FINAL MEETING SUMMARY

HANFORD ADVISORY BOARD
RIVER AND PLATEAU COMMITTEE MEETING

August 10, 2011
Richland, WA

Topics in this Meeting Summary

This is only a summary of issues and actions in this meeting. It may not represent the fullness of ideas discussed or opinions given, and should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.

Welcome & Introductions

Pam Larsen, River and Plateau Committee (RAP) chair, welcomed the committee and introductions were made. The committee adopted the May and June meeting summaries as revised.

Pam asked agency representatives to share their impressions from the public meetings for plutonium and cesium contaminated waste sites on the Central Plateau.

Emy Laija, U.S. Environmental Protection Agency (EPA), said public meetings were held in Richland, Seattle, Hood River and Portland. She said the Richland meeting was not as well attended as the others and it was mostly agency representatives. She encouraged Hanford Advisory Board (Board or HAB) members to attend public meetings and invite others. Emy said many people were able to voice their concerns and were very passionate, especially on the plutonium issue.

J.D. Dowell, U.S. Department of Energy-Richland Operations Office (DOE-RL), said meeting attendees also voiced concerns about safety and seismic activity. J.D. said the meetings included discussions about the residential cleanup levels considered all along the Columbia River since that area is used recreationally. The inner area of the Hanford Site is industrial with conservative cleanup standards. Remedies in that area are considered protective, although it is considered protective for different types of uses. J.D. said it is difficult for the public to understand and to accept that the government will be monitoring the Hanford Site for hundreds of years. It is even more difficult to consider real long-term risks that must be assessed for thousands of years.

J.D. said DOE is working to contain contamination into the smallest footprint possible for long-term monitoring. Madeleine Brown said there was concern expressed, especially at the Portland meeting, about how long institutional controls would be required and how trustworthy these controls would be. J.D. said he believes over the next several hundred years, as long as DOE remains on the Hanford Site, better solutions will be found that are more long-term and permanent. The decisions made today based on current knowledge can change as more information becomes available.

Pam added that the Public Involvement Committee (PIC) will also have a debrief on the meetings at their September committee meeting.

CERCLA Five-Year Review (joint topic with PIC)

Introduction

Vince Panesko, Issue Manger (IM) for the topic, said the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Five-Year Review is one of the most important reviews for the Hanford Site, particularly when the findings in the resulting report are viewed as a precursor for what will occur in 50 to 100 years. He said the public relies on the Five-Year Review since the future of other annual environmental protection reports is uncertain while the Five-Year Review must be completed every five years as long as contamination remains on the Hanford Site.

Vince said there are some positive aspects to the Draft Hanford Site Third CERCLA Five-Year Review Report **(**Draft Third Report). The document offers a comprehensive review of all operable units (OUs), which are organized into four areas that are easy to locate from the table of contents. Vince said another positive aspect of the Five-Year Review is that it offers updates on what happened over five years within the various OUs. The document describes all the progress at the Hanford Site since 2006. Vince added that the Draft Third Report seems to focus on what is not protective. He said that is useful information since the public would like to know what is not protective and what aspects of the Hanford cleanup are especially challenging. The downside of this focus is that it may be redundant to focus on areas that are known to need more work.

Vince said there are also areas of the Draft Third Report that are frustrating for him. He said it is frustrating that the Five-Year Review applies to those areas on the Hanford Site that have been remediated with contamination still remaining. Areas with no contamination remaining do not need to be considered. Vince said the public wants to know if a site that is considered cleaned up

continues to be safe. He said not including this information in the Draft Third Report is probably acceptable because of all the activity on the site and because it is fresh. However, 100 years from now excluding this information will be unacceptable.

Vince said the advice should address DOE's reliance on institutional controls to determine the protectiveness of a remedy. He said that using warning signs and fences is useful, but it does not indicate anything about whether radiation is leaving the area. All institutional controls indicate is whether people are staying out of the area or not. Vince said the Board has offered advice stating that DOE cannot take credit for cleaning an area simply by using institutional controls. He said the only way to determine protectiveness is to take samples, which is not currently being done.

Agency presentation

Steve Weil, DOE-RL, said the Draft Third Report is prepared based on EPA guidance. The purpose of the Five-Year Review is to determine if the remedy as selected is or will be protective. There are some remedies that are still being implemented or have not been in place long enough to make a determination. The question for these remedies-in-progress is whether they will be effective upon completion. Corrective actions will be recommended if a remedy does not appear to be effective. He said DOE is conducting the review as the lead agency on the Hanford Site. The Third Report is scheduled to be completed in November of 2011, which is five years from DOE's submittal of the previous report to EPA.

Steve reviewed the scope of the Five-Year Reviews. The scope includes: evaluating whether a remedy is operational and functional; evaluating those assumptions critical to the effectiveness of the remedial measures or the protection of human health and the environment made at the time of the remedial decision to determine, given current information, whether these assumptions are still valid; determining what corrective measures are required to address any identified deficiencies; and evaluating whether there are opportunities to optimize the long-term performance of the remedy or reduce life-cycle costs.

