

**FINAL MEETING SUMMARY**

**HANFORD ADVISORY BOARD**  
COMMITTEE OF THE WHOLE MEETING  
*October 29, 2009*  
*Richland, WA*

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*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 and Introductions**

Susan Leckband, Hanford Advisory Board (HAB or Board) Chair, welcomed the committee. She said the Central Plateau (CP) Completion Strategy document was a Committee of the Whole (COTW) topic identified at the leadership retreat, with the goal of helping Board members understand the vision and help comment on the documents that will be released soon. She said follow-up meetings and related workshops will take place, including the Base Assumptions Workshop tentatively scheduled for December 4. Susan L. said the Board will likely provide advice and there will be additional opportunity for input as advice comes forward at future HAB meetings.

Susan Hayman, EnviroIssues, provided an overview of the meeting structure, room logistics and meeting agenda. She reviewed the meeting objectives, which were to provide an opportunity for Board members to gain a better understanding of the CP strategy to enable them to comment or provide advice on future proposed Tri-Party Agreement (TPA) changes, to foster discussions with Board members, for the agencies to hear stakeholder values, and to identify technical issues for follow-on Issue Manager (IM) work. Susan H. said topics appropriate for a follow-on technical workshop will be noted.

## Orientation to the Central Plateau Strategy

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Matt McCormick, Department of Energy – Richland Operations Office (DOE-RL), said DOE has had previous discussions with the HAB on the CP strategy and wanted to summarize where the agencies are in terms of the strategy. He said the HAB has provided feedback that the CP Cleanup Strategy is needed and it is important that it is comprehensive and covers the entire scope of work, including waste sites, burial grounds, buildings, groundwater and tank waste. Matt said he feels there is support for the three major elements of the strategy – the Inner Area, which will require long-term waste-management activities, the Outer Area, which is outside the final footprint and is planned to be remediated to support unrestricted surface use, and the groundwater. Matt said he has heard questions from the HAB regarding how the strategy addresses issues like characterization. DOE has also heard questions about the decision structure and how consistent, comprehensive decisions will be made.

Matt provided an overview of the CP strategy, including how past HAB advice was taken into account. He reviewed the need and purpose of the document. As River Corridor cleanup is completed and remove, treat and dispose (RTD) work is finished, DOE needs to have cleanup work ready to ramp up on the CP. Matt said a vision on how to make and implement decisions was needed to supplement what is in the TPA, which has enforceable milestones. He said the strategy brings together requirements, methodology and cleanup decisions, and establishes goals, objectives and consistent principles to make decisions in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA). Matt said the CP Cleanup Strategy provides a solid basis for future funding requests and DOE will have a flat or slightly ramped up funding profile and must ensure this goes to the final cleanup of the CP.

Matt reviewed the three focus areas of the CP Cleanup Strategy. The first focus area is the Inner Area, including shrinking the active cleanup to the smallest practical footprint while being protective of human health, ecological resources and the groundwater. He said DOE believes it can shrink the Inner Area to less than 2 percent of the original site. The second focus area is the Outer Area, which DOE has started to clean up based on established cleanup levels from the River Corridor. The third focus area is groundwater, which Matt said underlies the CP and groundwater goals and regulatory requirements are the same, including cleaning up existing plumes to meet drinking water or aquatic standards and containing emerging plumes on the CP to prevent them from reaching the river.

Matt provided more detail on the Inner Area, which will have long-term residual contamination in the soil and buried waste like at the Environmental Restoration Disposal Facility (ERDF). He said DOE has the goal of minimizing the size of the area requiring long-term management and configuring waste and residual contamination to be protective of human health and the environment. Matt said the strategy divides the Inner Area into 10-12 small areas, such as U-Plant and the Plutonium Uranium Extraction Plant (PUREX). Once decisions are made for each of these areas there will be individual work

plans. A master work plan will sequence which area is completed first and will have enforceable schedules or milestones. Matt said once cleanup is completed in accordance with CERCLA and RCRA, the effectiveness of the remedies will be monitored. He said the key component of monitoring is monitoring the groundwater and vadose zone so if there is movement DOE has the resources and capability to quickly react, adjust remedies as needed, contain contaminated groundwater to the CP, and eventually remediate the contamination.

Matt said the Outer Area of the CP, which will not have long-term waste-management activities, includes 180 waste sites and covers 65 square miles. DOE plans to clean up this area to levels comparable to the River Corridor, with the exceptions of two landfills – the non-radioactive dangerous-waste landfill and the solid-waste landfill. Matt said DOE is working on closure plans for these landfills with the Washington State Department of Ecology (Ecology), and these will most likely be closed in place with a barrier. DOE plans to RTD the remainder of the Outer Area waste sites to allow for unrestricted surface use comparable to the River Corridor and conserve ecological and cultural resources in that area. DOE plans to decontaminate and decommission (D&D) excess facilities, including the fuel storage facilities in the north area and 212-N, P, and R. Matt said DOE is planning one record of decision (ROD) for the Outer Area and is currently doing cleanup decisions using a memorandum of action. He said the goal is to complete cleanup of the Outer Area and River Corridor by 2015 in order to focus on work in the Inner Area, including the Waste Treatment Plant (WTP), stored transuranic (TRU) waste, and the geographic areas in the Inner Area.

