste, but there may be options there as well. It's not ideal from an efficiency standpoint. If we do have a long-term outage that's a discussion we'll have to have with the state.

Committee Reports

Budget & Process – Ms. Price reiterated Mr. Adler's comments about DOE managing ORSSAB funds. She said the change was to bring ORSSAB's procedures in line with other SSABs around the country.

The next meeting will be a combined meeting with EM & Stewardship on March 19, where the committees will discuss a recommendation on the FY 2016 DOE Oak Ridge EM budget request to DOE Headquarters.

EM & Stewardship – Ms. Staley reported that the committee received a presentation on the remedial investigation/feasibility study for a second waste disposal facility on the ORR. Four sites are being considered in East Bear Creek Valley near Y-12. One of the sites, Option 3 just east of the current waste disposal facility, is the preferred site. A draft recommendation on the proposed facility will be presented at the March 19 meeting.

The committee also reviewed a draft recommendation on groundwater. There were many comments and suggestions made on the recommendation and a revised recommendation will be presented at the March 19 meeting.

Public Outreach – Mr. McKinney said the committee decided to have an exhibit at the Earth Day Celebration in Oak Ridge at Bissell Park on April 26. Mr. McKinney requested members volunteer to staff the exhibit. An exhibit for the Oak Ridge Secret City Festival is being considered.

Mr. McKinney said the board's outreach efforts have been successful in the Oak Ridge and west Knoxville areas, but not as successful in other areas. The committee is looking at ways to increase public outreach in the nine counties around Oak Ridge. He said the committee may work with the University of Tennessee marketing department to increase public outreach effectiveness.

Work is being done to update the ORSSAB exhibit at the American Museum of Science and Energy.

The *Advocate* newsletter is now being distributed in about 20 area libraries. The committee is also looking at trying to distribute the newsletter in area businesses.

The ORSSAB website will soon be migrated under the energy.gov website. The new website is active and can be accessed at <https://energy.gov/ORSSAB>. The current website will remain active for a time.

Executive – Mr. Hemelright said it was suggested at the January meeting that an overview of the work being done at the other SSAB sites around the country be added to the new member orientation materials.

Mr. Hemelright said the presentation for the April board meeting will be on a comprehensive mercury strategy for the ORR.

A suggestion was made that board leadership should make annual presentations to the Oak Ridge City Council and Planning Commission about cleanup work being done on the ORR and any subsequent land transfers to the city.

Regarding land transfers, Mr. Hemelright said DOE Oak Ridge EM will be more involved in transfer management of properties. He said the change will improve coordination with cleanup decisions. Mr. Hemelright said the topic will be discussed more at the board's annual meeting.

Mr. Hemelright that members who have suggestions for topics for the ORSSAB delegation to bring before the EM SSAB Chairs' meeting in April should submit those suggestions by March 26.

Ms. Staley is the board's representative on the Center for Oak Ridge Oral History. She reported that there are now more than 400 oral history interviews available at the Oak Ridge Public Library. They may be checked out or viewed on the library's website. The interviews are with people who worked and lived in Oak Ridge during World War II and the Cold War. Also included are 10 interviews conducted by George Mason University and 33 interviews done with hospital employees at Methodist Medical Center of Oak Ridge.

Announcements and Other Board Business

ORSSAB will have its next meeting on Wednesday, April 9, 2014, at the DOE Information Center.

The minutes of the January 8, 2014, meeting were approved. The board did not meet in February.

An EM SSAB Draft Recommendation on Capitalizing on EM Successes was reviewed by the board and approved for presenting at the EM SSAB Chairs' meeting in April (Attachment 2).

Ms. Price's trip report to the 2014 Waste Management Symposium was distributed (Attachment 3).

Federal Coordinator Report

Ms. Noe said travel arrangements have begun for members attending the EM SSAB Chairs' meeting in April.

Additions to the Agenda

Ms. Price announced that the Geological Society of America is holding a conference honoring the career of ORSSAB member Bob Hatcher in Asheville, N.C., March 30-April 4.

Motions

3/12/14.1

Ms. Staley moved to approve the minutes of the January 8, 2014, meeting. Ms. Cook seconded and the motion passed **unanimously**.

3/12/14.2

Ms. Price moved to send the EM SSAB Recommendation on Capitalizing on EM Successes to the EM SSAB Chairs' meeting in April. Ms. Smalling seconded and the motion passed **unanimously**.