Steve said the primary objectives of the Five-Year Review are: to evaluate the performance of the selected remedy for each CERCLA decision document; to confirm that immediate threats have been addressed and that the remedy will be protective when complete, where a remedial action has not been completed; to confirm whether the selected remedy remains protective where a site is in the Long-Term Management phase; to recommend actions to improve performance when the Five-Year review indicates that the remedy is not performing as designed.

Steve said the Draft Third Report covers all four National Priorities List (NPL) sites on the Hanford Site including the 100 Area, 200 Area, 300 Area, and 1100 Area. He said the 1100 Area was removed from the NPL list years ago, but since waste remains in place it must be included in the Five-Year Review.

Steve said the Draft Third Report is available on-line and comments will be accepted until September 12. DOE will consider comments, finalize the report, and then submit it to EPA. He said there is an error in the executive summary that is important to note. The Executive Summary states that the River Corridor Baseline Risk Assessment (RCBRA) was issued in December 2010. He said he is aware that the Board is concerned that the RCBRA was not incorporated into

the Five-Year Review. Steve said the 2010 version was still a draft and the RCBRA has not been finalized yet.

Steve reviewed results from the Five-Year Review for each of the NPL sites. He said the intent of all interim actions is to meet final Record of Decision (ROD) standards whenever those are issued so that no additional cleanup will be required. Steve noted the cut-off date for inclusion in the current Five-Year Review was September 2010. He said there was a large amount of work completed in the 100 Area since that time through American Recovery and Reinvestment Act funding that is not included in this Five-Year Review. Steve said DOE determined two remedial actions were not operating as expected concerning groundwater in the 100 Area so DOE is taking corrective actions. Overall, DOE has determined that the interim remedies in the 100 Area are effective and that cleanup standards are being met. Steve said the protectiveness evaluation will be reevaluated when the RCBRA is completed.

Steve reviewed results from the Five-Year Review for the remaining three NPL sites: 200 Area, 300 Area, and 1100 Area.

Regulator perspectives

- Chris Guzzetti, EPA, said the Draft Third Report is being circulated throughout the office for feedback. He said EPA was involved early in the process. The difference between the early versions versus the current draft is vastly different. There have been corrections for readability and formatting. EPA is currently trying to ensure protectiveness statements follow the guidance.
- Rick Bond, Washington State Department of Ecology (Ecology), said Ecology provided comments initially that some elements were missing from early versions of the Draft Third Report. He said those concerns have mostly been addressed.

Committee discussion

- Vince said there is strontium-90 in the 100 Area, yet the section on the 100 Area in the Draft Third Report states that the interim remedies selected are protective. He said the remedy is not protective if strontium is entering the Columbia River. Vince said there is boiler plate language under various technology assessments stating that verification sampling after completion of excavation indicates that contamination has been removed and sent to the Environmental Restoration and Disposal Facility (ERDF). Vince said if all the contamination has been removed, the area should not be included in the document. He said the same paragraph was applied to a number of different areas, which also states that there will be a Risk Assessment (RA).
- Pam said the Five-Year Review process includes steps. Examinations are conducted on remedial actions that have been completed and those actions that are on-going. DOE is not making protectiveness statements about areas that are still being remediated.
- Emy said DOE submits the Five-Year Review to EPA. EPA determines whether the protectiveness statements are accurate and which areas will have to be acted on in the next five years.

- Dale Engstrom, RAP vice-chair, said he agrees that this Draft Third Report is much better than the previous two reports. The document is more comprehensive and better organized. However, he is concerned about repeatedly hearing that the Five-Year Review will be relied on for determining whether remedies selected are protective. The document repeatedly states "DOE deems this to be protective." Dale asked what "deem" means. He would like to see some sort of evidence that provides reasonable assurance that DOE's statements are valid. Dale said there are fairly mobile constituents in the ground that may or may not be moving. He would like to see a written statement from DOE indicating that they have considered the process.
- Cliff Clark, DOE-RL, said the ROD is the document the Board can have the most input on. The ROD indicates that some material can be left in place without creating concerns for the environment or human health. There is an amount of residual contamination that is considered acceptable.
- Liz Mattson asked if there is an assumption that the contamination will move or remain in place. Cliff said material is assumed to remain in place unless there is some force that would cause material to move. He said all these considerations are part of the ROD and feasibility process. The Five-Year Review is the status report on decisions from the ROD.
- Emy clarified some points about the Five-Year Review. She said long-term remedies developed in a ROD must be maintained. Any potential issues will be documented in an operating and maintenance plan far in advance of a Five-Year Review. Whenever a remedy is put into place, the effectiveness must be evaluated. Emy said the process already exists to collect the data and determine remedy effectives. She said the Five-Year Review is not the most effective place to offer advice regarding determinations of protectiveness. Emy cautioned against any advice beyond recommendations that DOE follow the guidance more closely.
- Jean Vanni said there is a lot of uncertainty associated with determining the protectiveness of interim actions. She said one outstanding issue from the previous Five-Year Review is for DOE to reassess and resubmit an assessment for the OU along the river using new information from the RCBRA. DOE was asked to update the protectiveness determination and corrective actions, which should have been available in September. Jean asked if the RCBRA will be completed by September and if it will be incorporated into the next Five-Year Review. She said there is a large amount of uncertainty when DOE deems protectiveness effective in the current Five-Year Review when it was not considered effective in the previous Five-Year Review.
- Larry Gadbois, EPA, said the Five-Year Review is an after-the-fact review of the ROD and protectiveness. The ROD specifies protectiveness criteria and the Five-Year Review evaluates the ROD in the field to determine whether the decisions in the ROD are being enacted effectively. The cut-off date for this Five-Year Review was September 2010. The RCBRA will be included in the next Five-Year Review.
- Vince said there is a huge disconnect between the regulators and the Board. The regulators use the Five-Year Review to evaluate whether actions correspond with the

ROD. The Board, however, would like DOE to provide more information on the evidence used to determine whether remedies can be deemed protective.