Regarding the groundwater approach for the CP, Matt said DOE, Ecology and the U.S. Environmental Protection Agency (EPA) have agreed to a groundwater strategy that implements CERCLA and RCRA requirements. This strategy targets key contaminants such as carbon tetrachloride, technetium-99 and uranium. Matt said DOE plans to contain these key contaminants to the CP and remediate them to meet drinking water standards using 200-ZP-1 as a template. He said pump-and-treat systems will be implemented in the next few years to continue to contain key contaminants and eventually remediate these plumes.

Matt said the CP Cleanup Strategy reflects input received from the tribes, the HAB and other stakeholders and provides a roadmap for cleaning up the CP and a basis for sustained future funding. He said the strategy document was provided to regulatory agencies and the HAB at the end of September and DOE plans to use this feedback to discuss and propose milestones for completing decision-making on the CP and implementing the M-16 series of milestones. Matt said stakeholder and public involvement will continue throughout the CP cleanup decision-making process and implementation.

John Price, Ecology, provided a regulatory agency perspective on the CP strategy document. He highlighted places where there are differences between the CP strategy and past HAB advice. He said Matt gave an overview of the three parts of the strategy, but for Ecology and EPA there are few differences between the Outer Area and the groundwater.

He said there is more work to finish these decisions, but he thinks the Tri-Parties have similar views on these pieces of the cleanup. John said there is a great deal left to be decided on the Inner Area. He said the main goal is to protect human health and the environment, but the regulations are flexible and the Tri-Parties have differences about how these will be protected.

John reviewed the reasonable maximum exposure (RME) cleanup levels in the CP strategy. He said the strategy recognizes that cleanup levels for sites in the Inner Area will be established recognizing permanent federal control, and there are many hazards that the Tri-Parties want under federal care and budgeting. He said because of this DOE has developed scenarios for exposure levels, including a surveillance and maintenance worker and an adult and youth trespasser. John said for the state regulations, Washington develops RME cleanup levels only considering either residential or industrial exposure scenarios, but these are for chemicals and not radionuclides and land uses other than these scenarios may not be used for cleanup levels. He said the Washington Administrative Code (WAC) that covers alternate RMEs is the applicable or relevant and appropriate requirement (ARAR) for chemicals, but not radionuclides.

John reviewed institutional controls (ICs) in the CP strategy. He said HAB Advice #132 states that the best way to ensure a continuous human presence is to have people actively involved in the core zone, rather than relying on long-term government control of these areas. He said the CP strategy states that use of the core zone will be limited to waste management, which is a key difference between the strategy and past Board advice. John said the CP Cleanup Strategy says an IC plan for the entire Inner Area will be developed. He said he thinks a plan is a good idea, but it is presented in the CP Strategy as influencing cleanup decisions and in Washington the regulations consider ICs as a last resort to be used only if it is not possible to clean up everything.

John reviewed characterization in the CP strategy. He said DOE states that it believes that there is sufficient existing characterization data to make remedy decisions but envisions three phases of characterization. This differs from HAB Advice #132, in which the Board states that the ideal for remedial actions at CP waste sites is to first characterize them. John said characterization of pre-1970 burial grounds has also been an issue the Board has addressed. The WAC requirement for characterization of these sites states that sufficient characterization is needed. HAB Advice #170 says that DOE does not have sufficient knowledge about the amount of contaminated materials buried on the Hanford site. John said the CP strategy has a different take on this issue and says DOE will rely on information obtained from process knowledge and sampling and analysis of waste sites. The strategy states that DOE will work with Ecology and EPA to focus characterization on what is needed to ensure cap performance, which is different from the HAB's view in Advice #170 that DOE should not evaluate any proposed solution, including capping, without full characterization.

John said DOE states in the strategy that it will continue to assess new technologies to protect the groundwater. The Board has urged the reinstatement of the Site Technology Coordination Group in Advice #156 and #204. John said he thinks what is lacking in the

CP Cleanup Strategy is not the commitment to do technology development, but how to do technology development. He said the HAB flowchart on CP remedial action values includes an evaluation of whether it is appropriate to invest time and money into new technologies, and the regulatory agencies have the mandate to help DOE make decisions in the near-term.

### ***Agency Perspectives***

EPA, Ecology and DOE-RL identified specific areas of the CP Cleanup Strategy about which they would like to hear HAB feedback.