The meeting adjourned at 7:30 p.m.

Action items

Open

1. Staff will poll members about the structure and logistics of the annual meeting.

Attachments (3) to these minutes are available on request from the ORSSAB support office.

I certify that these minutes are an accurate account of the March 12, 2014, meeting of the Oak Ridge Site Specific Advisory Board.

Dave Hemelright, Chair
Oak Ridge Site Specific Advisory Board
DH/rsg

DATE



Checklist

Recommendations and Comments Consideration for Board Approval

- I. **Title:** Recommendations on Additional Off-site Groundwater Migration Studies
- II. **In response to (why necessary):** Recommendations based on Groundwater Strategy Document for the Oak Ridge Reservation (DOE/OR/01-2628&D1), September 2013
- III. **Committee:** Environmental Management & Stewardship
- IV. **Date submitted:** April 9, 2014
- V. **Date by which action is requested or required:** April 9, 2014
- VI. **Previous considerations:** none
- VII. **White Paper (if applicable):**
- VIII. **References (if applicable):**



Many Voices Working for the Community

Oak Ridge Site Specific Advisory Board

DATE

Mark Whitney
Oak Ridge Office of Environmental Management
U.S. Department of Energy
P.O. Box 2001, EM-90
Oak Ridge, TN 37831

Dear Mr. Whitney:

Recommendation: Recommendations on Additional Off-site Groundwater Migration Studies

At our April 9, 2014, meeting, the Oak Ridge Site Specific Advisory Board approved the enclosed recommendations on additional off-site groundwater migration studies.

These recommendations were the result of the Groundwater Strategy Document for the Oak Ridge Reservation (DOE/OR/01-2628/V1&V2/D1) that was developed in September 2013.

In summary, the recommendation requests that DOE proceed with an off-site groundwater quality assessment project and that DOE secure additional baseline funding for analysis to further understanding of potential migration and effects on off-site receptors.

We appreciate your consideration of our recommendations and look forward to receiving your response by July 9, 2014.

Sincerely,

Dave Hemelright, Chair
DH/rsg

Enclosure

cc/enc:

Dave Adler, DOE-ORO
Dave Borak, DOE-HQ
Fred Butterfield, DOE-HQ
Connie Jones, EPA Region 4
Terry Frank, Anderson County Mayor

Melyssa Noe, DOE-ORO
John Owsley, TDEC
Mark Watson, Oak Ridge City Manager
Ron Woody, Roane County Executive
File Code 140



Oak Ridge Site Specific Advisory Board

Recommendation:

Recommendations on Additional Off-site Groundwater Migration Studies

Background

A series of groundwater strategy workshops was held during 2013 to develop and prioritize groundwater pathways for the Department of Energy's (DOE) Oak Ridge Reservation (ORR). In addition to representatives from the Environmental Protection Agency, Tennessee Department of Environment and Conservation, and DOE, the ORR Groundwater Strategy Team included contractor representatives and a representative from the U.S. Geological Survey who acted as independent technical support and the interface and liaison between the ORR Groundwater Strategy Team and the Oak Ridge Site Specific Advisory Board. The workshops resulted in the development of a Groundwater Strategy document (DOE/OR/01-2628/V1&V2/D1).

Discussion

The groundwater pathways and flows are complex on the DOE ORR. The potential for releases (chemical species and radioisotopes) from waste burial sites, storage areas, and past operations due to groundwater penetration over time is possible.

It is reasonable to extrapolate that off-site migration of contaminants is possible and merits further evaluation. Current data may not adequately reflect the future presence of contamination in off-site groundwater; therefore this potential condition warrants investigation. The protection of public health must be considered a priority; therefore potential health exposures to hazardous/radioactive species should be investigated.

Recommendations

The Oak Ridge Site Specific Advisory Board recommends additional groundwater studies to address potential offsite migration of chemical species and radioisotopes. This recommendation is focused toward the development of information that will allow a better understanding of the potential impact of groundwater contaminants for the purpose of risk mitigation, groundwater remediation, and long-term stewardship.