- Jean said she is unclear how long an interim action must be in place before being evaluated. Emy said the Hanford Site is challenging because there are so many interim actions. A final protectiveness determination cannot be made on interim actions until the final ROD is in place. It is possible to evaluate how well a remedy is performing prior to making protectiveness determinations.
- Liz asked if the Board could still have any impact once the ROD is issued. Pam said a proposed remedy must be issued for review and comment before it is finalized in the ROD. Board advice would be on remedy selection, not on the ROD. Liz said that should be made clearer because the Board keeps being told to focus on the ROD. Emy said the proposed plan stage is when the public has the most impact. There is also opportunity for impact during the remedial investigation. The agencies would like to receive as much early public input as possible.
- Susan Leckband suggested that the most valuable advice on the Five-Year Review might be on format as opposed to content. The Board could request a demonstration of how determinations of protectiveness have been reached and make general recommendations for the Board's desired level of protectiveness. Susan said the agencies could then determine the requirements necessary to meet that goal. She said this type of advice is probably not appropriate for this document, but it would be effective for other documents.
- Vince said the draft advice includes a statement that many of the problems identified by the Board in the second Five-Year Review carry over into the third Five-Year Review. A previous advice point noted that the Board does not like the use of institutional controls. Vince said the Board's advice on the second Five-Year Review did not have any impact and he did not expect the advice on the third Five-Year Review to have any impact either. He said the purpose of the advice is for the long-term benefit of Board members educating themselves and the agencies.
- Vince said the Board once again believes that using institutional controls as a measure of protectiveness is unacceptable. Determinations of protectiveness should be based on measurements and those measurements should be readily available for review by the public. Vince said the links to source documents in the Draft Third Report mostly point to regulations as opposed to databases with the actual measurements used for analysis.
- Jean said there are cumulative waste sites in the Draft Third Report. Shelley Cimon said there needs to be an understanding of what cumulative risk is. Pam said that is addressed in the EIS. Liz said it would be important to include a discussion of cumulative risk as part of the definition of protectiveness. Vince said the Hanford Site uses the composite analysis concept. He said the idea is excellent, but is not fully developed and has not been implemented. Vince suggested discussing the issue more at future meetings.
- Vince asked the committee to consider the first advice point about DOE basing protectiveness of remedies on a minimum of three factors at each remediated waste site. Jean said there should also be an evaluation of whether there are any dangerous waste

constituents. Vince said that point is in the advice, but suggested clarifying the wording. Emy cautioned that the Board is recommending activities that are already underway. She is unsure what the benefit of the advice would be.

- Emy said past reports documenting the Five-Year Review concluded the Hanford Site is protective. At the time the Board said there should be more information about how protectiveness is determined. She said the EPA guidance includes three questions that should be asked in order to determine whether a is protective.
- Dale said he appreciates Vince's work and the advice, but he also agrees with Susan L. about the importance of offering advice at a more global policy level. He said Board comments on the advice would likely include writing the advice with more generalities and less specifics.
- Jean asked how the Board can request the Five-Year Review to include new information, even if it comes from a draft document. She said there is a lot of good information in the RCBRA, even though it is not finished yet. Susan L. said she does not want to advise DOE to use draft documents because much could change before finalization.
- Susan Hayman asked if there is a bigger question about how the Board defines protectiveness. Susan L. said protectiveness is defined in the Five-Year Review. Vince said the issue is that the regulators are only considering the ROD. The remedy is considered protective if the standards of the ROD are being met. The Board would like DOE to use measurements to determine what is protective.
- Harold Heacock said one thing to keep in mind is that the Five-Year Review reflects a periodic evaluation. There is no final review determining the acceptability of cleanup. Harold suggested the overall framework of the advice acknowledge that the Five-Year Review is not a final conclusion.
- J.D. said the source of everything for evaluating and determining protectiveness is in the final ROD. He is unclear about what the advice is trying to communicate. J.D. asked if the Board was advising DOE to use a number of measures for every kind of remediation to create a consistent standard. J.D. said the Board appears to be asking for an expansion of the Five-Year Review process, which would involve changing the law and be a different kind of recommendation.

After the committee made further on-screen revisions, Pam said the committee appears to have a good sense of the advice. She suggested responding through email with further questions or concerns. Liz said RAP should have a call the following week. Dale said RAP has discussed the draft advice several times and further revisions can be done through email.

The committee decided to focus their August committee call on additional review and revision of the draft advice before sending it to the committee for final concurrence.