- Craig Cameron, EPA, said EPA wanted to participate in the breakout sessions to hear the dialogue about the CP strategy and was hoping to learn more about the document after hearing HAB questions and dialogue. He said areas of interest for EPA are the long-term management DOE is proposing on the CP, the exposure scenarios, and what is meant by a continuous area of management, including the use of ICs over a contiguous area and intruder scenarios. Craig said EPA understands that there are disposal facilities that need to be watched for a long time, but what this means for the waste sites and areas between these facilities is important to consider.
- John said on the overall decision structure and geographic approach there are 10-12 cleanup decisions in the Inner Area. He said Jay Manning, Director of Ecology, heard a positive response to DOE's proposal to do a smaller number of decisions. John said to have three main decisions for eight waste sites in the Inner Area would result in complicated decisions with high implementation costs. Regarding characterization, John said Ecology would like to hear value statements on how much characterization is sufficient and feedback on DOE's proposal on post-decision characterization to make sure remedies are protective of human health and the environment. John said capping is an important issue to the Board. Ecology and EPA put together a white paper on CP cleanup that was a predecessor to the CP strategy. He said DOE felt that the document said that the agencies are against capping, but the Oregon Hanford Cleanup Board thought it favored capping. He said hearing values about how much capping should be done in the Inner Area would be helpful. John said there will be permanent waste disposal in the Inner Area and approximately six of those decisions have already been made, such as ERDF and the Navy reactor compartments.
- Craig commented that different groups had different reactions to the CP cleanup white paper, and the same can be said for the CP strategy document. He said one positive aspect of the HAB workshop is to discuss these differences.
- Matt said DOE is interested in values, concerns and issues related to the CP strategy as the agencies discuss and collaborate on changes to the TPA in order to implement the strategy. He said this input is important so the agencies can use it during their continuing negotiations on the strategy.

## **Topics for HAB Input – As requested by the Agencies**

*(as captured on flip chart notes)*

- Long-term management intruder scenarios (exposures)
- Long-term stewardship over contiguous areas
  - What does it mean for cleanup?
- Overall decision structure & approach
  - Four main RODs
  - Implementation and costs
- Characterization
  - How much characterization is enough?
  - What are the public values?
  - How will post-decisional characterization be used?
- What are the values regarding capping in the inner areas?
  - Capping versus RTD of waste site
- What are the HAB values of strategy in regards to TPA changes?

### **General Sessino: Overall Decision Structure and Geographic Approach**

*Note: The text and footnotes in the agency response and regulator perspectives includes additional clarification provided by the agencies after the meeting.*

Matt reviewed the framing questions on the overall decision structure and geographic approach for the CP Cleanup Strategy. Craig and John provided their agency perspectives.

#### **1. What does this mean for cleanup and what does this mean for integration?**

Matt McCormick, Department of Energy – Richland Operations Office (DOE-RL), said the Central Plateau (CP) Cleanup Strategy provides a comprehensive approach to CP cleanup, including how to implement quality cleanup of the Inner Area to provide long-term protectiveness. He said the strategy provides a systematic approach to cleanup, so the cleanup actions for each waste site will be clear and transparent based on the threat to the environment or human health and the strategy's decision logic. Matt said DOE is hoping the strategy provides an understandable process that allows for consistent remedy decisions. For example, when cleanup is completed at the 200-West Area, the process for determining the threats to groundwater, ecology, and human health and the environment for the 200-East Area should use the same transparent process as the 200-West Area. Matt said in terms of implementation, the strategy should provide a clear, interactive way to show decision units and understand the scope of cleanup and remedies for waste sites and burial grounds. Matt said the document addresses facilities, waste sites, the remedy for all waste sites, and the overall schedule to complete cleanup, as well as information on each site's process history. He said DOE hopes the strategy provides context and a logical, easily understandable picture of cleanup.

## **2. How can you discuss such an approach without addressing tanks?**

Matt said the tanks are an integral part of the strategy in terms of recognizing that the tanks store the waste that came from the canyons and Treatment, Storage and Disposal (TSD) units, especially single-shell tanks (SSTs), and those units will be closed under the Washington Administrative Code (WAC) in accordance with state requirements. The Tank Closure and Waste Management Environmental Impact Statement (TC&WM EIS) will make decisions covering the radionuclides inside the tanks and the state will make a decision on hazardous constituents in the tanks through the site-wide permit. Matt said the strategy recognizes the TC&WM EIS's role of supporting decisions<sup>1</sup> regarding tank-waste removal, while the CP strategy focuses on the environmental media under the tanks and characterizes DOE's path forward for dealing with this waste. Matt said DOE needs decision coverage for the radioactivity of environmental media and clarifies this portion of Appendix I of the Tri-Party Agreement (TPA). He said this relates to closure decisions for the tanks and should be released at the same time as that decision.

## **3. Can a graphic showing timeline and context be prepared for this strategy to make it easier for the public to grasp and understand? Can a cost and schedule for accomplishing the cleanup be made available?**

Matt said DOE developed a visual animation of the CP strategy that will be used to help regulators, tribes and the Hanford Advisory Board (HAB or Board) understand decision units, implementation of decisions and a geographical approach to implementing decisions. He said DOE recognizes that it cannot determine the cost and schedule of a remedy until the remedy has been decided. For the M-16 milestone that states that most of the work in the strategy document will be completed by 2024, DOE will look at the cost to implement that date and determine whether there are adjustments needed in terms of funding to meet that date. Matt said if the decisions take longer the agencies will have to consider adjusting that milestone, but they are not currently discussing any changes to the milestone.