Specifically, we recommend that:

- DOE proceed with the Off-site Groundwater Quality Assessment project, including: review of the existing monitoring well network (to include review of horizontal and vertical placement of well screens to ensure monitoring of groundwater systems), review of existing wells for determination of well integrity, abandonment of wells deemed not to be in appropriate locations and/or are of questionable integrity, and development of a monitoring plan (to include groundwater depth, water quality measurements, and hydrogeologic parameter determination) followed by implementation of the plan.
- DOE secure additional baseline funding for and perform interpretive analysis, (to include qualitative and quantitative modeling as appropriate) to further our understanding of potential plume migration pathways and potential effects on off-site receptors.
- With respect to the plume rankings developed in the Groundwater Strategy document, we note that these rankings are somewhat subjective therefore before adopting these rankings, we recommend that DOE:

- Develop process knowledge documents for each plume identified in the Groundwater Strategy document to support the interpretive analysis and assist with long-term stewardship.
- Review the method for plume rankings and confirm or revise the rankings.



Checklist

Recommendations and Comments Consideration for Board Approval

- I. **Title:** Recommendations on Additional Waste Disposal Capacity on the Oak Ridge Reservation
- II. **In response to (why necessary):** Recommendations based on Remedial Investigation/Feasibility Study (DOE/OR/01-2535&D2).
- III. **Committee:** Environmental Management & Stewardship
- IV. **Date submitted:** April 9, 2014
- V. **Date by which action is requested or required:** April 9, 2014
- VI. **Previous considerations:** none
- VII. **White Paper (if applicable):**
- VIII. **References (if applicable):**



Many Voices Working for the Community

Oak Ridge Site Specific Advisory Board

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Mark Whitney
Oak Ridge Office of Environmental Management
U.S. Department of Energy
P.O. Box 2001, EM-90
Oak Ridge, TN 37831

Dear Mr. Whitney:

Recommendation: Recommendations on Additional Waste Disposal Capacity on the Oak Ridge Reservation

At our April 9, 2014, meeting, the Oak Ridge Site Specific Advisory Board approved the enclosed recommendations on additional waste disposal capacity on the Oak Ridge Reservation.

These recommendations are based on the Remedial Investigation/Feasibility Study for CERCLA Oak Ridge Reservation Waste Disposal (DOE/OR/01-2535&D2).

The recommendations encourage DOE to continue planning for an additional on-site disposal facility for low-level waste and that a second facility be placed in an area already used for similar waste disposal. The recommendations also request a trust fund be established for a second facility, similar to the one in place for the Environmental Management Waste Management Facility.

We appreciate your consideration of our recommendations and look forward to receiving your response by July 9, 2014.

Sincerely,

Dave Hemelright, Chair
DH/rsg

Enclosure

cc/enc:

Dave Adler, DOE-ORO
Dave Borak, DOE-HQ
Fred Butterfield, DOE-HQ
Connie Jones, EPA Region 4
Terry Frank, Anderson County Mayor

Melyssa Noe, DOE-ORO
John Owsley, TDEC
Mark Watson, Oak Ridge City Manager
Ron Woody, Roane County Executive
File Code 140



Oak Ridge Site Specific Advisory Board Recommendation: Recommendations on Additional Waste Disposal Capacity on the Oak Ridge Reservation

Background and Discussion

In formal presentations made to the Oak Ridge Site Specific Advisory Board (ORSSAB) in January and February of 2014, the Department of Energy (DOE) identified the need for additional contaminated waste disposal capacity on the Oak Ridge Reservation (ORR). Disposal capacity in the existing Environmental Management Waste Management Facility (EMWMF) will be exhausted by the year 2023, primarily due to:

1. availability of American Recovery and Reinvestment Act funds that allowed the acceleration of Cold War clean-up projects, and
2. expansion of the Oak Ridge Environmental Management Program to include the removal of outdated facilities at the Oak Ridge National Laboratory and the Y-12 National Security Complex. In addition to 2.2 million cubic yards of waste to be disposed in EMWMF by year 2023, capacity for approximately 2.5 million cubic yards more will be needed through year 2046.

Development of a new disposal area, named the Environmental Management Disposal Facility (EMDF), has been proposed to the Tennessee Department of Environment and Conservation (TDEC) and the Environmental Protection Agency (EPA). The initial remedial investigation/feasibility study (RI/FS) report has been compiled to “develop, screen, and evaluate alternatives for waste disposal against CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) criteria ...” including off-site disposal options. This report was submitted to TDEC and EPA for review and comment in September 2012 and revised in June 2013 to incorporate the many comments received. Comments on the revised version currently are pending resolution.

The ORSSAB understands that no decision has been made regarding whether, when, or where to develop another on-site disposal facility, and that ORSSAB and public input will be solicited and incorporated as appropriate prior to any decision being made.