Advanced Simulation Capability for Environmental Management

Susan L. said the committee is interested in the Advanced Simulation Capability for Environmental Management (ASCEM) program. She said the latest technologies were discussed

at the last meeting of the eight Site Specific Advisory Boards. Susan L. was impressed with the DOE demonstration of how the model can assist Hanford cleanup efforts.

Presentation

Mark Freshley, Pacific Northwest National Laboratory (PNNL), provided an overview of the ASCEM program. He said the project is lead by Paul Dixon and funded by the DOE-Environmental Management (DOE-EM) Office of Technology and Development.

Mark said ASCEM developers recognized that the model should be linked to actual site problems. ASCEM will enable robust and standardized future performance and risk assessments for DOE-EM cleanup and closure. He said it is a state-of-the-art tool for predicting contaminant fate and transport through natural and engineered systems. Mark added that the first demonstration was conducted at the Savannah River Site.

Mark said ASCEM is similar to climate community models. Multiple organizations with experience developing codes came together with new capabilities designed to be implemented on parallel computers. The first model existed in serial mode to be run on a desktop or laptop. This did not take advantage of the parallel architecture of mainframe computers. Mark said ASCEM was developed in a modular and open source design so it would be open to the people who want to use it.

The challenge of ASCEM is to develop an integrated computer modeling capability that provides tools for decision making and leverages investments. Mark said there was a lot of progress over a short amount of time, particularly in Phase 1, by taking advantage of other developments that have already been made. Mark said the impact of ASCEM is to provide the technical underpinning for current risk and performance assessments, inform strategic data collection for model improvement, and strengthen and standardize DOE-EM's risk and performance assessment approach. Mark said ASCEM will not be ready for immediate application in a regulatory setting; a phased approach will be required. He said ASCEM is delivered though a national laboratory consortium. Berkley Lab, Los Alamos National Laboratory, and PNNL are the main three contributors.

Mark said ASCEM is much more than a new computing code. There is a lot of work being done on a platform known as Akuna. Akuna holds all the input and output for modeling. Mark said the advantage of Akuna is that it will track data sources, allowing the user to maintain a strong quality assurance record.

Mark said working groups were formed around different representative DOE-EM problems. Three are associated with applied field research initiatives: attenuation-based remedies for the subsurface working group, deep vadose zone working group, and waste tank working group. Savannah River also leads a remediation of mercury and industrial contaminants working group.

Mark described the high performance computing capabilities of ASCEM along with the platform and integrated toolsets. He said ASCEM development was shaped by user interactions. Mark said a User Steering Committee was convened to help design the implementation of ASCEM tools that will be useful for DOE-EM. The committee made a number of recommendations

including: clearly articulate near-and longer-term objectives and establish metrics for success; focus on identifying a set of near-term positive impacts; maintain focus on a toolset designed to support EM-related decision-making during and at the end of the modeling process; enhance sustainability by engaging in an annual work planning process that considers contractor and regulatory schedules for modeling and supporting activities around the DOE complex; and look for opportunities for demonstrations at small and large DOE sites beyond Applied Field Research Initiatives, Science Focus Areas and Integrated Field Research Challenges.

Mark reviewed the ASCEM lifecycle plan through 2015. There are a series of development cycles, which are likely to change with budget scenarios and other realities.

Mark next discussed Phase II Demonstration of ASCEM, which will begin in earnest in the fall and be published in March 2012. The Phase I Demonstration focused on individual components and elements that were not linked together. He described the background and goals of the Deep Vadose Zone Working Group. Results indicated nitrate contamination in the subsurface using the visualization tool. Mark said the Deep Vadose Zone Working Group also conducted parameter estimations and uncertainty quantifications. He reviewed the group's Fiscal Year 2011 scope.

Regulator perspective

- Cheryl Whalen, Ecology, said she is on the User Steering Committee as one of two external regulators. The other external regulator is Chris McKenney who is the Branch Chief at the National Research Council for performance assessments. She said the reason regulators are involved in the committee is to ensure regulators are able to use the code independently and ask questions about modeling results.

Committee discussion

- Shelley said supercomputers are expensive. She asked if data was currently being gathered to run on supercomputers and whether that was occurring in-house or was being contracted out. Mark said the simulations to date have been run on supercomputers in the Bay Area and at Los Alamos. He said many developers have access to smaller scale multiprocessor computers that are less expensive than mainframe computers. Testing of smaller problem sets can be run on these computers. Mark said the goal is to develop a model that can be run on a laptop or a massive supercomputer depending on the question being addressed.
- Susan L. asked about what the expectations are for the system at Hanford and what degree of confidence they can have in the model. John Sands, DOE-RL, said the simulations will bound uncertainty, which requires a lot of computing time. He said the goal is to create a better quantification of accuracy and uncertainty.
- Pam mentioned the earlier discussion regarding the CERCLA Five-Year Review and asked if ASCEM could be useful from a regulator perspective to determine whether a remedy is effective. Cheryl said ASCEM could be used for that, as could a number of other models. In order to determine the effectiveness for the purposes of a CERCLA Five-Year Review, much more data would be necessary.