Paul Seely, CH2M HILL Plateau Remediation Company, presented an interactive tool (i.e., visual animation) they have developed to show how the elements of the CP strategy come together in an easy-to-understand manner. He said input on ways to enhance the tool is welcome since it is a dynamic tool that will be updated throughout the process. The major areas on the CP are the permanent waste sites that will require long-term institutional controls: The Inner Area, the Outer Area, and the groundwater. Paul said the interactive tool will allow for looking at the detailed information within each decision unit. As the strategy moves forward, the tool will illustrate the decision process related to the M-15 milestones, including the remedial investigation/feasibility study (RI/FS), the proposed plan and the final record of decision (ROD). He said for the RI/FS there has been concern about whether all of the operable units (OUs) will be captured, so that information will be included to track OUs as they are being grouped into larger decision

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<sup>1</sup> The EIS will evaluate alternatives – an EIS does not actually make a decision. A National Environmental Policy Act (NEPA) Record of Decision (ROD) will select one of those alternatives.

units. Paul said the M-16 milestone is the remedial design/remedial action (RD/RA) work plan part of the process and will be divided into implementation zones. During this phase individual site data will be collected, and users can zoom in on a particular area and see what is involved in each implementation zone. The CP strategy addresses the necessity to address all waste sites, and Paul said this tool will help track the status, remedy and implementation for each waste site and provide a visualization of the geographical configuration of each area. He said a tool will be developed with the same level of information for the Outer Area and will provide an easy-to-use interactive framework for understanding the strategy and progression of cleanup.

**4. How does the current cleanup strategy compare with the previous plan? Is there a difference, or are the strategies basically the same?**

Matt said there was not previously a strategy for CP cleanup. DOE has had strategic documents in the past, including a 2002 document that covered where the site was in terms of cleanup and making sure the area is safe and secure for long-term surveillance and maintenance, but this focused primarily on removing contamination in the River Corridor. Matt said the CP strategy is the first comprehensive strategy of cleanup that includes groundwater, waste sites, and excess facilities as well as Department of Energy – Office of River Protection (DOE-ORP) work of cleaning up tank waste.

**5. How does this plan respond to HAB values - especially the CP Decisions flow chart and the Groundwater Values flow chart?**

Matt said the CP strategy fully embraces the groundwater flow chart. He said the one difference is in nomenclature – the flow chart states that groundwater will be remediated and restored to its highest beneficial use, while the strategy refers to restoring groundwater to its beneficial use. Matt said DOE wanted to reflect what is in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) regulations, but this is just a different term for the same requirement.

Matt said the flow chart on CP remedial action values is reflected in the strategy regarding implementation, mainly in terms of CERCLA, although Resource Conservation and Recovery Act (RCRA) requirements are analogous. He said the HAB flow chart focuses on characterization before a decision is made, but the strategy also focuses on characterization during remedy design, implementation and deployment, which is important because new information could be discovered during this process. Regarding determining whether a waste site requires action, Matt said as DOE moves forward with waste sites in OUs they will conduct an Inner Area baseline risk assessment but assume that remedial action is required. There may be cases in which site conditions will not require further cleanup action. Additional elements of the CP remedial action values flow chart are reflected in the terms of analysis to reach a decision, including the CERCLA threshold and balancing criteria. Matt said CERCLA has a preference for remove, treat and dispose (RTD) for cleanup of a National Priority List (NPL) site, which is built into the process through the CERCLA criteria. When it comes to a final remedy, Matt said state and community acceptance are criteria that are reflected in the preference for RTD.

He said the process of implementing CERCLA covers the HAB advice included in the flow chart.

Regarding the technology component of the flow chart, Matt said DOE has a plan focused on minimizing or eliminating the threat the deep vadose zone has on groundwater, centered on uranium and technetium-99. Matt said DOE looked at the treatability test plan being implemented and other technology development initiatives such as the Pacific Northwest National Laboratory (PNNL) investigations of ways to remediate the deep vadose zone and other areas using labs such as the Savannah River National Laboratory (SRNL) and Vanderbilt University. He said as technologies mature DOE can apply these to the deep vadose zone to minimize the threat. He said a defense-in-depth strategy of monitoring areas that are a threat to groundwater deep in the vadose zone is needed to detect movement and have the capacity to contain the plume to the CP if it does reach the groundwater.

### ***Regulator Perspectives***

- Craig Cameron, U.S. Environmental Protection Agency (EPA), said when looking at the flow chart on CP remedial action values, it is important to consider the issue of protectiveness and threshold criteria. He said points of compliance for ecological protection and exposure scenarios (whether for a traditional industrial worker or for someone driving over an area to do IC management) have an important role in deciding whether there is a need for an active remedy. Craig said if it does not look like there is a need then the rest of the boxes on the chart are not considered. He said the CP strategy includes defense-in-depth, but EPA has a preference for treatment and active remedies. Craig said the site should not rely as much on ICs and measures that require waiting for contamination to reach the groundwater, which is why EPA has pushed for treatability studies to provide technologies to apply to the deep vadose zone. He said these efforts need to continue to ensure that the agencies are not waiting for the contaminants to reach the groundwater.
- John Price, Washington State Department of Ecology (Ecology), said Matt mentioned that the CP Cleanup Strategy clarifies Appendix I and modifies how SSTs will be closed, but the Strategy is not a TPA document and Ecology has been clear on the importance of following through with the Appendix I process on closing SSTs. He said DOE has proposed four CERCLA RODs for the Inner Area and Ecology would like feedback from the HAB on the smaller number of decision units.