Recommendations

Based on information provided by the DOE that identified the need for additional contaminated waste disposal capacity on the ORR and the preliminary facility design criteria, the ORSSAB makes the following recommendations to the DOE:

- Continue with planning for additional on-site disposal capacity for low-level radioactive and chemically hazardous contaminated waste, and continue ongoing efforts to minimize the need for additional on-site capacity;
- Ensure that the proposed new disposal facility will have sufficient capacity to accept all appropriate future generated waste from DOE activities through cleanup of the ORR;
- Ensure the proposed disposal facility is engineered to operate safely and block migration of contaminants into adjacent groundwater, soil, and air;
- Locate the proposed facility in proximity to existing waste burial grounds, if technically feasible, such that contaminated areas are consolidated on the ORR;
- Ensure that a trust fund for long-term stewardship is established for any new disposal facility similar to that for EMWMF.



Checklist

Recommendations and Comments Consideration for Board Approval

- I. **Title:** Recommendation on Fiscal Year 2016 DOE Oak Ridge Environmental Management Budget Request
- II. **In response to (why necessary):** At the request of DOE Oak Ridge Environmental Management to provide a recommendation on the FY 2016 budget request
- III. **Committee:** EM & Stewardship and Budget & Process Committees
- IV. **Date submitted:** April 9, 2014
- V. **Date by which action is requested or required:** April 9, 2014
- VI. **Previous considerations:**
- VII. **White Paper (if applicable):**
- VIII. **References (if applicable):**



Many Voices Working for the Community

Oak Ridge Site Specific Advisory Board

DATE

Mark Whitney
Oak Ridge Office of Environmental Management
U.S. Department of Energy
P.O. Box 2001, EM-90
Oak Ridge, TN 37831

Dear Mr. Whitney:

**Recommendation : Recommendation on Fiscal Year 2016 DOE Oak Ridge
Environmental Management Budget Request**

At our April 9, 2014, meeting, the Oak Ridge Site Specific Advisory Board approved the enclosed recommendation regarding the FY 2016 DOE Oak Ridge Environmental Management Program budget request.

We appreciate your consideration of our recommendation and look forward to receiving your response by July 9, 2014.

Sincerely,

Dave Hemelright, Chair
DH/rsg

Enclosure

cc/enc:

Dave Adler, DOE-ORO
Dave Borak, DOE-HQ
Fred Butterfield, DOE-HQ
Connie Jones, EPA Region 4
Terry Frank, Anderson County Mayor
Melyssa Noe, DOE-ORO
John Owsley, TDEC
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Oak Ridge Site Specific Advisory Board Recommendation ___: Recommendation on the FY 2016 DOE Oak Ridge Environmental Management Budget Request

Background

Each year the U.S. Department of Energy (DOE) Environmental Management (EM) Program develops its budget request for the fiscal year two years beyond the current fiscal year. It uses budget requests from the various DOE field offices in developing the EM Program budget request to the President.

DOE EM Headquarters typically issues guidelines to the field offices advising them how much budget they should reasonably expect when developing their fiscal year +2 budget requests to headquarters. The field offices then brief the public, the regulatory agencies, and the Oak Ridge Site Specific Advisory Board (ORSSAB) and seek input from them regarding budget requests.

Discussion

In March 2014, DOE briefed ORSSAB on the current budget picture and described near-term, mid-term, and long-term priorities. Near-term priorities (2014–2016) are:

- Demolish Building K-25
- Prepare the K-27 Building for demolition
- Continue direct disposition of uranium-233 from Oak Ridge
- Process and dispose of transuranic (TRU) waste inventories
- Planning, engineering, and design for the Y-12 Outfall 200 Mercury Treatment Facility
- Planning, engineering, and design for the TRU Waste Processing Center Sludge Processing Facility build-outs
- Planning, engineering, and design for the Environmental Management Disposal Facility (EMDF)

Mid-term (2017–2026) priorities include:

- Complete U-233 material processing and disposition
- Complete TRU waste processing and disposition
- Complete closure of the East Tennessee Technology Park (ETTP)
- Construct/operate the Y-12 Outfall 200 Mercury Treatment Facility at the Y-12 National Security Complex
- Initiate demolition of Y-12 mercury use facilities
- Construct and begin waste operations at the EMDF

Long-term (2027–2043) priorities include completing cleanup of Y-12 and Oak Ridge National Laboratory.