- Liz asked if there is an example of the model working and how models are checked for accuracy. Mark said parameter estimates are used, which is another name for the model calibration process. Calibrating a model involves making a prediction and then comparing the results with actual field data.
- Dib Goswami, Ecology, asked if ASCEM is a new code or a modification of existing code from STOMP and other models. Mark said ASCEM is a new code, but it was developed by individuals who have worked on building other codes. He added that part of the testing and benchmarking of ASCEM will involve comparison with other models.
- Dick Smith said he does not think the contamination left after an area is excavated is being closely examined. He said there are many questions regarding future remediation tactics. Mark said the ASCEM developers are trying to set up a process to work through problems more quickly using the platform and model.
- George Klinger, Confederated Tribes of the Umatilla Indian Reservation (CTUIR), asked if the user will be able to monitor various source codes simultaneously, such as for major cribs and trenches. Mark confirmed a user would be able to do that. John added it would be a more complicated problem and would require a supercomputer instead of a desktop computer.
- Pam thanked Mark and Cheryl for speaking with RAP. She said RAP would be interested to hear more when updates are available.

River Corridor Decisions (Joint topic with PIC)

Update

Jim Hansen, DOE-RL, said the last time he spoke with the Board there was a first decision document expected to be available in late September for the 100 Area K OU Remedial Investigation/Feasibility Study (RI/FS). He said this is still the plan. DOE reviewed the draft, provided comments and it is currently in revision. The document explains the alternatives being considered. The proposed plan will be available concurrently with the RI/FS. Jim said there are three additional RAs that have not been made available yet. The Human Health Risk Assessment and RCBRA are available and the Ecological Risk Assessment will be available in September. There is still some question on when the Columbia River Ecological and Human Health RA documents will be available. The information from these documents will be used in the RI/FS.

Jim reviewed the timeline for when the four RI/FSs will be available. Susan H. captured this in a table on a flip chart:

Where	What	To Regulators When
K	RI/FS Proposed Plan	Sept
DH	RI/FS Proposed Plan	Nov

BC	RI/FS Proposed Plan	Nov
F & IU-2-6 (300 Area)	RI/FS Proposed Plan	Dec
DH	RI/FS Proposed Plan	Sept 2012

Jim said there is a formal milestone to submit all of the RI/FSs to regulators by December 2012. These will go through initial regulator comment. After comments are received and considered the Proposed Plan will be made available for public comment. Jim said there is no milestone for the ROD, but there are milestones for submittal to regulators. He said the Board will be given access and should discuss how to deal with these massive documents. He said the proposed plans are only 30-60 pages, which would be more manageable than the thousands of pages in the other documents. Jim said the decision documents are a high priority.

Committee discussion

- Susan L. said that, considering the size of these documents, she hopes there is a readable executive summary that does not contain a lot of technical details and that the Board can easily understand. Jim said the Proposed Plan is meant to fulfill that role.
- Liz suggested creating a map of the site with each of the areas covered under the proposed plan shaded to indicate the date the plan would be available. Once the documents are available, the map could link to those documents.
- Pam asked for recommendations on how the committee should engage since there is so much to read. Susan L. said that the place where the Board has the greatest opportunity for meaningful comment is on the proposed plan, which will determine what is in the final ROD. Dale said an IM group has been formed and are following the issue.
- Liz asked how long the comment period would last. Jim said the typical public comment period after reaching resolution with regulators is 30 days. Larry said the comment period would likely be 45 days and people often ask for extensions. Liz said it would be helpful to have a chart showing when comments are needed. Jim said that information is in the drafts, but it depends on arrangements made with regulators and whether they ask for extensions. Regulators traditionally have a 30-day period to review documents, but often ask for the review period to be extended. Comments from the regulatory agencies need to be addressed and the agencies must concur on the Proposed Plan before it can be sent out for public comment. This is an iterative process that can be lengthy. Susan H. said the IMs could develop a table and enter the dates when available.

The committee agreed that they need to be prepared to comment on the River Corridor Proposed Plans in September. The issue managers will develop an approach to address this review, and will also develop a table for the document review schedule that can be filled in as dates become available.

River Upwelling Package

Introduction

Jean Vanni, issue manager with Gene Van Liew for this topic, provided two handouts with notes on the River Upwelling Document. She said these are not necessarily for discussion; only general information. She is interested in hearing how information from the River Upwelling Document will be incorporated into the RCBRA and how the upwelling information can be considered when evaluating risk.

Agency Presentation

John Sands provided a presentation titled "Remedial Investigation of the Hanford Site Releases to the Columbia River – Overview." He said the risk assessment (RA) for the Columbia River will be available in approximately one month.

John reviewed the key documents for the River Corridor Closure Project. He said it is a multi-year effort to combine all available data through the Data Evaluation Summary Report. He said there was a specific focus on identifying data gaps to complete the CERCLA process in the Columbia River Component Data Gap Analysis. John said DOE has done a lot of work on the Columbia River, but has not done a lot of work for the CERCLA process. The report identifies data gaps that should be filled to conduct an RA and proposes a sampling and analysis plan. A work plan was signed in 2008. The next sets of documents are a two volume RA, which will be available for regulatory review in the coming months. The Ecological RA will be available first in late September and the Human Health RA will be available shortly after.