### ***Committee Discussion***

- Pam Larsen asked whether the interactive tool is available to the public. Matt said the intention is to make that available. He said suggestions on information the HAB would like to see included in the tool would be helpful.
- Larry Lockrem asked when the tool would be made available. Matt said DOE is working to make it available as soon as possible and is considering the best format for the tool. Larry L. recommended using a Web-based format, as this would help capture changes to the process. Matt said DOE will make the interactive tool available on its Web site as soon as possible.
- Susan L. suggested that the Public Involvement and Communications Committee (PIC) should look at how to make the interactive tool better for public use, and asked where HAB members should submit their suggestions. Matt said suggestions should be submitted to Paula Call, DOE-RL.
- Ken Gasper commented that there have been many discussions on planning between now and 2015, but after 2015 there are issues with priorities and funding. He asked whether DOE will focus on risk-reduction as a vehicle for addressing and scheduling activities or if it will focus on geography as it moves forward with creating schedules. Matt said this is an area of the vision where DOE can add detail because each of these priorities will determine the schedule. He said in addition to CP waste, burial grounds and buildings, there is legacy waste that may not be finished by 2015 and will need to be retrieved and shipped to the Waste Isolation Pilot Plant (WIPP) if it is Transuranic (TRU) waste. He said remedy implementation of the groundwater should be completed by 2015, but DOE will continue to monitor and operate groundwater systems along the river and in the CP. He said the schedule will be a risk-based decision that must take technical restraints into account, such as T-Plant unable to begin in 2015. Briant Charbonneau, DOE-RL, said currently DOE has RODs, issues work plans and pursues work plans. In the new strategy DOE is proposing that, after decisions are made that set the objectives and cleanup levels, DOE will develop individual work plans for each zone. He said DOE has committed to involving the public in this process and getting feedback on the details of the implementation work plans. He said major decisions may have four to six different work plans and DOE would receive input on each of these, which would keep the public engaged in the process.
- Pam asked what is included in each of the four RODs. Matt said the first ROD is for the Outer Area decision unit and will be completed within a year. This will also include a combined proposed plan for PW-1, 3 and 6 and CW-5 in the Inner Area, which include approximately 30 waste sites. He said this should be available for public comment in the spring of 2010 with a final ROD by the end of fiscal year (FY) 2010. The second ROD is for waste sites, burial grounds and key facilities in the 200-W Inner Area. The third ROD is the East Area decision unit, including two canyon facilities. Matt said the fourth ROD will cover the balance of the Inner Area, including the environmental media beneath the tank farms. This will be sequenced with the closure actions of the tanks that include a series of decisions such as amending the ROD for the next tank farm after Tank Farm C to address

environmental media. Briant said it is important DOE gets the high-level objectives of these in the proposed timeframe since some major activities will ramp down in 2012-2013 and the RODs should be clear in order to continue the same level of funding in the budget request.

- Dale Engstrom commented that an overall comprehensive strategy was needed to have a consistent way to approach the problems and determine the end state, and the interactive tool is impressive. He noticed that tanks are under the “Other Balance” category, but Oregon feels that there are too few RODs and suggested that the implementation zones used in the online tool be broken out as separate RODs. He said this would create eight or nine areas rather than having an overall ROD that deals with a variety of burial grounds and processes. He said the state of Oregon is also nervous about the exposure scenario change and feels that there is a lack of control of who can access the site in the future. Dale said Oregon would suggest keeping the exposure scenarios more conservative. Regarding defense-in-depth, Dale said there is a great deal of attention being paid to cleaning up cribs and solid waste as well as groundwater, but little is being done on the vadose zone. He said there is not currently technology to deal with the vadose zone, but the defense-in-depth approach only monitors the deep vadose zone and there are technologies that could be discussed. Briant said the deep vadose zone is being pursued, including uranium sequestration. He said DOE has done laboratory testing of these technologies and intends to move those into the field for demonstration purposes. Briant said DOE has been working on this issue for a number of years and is committed to improving it.
- Keith Smith asked whether the comprehensive plan for the CP includes a way to move data forward as new technologies become available so it is not lost in the future. He said in the future someone will need to retrieve data on the characterization and decision processes. Matt said this is a good comment.
- Dick Smith asked whether there will be an opportunity for the HAB to see the RI/FS process before it is finalized in a proposed plan. Matt said DOE will engage with the HAB as it develops FSs with a process similar to PW-1, 3 and 6. John said the agencies have talked about the four RODs, and asked whether having more decisions would make it easier for the HAB to be involved in the process. Dick said he thinks it would be difficult to do an FS for many different areas at once since facilities like PUREX are significantly different than U-Plant and looking at the proposed engineering approach is important.
- Larry L. said that he appreciates the CP strategy document. He asked the long-term strategy for whether the Outer Area will be designated as industrial use or a park area. He said companies that potentially want to use those locations will impact economic development for the area. He said companies need to start to understand when use of this area may become available, and asked when a process for commercialization will be put in place. Matt said most of the Outer Area is undisturbed sage-steppe environment and the Comprehensive Land Use Plan (CLUP) calls for that to be preserved. He said there are some industrial areas set aside in the 300 Area and north of the 300 Area. He said there are areas that have been disturbed by past operations and would be likely areas for industrial facilities on the CP. An industrial park or power plant on the CP would most likely be located in the old core zone footprint of