In March 2014, the ORSSAB EM & Stewardship and Budget & Process committees met with DOE for a more in-depth discussion. At that meeting, Dave Adler and Tammy Blaine (DOE) went into more detail explaining the reasoning for the near-term, mid-term, and long-term priorities.

Mr. Adler said any suggestions on the appropriateness of currently proposed priorities, would be welcome.

Committee members discussed some of the projects and suggested alternatives that might be employed should actual funding levels challenge planned implementation schedules.

Recommendation

ORSSAB agrees with DOE's near-term, mid-term, and long-term priorities as stated above and strongly encourages DOE EM to request funding sufficient to adequately address those projects. In particular, ORSSAB recommends aggressive implementation of projects which, as completed, will reduce the "base" costs of the Oak Ridge cleanup program and allow accelerated investment in remaining cleanup work.

ORSSAB recognizes that continuation of cleanup work at ETTP serves to both maintain productivity of currently assembled Oak Ridge EM workforce, and reduce the base costs of the Oak Ridge EM program.

Recommendation Response Tracking Chart for FY 2013

	Date	To	Recommendation	Originating Committee	Response Date	Response Status	Committee Review of Response
1.	10/10/12	Susan Cange, DOE Oak Ridge Deputy Manager for EM	211: Recommendation on Availability of DOE Environmental Management Documents	EM	1/8/13	Complete: DOE is working with information technology to improve search capabilities. The 'search tip' function has been reactivated. On request, training can be provided to access information. DOE Information Center staff is always available to provide documents. DOE is working to ensure documents are available at the information center no later than the date when availability is announced.	Complete: EM Committee accepted recommendation response at its January 2013. It asks that DOE notify the board when upgrades to the system are complete.
2.	5/8/13	Susan Cange, DOE Oak Ridge Deputy Manager for EM	215: Recommendation on Remaining Legacy Materials on the Oak Ridge Reservation	EM	7/19/13	Complete: DOE Oak Ridge has developed an inventory of all waste/materials stored on the reservation and has prioritized the inventory for disposition. The highest priority is to address hazardous and/or radioactive waste that may pose a threat to the environment.	Complete. The accepted the response, but asked that asked that a comprehensive inventory list be presented to the committee periodically so the committee can see what has been worked off.
3.	5/8/13	Mark Whitney, DOE Oak Ridge Manager for EM	216: Recommendations on the Fiscal Year 2015 DOE Oak Ridge Environmental Budget Request	Board Finance & Process	5/22/13	Complete: DOE responded that it is sending the recommendation to DOE EM Headquarters along with its FY 2015 budget request.	
4.	6/12/13	Susan Cange, DOE Oak Ridge Deputy Manager for EM	217: Recommendation on Stewardship Point of Contact for the Oak Ridge Reservation	Stewardship	9/12/13	Complete: DOE responded that it will add the responsibility of a permanent stewardship contact to the Environmental Management & Stewardship Committee DOE liaison.	Complete: EM & Stewardship Committee accepted response on 11/20/13

5.	6/12/13	Letitia O'Connor, DOE HQ Sue Smiley, DOE EM Consolidated Business Center	218: Recommendation to Develop a Fact Sheet on Site Transition at Ongoing Mission Sites	Stewardship	9/20/13	Complete: DOE revised the fact sheet to include points requested by the Committee.	Complete: EM & Stewardship Committee accepted response on 1/15/14
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EM Project Update