John described the data gaps filled through sampling. Samples were collected from the shoreline across the Columbia River from Hanford operations, island soils, and sediment deposition areas. Media sampled include: river water, pore water, sediment, island soil, and six types of fish. The scope of the investigation area includes a 120-mile stretch of the Columbia River including portions of the Snake, Yakima, and Walla Walla Rivers. John said there are a number of sources of contamination in the Columbia River. Contamination originated from reactor cooling water discharge, which consists primarily of radionuclides and is no longer active. Groundwater plumes that migrated toward the river and discharged to the river in seeps and upwelling are also sources of contamination. The key contaminants in the groundwater include chromium+6, strontium-90, tritium, and uranium. Additional contamination to the Columbia River originates from stacks and overland flow, which is also no longer active.

John said sources of contamination to the Columbia from non-Hanford upstream sources are harder to identify. Some of these sources include: mining, municipalities, farming, coal fire plants, pulp and paper mills, transformer spills, salmon, and fallout from nuclear weapons. John said DOE collected a lot of data to supplement the existing data. There are approximately 244,000 sample data results.

John summarized the results of data analysis. He said the results were not unexpected, although chromium contamination will need to be examined more closely. A large number of the contaminants may not originate from Hanford. John said it will be important to thoroughly

explain contamination resulting from the Hanford Site and contamination originating elsewhere. The primary Hanford Site contaminants found in groundwater are found upwelling in the Columbia River. Hanford radionuclides found in deep cores within Lake Wallula were at expected concentrations. John said seven out of eight islands sampled had no elevated radionuclides. Total chromium was found in sediment throughout the study area, including the Snake and Yakima Rivers. The primary contaminants measured in fish were arsenic, cadmium, PCBs, and pesticides.

John said DOE uses specific conductivity and temperature to map groundwater upwelling. John summarized a number of maps showing Phase II(a) conductivity and temperature measurements along with Phase II(b) stations selection.

John said the full report will be available at the end of September for review. He said DOE can return to the Board to review the RA results, preferably in October or November.

Committee discussion

- Liz asked what the fish samples were being tested for. John said DOE sampled for a suite of contaminants and radionuclides. Liz then asked if plutonium was found in the fish samples. Jim indicated that lab results came back with plutonium detections in three fish samples. Two were near the detection limit and likely a false positive. The third was not a false positive, but was inconsistent with what is known about plutonium uptake in fish. The lab indicated that plutonium was detected in the one fish fillet sample, with no detectable levels in the liver or carcass and no detectable levels of americium (a decay product of plutonium). Documented studies indicate that if plutonium was in the fish, the fillets would have much less concentrations than the liver or carcass and americium would be detected. Jim said the risk assessment would fully explain why this one sample is not being carried through in the RA.
- Gene asked if there was a noticeable difference in contamination between fish upstream versus downstream of the Hanford Site. John said there was not a large difference and the report includes a detailed analysis. Gene said there are people who will blame the Hanford Site for all contamination without considering upstream sources so DOE should make clear that not all contamination originates from the Hanford Site. John said DOE must identify if there is a plausible pathway for any contamination identified to have originated from Hanford.
- Shelley asked for more explanation of the charts, specifically the Field Quality Control Qualifiers. John said there were field sampling guidelines. The Columbia River level needed to be low for a certain amount of time in order to address lag time. There were a few occasions when the option was either to violate protocol to obtain a sample or not sample. John said there are notes for all instances when sampling violated protocol.
- Gene asked if there were differences between contamination found in fish that are bottom-feeders, top-feeders, or middle-feeders. Jim said there were differences depending on the type of contamination. He said bass and other species that prey on other fish had higher levels of contaminants that bioaccumulate. Sucker fish and carp typically had

higher metal concentrations because they are bottom-feeders. Jim said there were a large variety of sample results.

- Pam said she believes the Washington State Department of Health (DOH) determines whether fish are healthy to eat or not. Mike Priddy, DOH, said the agency does conduct quality assurance of DOE work. Pam asked if DOH will make a determination based on DOE findings to inform the public about possible fish contamination. Mike said there are currently no plans to do that, but it would be possible.
- Gene said in 2007 EPA and the tribes developed information about healthy amounts of fish consumption and species of fish safe for consumption. He said this was done for a cancer study in EPA-Region 10. Gene said a very large amount of fish would need to be consumed to experience human health risks. He said this type of discussion might be interesting to add for the Hanford Site.
- Jean thanked John for the great presentation. She would like to see more explanation from DOE on how they reached conclusions in the River Corridor Decisions. Jean said she never received an answer to her initial question of how this information will be used by Ecology for decisions from the RCBRA. John said the remedial investigation must consider the nature and extent of contamination. The results of the RCBRA and contaminants of concern identified from this project will help determine if there is a link between the Hanford Site and contaminants found in fish. All the river and sediment data has been provided to the remedial investigation team.
- Jean asked if RAP would like any more action on this item. Gene said he would like to see this topic discussed at a Board meeting. He suggested the April meeting since it would be held on the Columbia River where there are lots of salmon.
- Susan H. asked if RAP would like to take any action before April. She suggested the IMs discuss what should be included in the possible April presentation. Pam said October would be a good time for DOE to return to RAP with more information. John agreed that once the report is issued, it would be timely for DOE to share the results with RAP.
- Dale said the River Corridor Decisions investigation will feed the Columbia River component of the RA. The data will be used to evaluate that risk. He said RAP can discuss this, which is a lot of data and interpretation of that data, or wait for the RA and comment on that document.
- Jean and Gene, as the IMs, will speak with John about any further information that should come to RAP.