20 square miles. Matt said much like Energy Northwest, the land would be under continued federal control. Pam said there is an industrial area in the west that has potential for use because it is cleaner land, and there are currently plans underway to use this location. Matt said he thinks DOE's path forward with the strategy supports these plans and provides flexibility for developers. Mike Korenko said there is also a great deal of interest in business cases being developed in the 400 Area and cases being developed for energy parks.

- Mike commented that the integration between tanks and groundwater is a positive step forward. For the vadose zone, particularly under the tank, there are specific cases such as SSTs that have leaked where the best way to remediate this is to go through the bottom of the tank to get to the vadose zone. He said one possibility is making the vadose zone an OU to make sure there is a focus on preventing contamination from reaching the groundwater.
- Jerry Peltier, former HAB member, asked how changes can be captured and incorporated in the CP Cleanup Strategy document. Matt said the document is DOE's strategy and is not a regulatory requirement. He said it will be used as a basis for DOE's discussions with regulators for setting deadlines and requirements that will be supported with TPA milestones. Matt said the CP strategy is a requirement in terms of contractors for CP cleanup and will guide them through how waste sites are configured and how to make decisions, but DOE will review contractor plans to ensure they are consistent with the strategy DOE has developed.

### **Feedback on Central Plateau Strategy including Overall Decision Structure & Geographic Approach**

*(as captured on flip chart notes)*

- Schedules – take into consideration when considering risks
  - Decision making with regulators for risk reduction
- RODs outline in advice to request funding level
- HAB overview of Central Plateau mapping tool
  - View 8 or 9 approaches
  - Implement zones as RODs
- More focus on vadose zone
- Transferability of technological knowledge
  - How can information be retrieved 20 years from now
- HAB involvement in development of RI/FS and Proposed Plan processes
  - Best done individually
  - RAP follow-up
    - What makes sense to group/separate
- When will DOE plan for use of area (e.g. industrial park)
  - How does the CP Strategy address/support use of area?
  - Look at the 400 facility/area

- Is there an operable unit vadose zone?
  - How to address tank leaks?
- How will CP Strategy adopt and/or accept changes?

### **First Breakout Session: Inner Area**

*Note: The text and footnotes in the agency response and regulator perspectives includes additional clarification provided by the agencies after the meeting.*

Briant provided an overview of the framing questions on the Inner Area.

#### **1. What criteria will be used to determine whether to retrieve, treat, and dispose wastes vs. using barriers (caps)?**

Briant Charboneau, DOE-RL said the criteria developed for the CP strategy will consider all pathways to ensure each remedy for each waste site is protective of ecological resources, groundwater and human health. Briant said there are no shortcuts to groundwater protection and no changes to ecological exposure evaluations. Briant said the criteria developed for the strategy will be applied to each waste site within an operable unit. DOE has a preference to remove, treat and dispose (RTD) on shallow sites in the Inner Area if the proposed remedies for adjoining wastes do not already provide the necessary level of protectiveness.

The CERCLA criteria requires a remedy that balances costs, human health, and long term effectiveness with state and public acceptance. Briant thought that the key to DOE's proposed strategy is a balanced approach that eliminates the disconnected remedy selection process currently being used. Briant said the regulations can be interpreted differently, and different people would flex the regulations in different ways to get different answers. Briant thought that it was important to consider the relationship between waste sites in order to understand the impact of the remedy on the neighboring waste site. If a small waste site is next to a canyon, the remedy might say to dig it up if the canyon next to it was not part of the consideration. However, if you know the canyon will be capped you can consider whether that will be protective of the waste site as well. Every waste site will be considered individually, and rules will be applied to every site.

Briant said there currently are no technologies to address the deep vadose zone contamination. Briant said DOE has committed to continue testing, monitoring, and enhanced detection so they can take action if contaminants start moving towards the groundwater. Briant said they tried to include all options for addressing the deep vadose zone contamination in the strategy, but encouraged additional suggestions or comments if anyone had other ideas. Briant was asked by HAB members if DOE had considered known technologies such as mining. He said yes they had evaluated that and other similar technologies. He was asked by Ecology to share the results of that evaluation with the regulators and the HAB. He agreed to do so.