ETTP	February	March
Zone 1 Final Soils ROD	Draft responses to EPA comments on the D2 RI/FS were informally transmitted to DOE for review. Preparation of revisions to the D2 RI/FS was initiated.	Draft responses to EPA comments on the D2 RI/FS and draft revisions to the D2 RI/FS were transmitted to EPA. Comments on the draft responses to EPA comments were received. A conference call was held with EPA to discuss their request for GIS shape files.
Zone 2 ROD		Plans are being made to start characterization of the K-25 Building footprint (Exposure Units Z2-20, 21, and 22).
K-25/K-27 D&D	Disposal of debris from the final six K-25 Building units is 89 percent complete and the mining of deposits in the Segmentation Shop is 80 percent complete.	The final truckload of debris from the K-25 Building was shipped to EMWMF. Mining of deposits in the segmentation shop is 91 percent complete.
	Grading and seeding of the retaining wall area from the Tc-99 area is complete.	Shipments of volutes (68 percent complete) and boxes of debris (73 percent complete) continue.
	Ancillary tie lines around the K-25 footprint are being prepared for removal.	The Headquarters Project Peer Review of the K-25/K-27 projects was completed.
	Initiated preparation of the K-25 Completion Report.	
ORNL	February	March
ORNL Small Facilities D&D	The Building 3038 fire protection sprinkler system was removed from service and air gapped from site process water. The system was replaced by a linear heat detection system. With this fieldwork completed, Building 3038 will transition to long-term S&M.	
MSRE (Fuel Salt)		The Waste Handling Plan Addendum was submitted to the regulators for review.
U-233 Disposition	An overview of the U-233 Disposition Project and a tour of the 3019 facility was provided to personnel from the Defense Nuclear Facilities Safety Board (DNFSB).	
Y-12 Site	February	March
Y-12 Phase I ROD	The Treatability Study Report for Mercury Contaminated Soil was approved by the regulators.	
Y-12 Phase I ROD Outfall 200 Mercury Treatment	Awarded a task order to develop a Sampling & Analysis Plan to collect data and perform characterization at the Outfall 200 proposed site. Plan will characterize structures and soils and will also address the geotechnical properties of the area to aid the design of the mercury water treatment facility.	Completed draft Outfall 200 D2 Mercury Treatment Facility RDWP and draft Conceptual Design Report. Both will be submitted to regulators in April.
Y-12 EM Facilities D&D	The PCCR for Secondary Pathways was approved by the regulators.	
Y-12 Long Term S&M	The Removal Action Report for Mercury Reduction was approved by the regulators.	
Y-12 Salvage Yard	The PCCR for the 5-Tank Mercury Reduction project was approved by the regulators.	

EM Project Update

Off-Site Cleanup/Waste Management	February	March
TRU Waste Processing Center	The Mark II Remote Drum Opener returned to service after several modifications were made to the unit.	Project completed all TRU waste recertification activities.
	The DNFSB reviewed preparations for SWSA 5 waste processing. Their primary concern was the aggressiveness of the schedule.	The Presolicitation Notice for Architect-Engineering Services for the Sludge Buildouts project was issued. The notice requested technical capability information from licensed firms for the design of the Sludge Processing Facility at the TRU Waste Center.
	The Central Characterization Project processed through Flame-Gas and performed visual examination of remote-handled container in the hot cell.	
EMWMF	The RA Work Plan, including the Operations Plan and the Sampling & Analysis Plan, was submitted to the regulators for approval.	The FY 2014 PCCR was submitted to the regulators for review.
	EMWMF continues to receive shipments of K-25 Tc-99 contaminated waste and has effectively controlled Tc-99 in contact water and leachate to less than 2 percent of the release criteria.	EMWMF continues to receive shipments of K-25 Tc-99 contaminated waste.
Remediation Effectiveness Report	The draft version of the FY 2014 RER was provided to the regulators for review.	The FY 2014 RER was submitted to the regulators for review.
ORR Groundwater Strategy	Work on the draft Off-site Groundwater Assessment Remedial Site Evaluation Work Plan continued.	The draft Off-site Groundwater Assessment Remedial Site Evaluation Work Plan was provided to the regulators for review.
	Responses to Comments on the D1 ORR Groundwater Strategy document were completed in preparation for submittal to the regulators in March.	The Responses to Comments were submitted to the regulators for approval.

Abbreviations/Acronyms List for Environmental Management Project Update

AM – action memorandum

ARRA – American Recovery and Reinvestment Act

BCV – Bear Creek Valley

BG – burial grounds

BV- Bethel Valley

CARAR – Capacity Assurance Remedial Action Report

CBFO – Carlsbad Field Office

CERCLA – Comprehensive Environmental Response, Compensation
and Liability Act

CEUSP – Consolidated Edison Uranium Solidification Project

CD – critical decision

CH – contact handled

CNF – Central Neutralization Facility

CS – construction start

CY – calendar year

D&D – decontamination and decommissioning

DOE – Department of Energy

DSA – documented safety analysis

DQO – data quality objective

EE/CA – engineering evaluation/cost analysis

EM – environmental management

EMDF – Environmental Management Disposal Facility

EMWMF – Environmental Management Waste Management Facility

EPA – Environmental Protection Agency

ETTP – East Tennessee Technology Park

EU – exposure unit

EV – earned value

FFA – Federal Facility Agreement

FPD – federal project director

FY – fiscal year

GIS – geographical information system

GW – groundwater

GWTS –groundwater treatability study

IROD – Interim Record of Decision

LLW – low-level waste

MLLW – mixed low-level waste

MSRE – Molten Salt Reactor Experiment

MV – Melton Valley

NaF – sodium fluoride

NDA – non-destructive assay

NEPA – National Environmental Policy Act

NPL – National Priorities List

NNSS – Nevada National Security Site (new name of Nevada Test Site)