Update on River Corridor Closure Projects: Building 324 – B Cell Contamination and 618-10 and 11

Update: Building 324

Mark French, DOE-RL, discussed soil sampling at Building 324-B Cell. Mark said there were both deep and shallow samples. The shallow sample is where higher dose waste was expected. All samples were sent to 325 Lab for analysis and a full report is expected in August. He said the

shallow samples were not likely to be transuranic waste. Mark presented a current timeline showing an overview of the work in progress and next steps for moving forward with Building 324 cleanup. Mark said once the final sample results are received, the rest of the calendar year will be spent determining the best remediation path forward.

Don McBride, Washington Closure Hanford (WCH), said a few angled pushes were inserted underneath the cell to reach deeper elevations in the cobble. A second push indicated background levels of radiation. This push was 25 feet below the building and there was still space before encountering groundwater.

Committee discussion: Building 324

- Pam asked how the material was initially determined to be highly radioactive while that appears to no longer be the case after testing. Mark said the material is very radioactive, which was expected. He said it is "hot low level waste," and that not all transuranic waste is considered hot. Don said it would be premature to make any final conclusions before receiving the lab results. He said materials sitting in a concentrated form are different than the form required for retrieval. This contamination will require remote handling.
- Shelley asked for a volume estimate. Don said that depends on the retrieval method. He said there is not a huge amount of material that would require remote handling. The top five feet would need to be done remotely. He said the retrieval options will be to go through the building floor or remove the building. This is one of the decisions that will need to be made.
- Susan L. said she was concerned about the funding scenarios since the contractor contract will be completed in 2015. She asked if the work being envisioned could be completed within the contractual timeframe. Susan asked if the remediation methodology will be in the Remedial Investigation/Feasibility Study. Mark said the work should be completed within the contract and the remediation options are probably within the existing workplan.
- Shelley asked if the cost would alter other work. Mark said it should not change any work within the River Corridor. He said the case could be made that money spent on Building 324 was money not being spent elsewhere, but that would not be done within the confines of the River Corridor project and contract.
- George asked if the contaminants are in a configuration that might make them mobile. Mark said current data indicates the contamination is underneath the building with no motive force that could drive it elsewhere. He said the contamination is stable. George asked about mice and other agents that spread materials in the 300 Area. Larry said since the contamination is under the basement of a building mice are not a concern.

Update: 618-10 & 11

Jamie Zeisloft, DOE-RL, provided an update on the 618-10 and 11 Burial Grounds. He said all the controls were in place and working properly when anomalies were found while remediating trenches at 618-10. A number of bottles were found that posed a large challenge. DOE decided to speak with EPA to determine a more effective approach to removing the bottles. Jamie said the

goal is to completely excavate the trenches by May 2012 and remediate burial grounds by September 2014.

Jamie said non-intrusive characterization was completed for 618-11, including a geophysical survey of vertical pipe units (VPUs) and caissons. That information will be available in draft format at the end of September. Jamie said there were no surprises. Most of the activity was in the deeper VPUs. He said DOE is working closely with Energy Northwest to get a license amendment as required for remediation of the 618-11 Burial Grounds. The license process takes 18 months so it will likely be April 2013 when work can begin on the trenches, followed shortly by the caissons and then remediation on the VPUs. The goal is to complete all work by September 2015.

Committee discussion

- Susan L. said the 618-11 Burial Ground has historically been characterized as the most contaminated and least defined area of the Hanford Site. She asked if the work would be done remotely. Jamie said it would not be remote, but there will be safety controls to minimize worker exposure.
- Vince said the caissons were used to hold highly contaminated material. Caissons were designed with goose necks so waste would not vent back up. He said the concern has always been how to remove material.
- Vince asked if materials from 618-10 and 11 would be going to the Environmental Restoration Disposal Facility (ERDF). Larry said that has yet to be determined. Mark said all materials removed from the trenches were low level waste. Vince said ERDF does not allow materials with high levels of radiation. Mark said EDRF acceptance criteria are based on activity as opposed to dose.
- Dick asked if there were any atmospheric controls in place when the bottles are placed in the trenches, crushed, and when the residue is grouted. Larry said keeping the bottles beneath a layer of dirt is the protection. He said all material is absorbed in the soil. Jamie said there are other controls in place plus physical barriers.
- Shelley is concerned gas is being released. Larry said there were radiation particulates and a bottle of liquid ruptured in the air. The intention is to not let that happen again. The bottles will be placed in soil with fixatives so there is no air exposure.
- Jean asked if the Explanation of Significant Difference (ESD) is final and whether there had been public comment. Larry said it is final and there was no public comment period. He added that the document will be posted on the web for informational purposes.
- Jean cautioned that these types of instances (i.e. in-trench treatment) can be a slippery slope and the type of treatment being used for the bottles might not be recommended for other uses. Larry said the remedy is still to remove, treat and dispose. Contaminants are still being removed and sent to ERDF.