**2. What is the rationale for the contiguous waste management area? What are the implications to cleanup standards, reasonable maximum exposure scenarios and risk assessments for Inner Area waste sites as compare to the Outer Area? How will the Natural Resource Damage Assessment process play out for the Inner Area?**

Briant explained that DOE evaluated whether to put a fence around each waste site or to define a contiguous waste management area. Briant said the purpose of the contiguous area is to avoid setting an alternative land use between two contaminated areas, so it is clear what is a waste management area and what is not. He said the Inner Area boundary is not fixed; it can be defined further. The proposed boundary was developed using key markers such as the Environmental Restoration Disposal Facility (ERDF), mixed waste trenches, Interim Disposal Facility (IDF), U Plant, and other large facilities and waste sites on the Central Plateau. Briant said the boundary also considers the deep vadose zone contamination problems that waste sites have created. Briant said DOE-RL felt that putting fences around each facility or waste site would not show the boundary of where the contamination has moved and they did not think it would be prudent to fence off waste sites and allow other uses between them.

Briant said the strategy is consistent with the Comprehensive Land Use Plan (CLUP) and with HAB advice which has encouraged making the site as small as possible. The strategy identifies a core zone as the “Inner Area” and leaves the rest of the area open to DOE sponsored activities to ensure that DOE maintains a presence at the site, which is a value of the HAB. Briant said he thinks they can reduce the Inner Area to 10 square miles under this strategy. Briant said the Inner Area is small enough that the plants and animals act consistently across the area. For example, if a plant can grow and extract contaminants in one area, you can assume it could do so in the remainder of the inner area, too. DOE will select a specific depth, which they will work with regulators and stakeholders to define, and apply it across the Inner Area to be protective of plants and animals across the entire area. Briant said DOE is considering a surface cleanup standard between 6-15 feet and a human exposure scenario limited to a maintenance worker and an intruder. Briant said they will evaluate other scenarios for the remedy, but the analysis for the CP strategy included anticipated scenarios as part of the feasibility study evaluation, but the anticipated scenarios will be limited to maintenance worker and an intruder.

Briant said the strategy only includes two cleanup standards: the Outer Area (including the portion of the core zone not included in the Inner Area) would be cleaned up to similar standards as the River Corridor, and the Inner Area would have a different cleanup standard. Briant said the difference between the two standards will be based on anticipated land use. DOE does not believe that anyone will be digging a basement in the Inner Area on top of one of the waste sites. Briant said DOE will evaluate for the Outer Area a rural residential scenario. There is a rural residential scenario being used to evaluate cleanup alternatives for the River Corridor (which includes digging a basement) will also be used for the Outer Area to evaluate cleanup alternatives but not within the Inner Area. This scenario will not be used for the Inner Area since it is so inconsistent with using the land as a permanent waste management area.

Briant said DOE is considering Natural Resource Damage Assessment (NRDA) implications while proceeding through the CERCLA cleanup process. He said the CP strategy aims to minimize the footprint of the site long term which is consistent with NRDA. Briant said the strategy also does not make the cleanup decisions made through the CERCLA process. Briant said NRDA is ongoing and would not be completed by the time the cleanup decisions are made, but the values will be considered in the decision process.

Briant was asked by HAB members to consider the impact of lateral flow in spreading contamination beyond the “fence lines” when setting the remediation boundaries.

### **3. What effect will the TC&WM EIS have on cleanup decisions/RODs?**

Briant said the primary effect of the CP strategy on the TC&WM EIS is timing. Briant said DOE is proposing four<sup>2</sup> CERCLA Records of Decision (RODs) for the Central Plateau (not including groundwater decisions): 1) the early decisions for PW and CW waste sites; 2) East Inner Area; 3) West Inner Area, and 3) the balance<sup>3</sup> of the Inner and the Outer Areas. Briant said tank closure is included in the balance between the areas. Briant said the TC&WM EIS is related to the RCRA action which deals with tank hardware and tank content. DOE’s CP strategy will deal with what has leaked out of the tanks and the contamination under the tanks<sup>4</sup>. The effect on the EIS is that a RCRA decision for the tanks cannot happen until the EIS is completed and comments have been responded to. The tank farm contamination under Waste Management Area C could be addressed in a 2012-14 timeframe.

### **4. Is the potentially long “Interim” storage of high level waste considered?**

Briant said the strategy allows the Inner Area boundary to be flexible, so it can be defined by the CERCLA ROD. Briant said if a decision is made regarding long term or interim storage of waste, DOE would prefer that to happen in the Inner Area. The other option is to store it in the area immediately adjoining the Inner Area and amend the Inner Area. DOE would prefer to have the Inner Area used for waste management purposes. There may be waste sites that could be impacted by the siting of a potential facility, so DOE would like any waste storage facilities sited in the Inner Area core zone.

### **5. How will this strategy factor in the pre-1970 buried waste – especially in section 3.1.2.1?**

Briant said the key premise of the strategy is to develop a consistent set of interpretations for the entire inner area. Briant said to the extent all waste is treated equally, the pre-

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<sup>2</sup>Five RODs

<sup>3</sup> The “balance of the site” actually includes the TW waste sites associated with the B/BX/BY and T/TX/TY tanks farms, not closure of the tanks themselves.