NTS – Nevada Test Site

ORNL – Oak Ridge National Laboratory

ORO – Oak Ridge Office

ORR – Oak Ridge Reservation

ORRS – operational readiness reviews

PaR – trade name of remote manipulator at the Transuranic Waste Processing Center

PCB - polychlorinated biphenyls

PCCR – Phased Construction Completion Report

PM – project manager

PPE – Personal Protective Equipment

QAPP – Quality Assurance Project Plan

RA – remedial action

RAR – Remedial Action Report

RAWP – Remedial Action Work Plan

RCRA – Resource Conservation Recovery Act

RDR – Remedial Design Report

RDWP – Remedial Design Work Plan

RER – Remediation Effectiveness Report

RH – remote handled

RI/FS – Remedial Investigation/Feasibility Study

RIWP – Remedial Investigation Work Plan

RmAR – Removal Action Report

RmAWP – Removal Action Work Plan

ROD – Record of Decision

RUBB – trade name of a temporary, fabric covered enclosure

S&M – surveillance and maintenance

SAP – sampling analysis plan

SEC – Safety and Ecology Corp.

SEP – supplemental environmental project

STP – site treatment plan

SW – surface water

SWSA – solid waste storage area

Tc – technetium

TC – time critical

TDEC – Tennessee Department of Environment and Conservation

TRU – transuranic

TSCA – Toxic Substances Control Act

TWPC – Transuranic Waste Processing Center

U – uranium

UEFPC – Upper East Fork Poplar Creek

VOC – volatile organic compound

WAC – waste acceptance criteria

WEMA – West End Mercury Area (at Y-12)

WHP – Waste Handling Plan

WIPP – Waste Isolation Pilot Plant

WRRP – Water Resources Restoration Program

WWSY – White Wing Scrap Yard

Y-12 – Y-12 National Security Complex

ZPR – Zero Power Reactor

Travel Opportunities

Meeting/Event	Dates	Location	Reg. Cost	Website	Conference Lock Date; # Allocated Attendees	Deadline to Submit Requests
FY 2014						
Fall Chairs Meeting (Attendees: Hemelright, Hicks, Staley)	Oct. 15-17, 2013	Portsmouth, OH	none	http://www.planetreg.com/E79143550250173		Aug. 28, 2014
Intergovernmental Meeting with DOE	Oct. 28-30, 2013	New Orleans	none			Oct. 11, 2014
Perma-Fix Nuclear Waste Management Forum (Requests: Hemelright, Holmes)	Dec. 2-5, 2013	Nashville	\$500	https://events.r20.constantcontact.com/register/eventReg?llr=8n5x6qkab&oeidk=a07e84apcpub37c9f6e&oseq=a01lph9iyhwj		Oct. 23, 2014
Waste Management Symposium Attendees: Price)	March 2-6, 2014 (Registration opens 10/15/13. Early registration ends 12/31/13)	Phoenix	\$995	www.wmsym.org	2	Nov. 20, 2014
National Environmental Justice Conference & Training (Attendees: M. Hatcher)	March 26-28, 2014	Washington, D.C.	none	http://thenejc.org	1	Jan. 29, 2015
Spring Chairs Meeting (Attendees: Cook, Hatcher, Hemelright, Hicks, Staley)	April 22-25, 2014	Richland, WA	none	http://www.eventbrite.com/e/2014-environmental-management-site-specific-advisory-board-chairs-meeting-registration-5248440226	N/A	March 26, 2014
Western Waste Site Tour (Tentative requests: DeLong, Hagy, B. Hatcher, M. Hatcher, Lyons, McKinney, Mei, Paulus, Price)	Postponed pending resolution of issues related to fire at WIPP	Waste Isolation Pilot Plant, Nevada Nat'l Security Site	none	none		April 23, 2014
National Brownfields Conference						

Shading indicates closed trips