The committee will continue to receive periodic updates on the progress of cleanup at 618-10 and 11.

Committee Business

- The committee reviewed potential topics for the September meeting and completed the potential meeting topics table. They decided to defer a full discussion of the six month work plan until after the 2012 priorities have been solidified at the September Board meeting.
- Pam said she would like more information about the ESD. Shelley said the bottles are so small that if they were sampled nothing would remain to be disposed of. She said the ESD is addressing the potential for airborne exposure.
- Vince said he would like a review of Board values and expectations for the River Corridor Decision documents.
- Jean requested to see the Biological Opinion on N Reactor. Paula Call said she would follow-up with management. If the document is finalized she will be able to provide a copy (note: this action item was completed by the end of the meeting).
- Susan H. handed out a draft thank-you letter for the Deep Vadose Zone Preliminary Technology Information Exchange. The committee had no comments or changes. Susan H. said the letter will be sent. Tammie Gilley, EnviroIssues, will format the letter and send it to Susan L. for signature.
- Vince asked about the 2011 Hanford Lifecycle Scope, Schedule and Cost Report. Susan H. said there would be a webinar on the subject the following Wednesday. She said information on the webinar will be sent to the entire Board with a registration link.

Handouts

- U.S. Department of Energy Third CERCLA Five-Year Review for the Hanford Site 2006-2010. DOE, August 10, 2011.
- Draft Advice: Third CERCLA 5-Yr Review
- ASCEM. DOE-EM, August 10, 2011.
- Field Summary Report for Remedial Investigation of Hanford Site Waste Releases to the Columbia River, WCH, Rev 1.
- Jean Vanni email to Diane.
- Remedial Investigation of Hanford Site Releases to the Columbia River – Overview. John Sands, DOE-RL, August 2011.
- 324 Building Update. Mark French, DOE-RL, August 10, 2011.
- 618-10 & 11 Burial Ground Update River and Plateau Committee. Mark French, DOE-RL, August 10, 2011.
- Explanation of Significant Differences, Hanford 300 Area, 300-FF-2 Operable Unit, 618-10 Burial Ground.

- Deep Vadose Zone Preliminary Technology Information Exchange; Draft Letter v.1. Hanford Advisory Board.

Attendees

Board Members and Alternates

Shelley Cimon	Jim Matthews	Dan Serres
Dale Engstrom	Liz Mattson	Dick Smith
Steve Hudson (phone)	Vince Panesko	Robert Suyama
Harold Heacock	Mike Priddy	Gene Van Liew
Pam Larsen	Wade Riggsbee	Jean Vanni
Susan Leckband	Tom Rogers	Steve White

Others

Pamela McCann, DOE-ORP (phone)	Rick Bond, Ecology	Sunil Mehta, CHPRC
Paula Call, DOE-RL	Alicia Boyd, Ecology	George Klinger, CTUIR
Cliff Clark, DOE-RL	Madeleine Brown, Ecology	Nicole Addington, EnviroIssues
J.D. Dowell, DOE-RL	Dib Goswami, Ecology	Susan Hayman, EnviroIssues
Mark French, DOE-RL	Beth Rochette, Ecology	Sharon Braswell, MSA
Jim Hansen, DOE-RL	Cheryl Whalen, Ecology	Suzette Thompson, MSA
John Morse, DOE-RL	Larry Gadbois, EPA	Jake Whiteplume, Nez Perce Tribe
Cameron Salony, DOE-RL	Chris Guzzetti, EPA	Mark Freshley, PNNL
John Sands, DOE-RL	Emy Laija, EPA	Annette Cary, Tri-City Herald
Steve Weil, DOE-RL		Warren Bryant, WCH
Jamie Zeisloft, DOE-RL		Larry Hulstrom, WCH
		Jeff Lecch, WCH
		Don McBride, WCH

Appendix 1: Transcribed Flip Chart Notes

CERCLA

1. Review should include how "deemed protective" has been reached.
2. Believe that remedy selection should be protective enough that (value) remedy in ROD (not for this advice).
3. Protectiveness should consider if cumulative effects have been addressed.

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River Corridor

To regulators

K	RI/FS & Prop Plan	Sept
DH	RI/FS & Prop Plan	Nov
BC	RI/FS & Prop Plan	Nov
F & IU-2-6 300 Area	RI/FS & Prop Plan	Dec
N	FI/FS & Prop Plan	Sept 2012

Milestone of Dec 2012 for submission of drafts to regulators

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Follow-Up

1. Email draft CERCLA 5-year advice & question – Susan H by Thursday
2. Run an example of a project through the CERCLA 5-year review process
3. Be prepared to comment on River Corridor Prop. Plans – Sept
    a. Schedule on table (IMs develop & fill in as dates available)
4. Remedial Investigation for River Component. Bring back to RAP in Oct (briefing on Report)
5. Potential April Board mtg topic (River Corridor) – salmon
6. Jean to send RC decision map to RC IMs – by Friday
7. B.O. on N Reactor – Ask Paula for copy
8. Susan H follow-up with Gene & Jean – IM (Susan L)
9. Susan H Letter to Susan L