<sup>4</sup> Ecology has been clear that the contamination under the tanks is being dealt with through M-45 milestones whereas the CP strategy responds to the February 2009 Agreement in Principle covering M-15 and other milestones.

1970s waste would be treated the same way as any waste that is buried in the Inner Area. Briant said DOE will treat pre-1970 transuranic (TRU) material the same as non-TRU materials disposed of in the same time frame. The strategy evaluates risk, and therefore would evaluate the risk the same as other waste disposed of in the area. Briant said that no waste would be given special consideration; it would all be evaluated the same way (i.e., under consistent processes) through the CERCLA process.

### ***Regulator Perspectives***

- Larry Gadbois, EPA, said during the morning discussion the topic came up of how many RODs should be issued for the Central Plateau. Larry said it is important to consider the trade-offs with the number of RODs. The bigger the ROD the more complicated it is for the regulators and the public to understand. However, a larger ROD also provides a bigger picture and more consistency across the site. Larry said there are areas where the waste sites are pretty well understood and there is agreement on the remedy. In other areas, the Tri-Parties do not agree on a remedy and not much is known about the waste sites. If the unknown areas are packaged with the known areas, that may prevent a decision from being made and work from progressing on some of the easier sites.
- John Price, Washington State Department of Ecology (Ecology), said he agreed that there are trade-offs between how to package the RODs. John thought that DOE has heard preferences for both ways of doing the RODs (i.e. give the public a more comprehensive look at cleanup versus do not make the RODs too complicated). John said Ecology would like the Board's thoughts on which way they prefer. John also commented that he thought DOE was planning to finish characterization for all waste sites except for burial grounds, which they would treat differently. John said DOE is proposing dealing with burial grounds under EPA guidance for landfills which would contradict the statement Briant made regarding treating all waste equally.
- Briant explained that DOE differentiates between waste sites and burial grounds because of the presumptive remedy. He explained landfills at military bases in Washington State have used this presumptive remedy; that is to ensure nothing is leaking, isolates exposure, and has a cap and monitoring system. Briant said it is not typical to dig up and characterize a landfill, which is relevant to some of the burial grounds on site. This approach has been used at other sites to set a cleanup objective.
- CERCLA says to determine if there is a hazard. In this case DOE is assuming there is a hazard for the Inner Area. They are looking at exposure to plants/animals, people, and groundwater. The goal of the strategy is to set straightforward rules for the exposure pathways. Briant said plants and animals would be consistent in terms of exposure pathways across the Central Plateau. Groundwater will be consistent across the site. Briant said that human health is the only pathway that would be different. DOE is restricting the human land use for the Inner Area because they do not expect someone to dig a basement in the Inner Area, but they do expect this in the Outer Area. Briant said the

contamination on the surface will need to be removed or buried deeper (i.e., deep enough to prevent exposure to plants, animals and anticipate human use. DOE will also include bounding alternatives such as maximum RTD and maximum containment to assist with the decision making), and they will have to determine the groundwater threat. DOE will include some extreme cases in the analysis to evaluate the scenarios in the risk assessment to assist with the decision making.

- Craig Cameron, EPA, said DOE's strategy implements principals that would be applied across a large area and would influence the set of cleanup levels protective of groundwater. Craig said there are differences between the west area and the east area (and even within those areas) that would affect the cleanup levels for protection of groundwater. Craig asked how DOE would address these differences in one decision. Briant said the strategy does not prevent different cleanup levels of soils in different areas. Briant said in one area they may cleanup to a certain standard that is protective of groundwater, but there could be different standards in a different area because the soil contamination level (and soil characteristics) is different.
- Craig said the CP strategy would lump decisions together and some units might need more characterization data (or have disagreements about what is enough, like with the burial grounds) and thus slow down decisions that could be made now. Craig said he was concerned about this because it seems like there is agreement with what to do about the BC cribs and trenches. Craig asked if there has been any consideration given to including BC cribs and trenches in the Outer Area or in a separate removal action so that if additional money became available, that work could begin sooner. Craig also said everyone should keep in mind that the CERCLA process is applied to waste sites with site-specific information; it is not applied to a certain type of waste site. Craig said there are different circumstances that would warrant different levels of active cleanup (i.e. go after contamination in a particular area, excavate below the engineered structure, or remove the mass of contamination to protect groundwater or an intruder). Craig thought that by trying to apply consistent principles, DOE is being pre-decisional about how they are approaching waste sites. Craig said he understands the goal of having a composite or cumulative analysis, but said CERCLA evaluations have to be applied on each actual waste site.

Briant said the BC cribs and trenches are in the Inner Area because of the deep vadose zone contamination. Briant said the strategy will also evaluate "book end" remedies to show scenarios that would push the envelope for remediation and for containing as much as possible in place. Briant said the strategy will not affect field remediation for the next few years because of where this work falls within the site priorities Briant said DOE is proposing to clean up the outer area by 2015, and reduce the Inner Area to less than 10 square miles. Briant clarified that the remedy will be applied to every site individually, not universally.

### ***Inner Area Breakout Session #1 – Committee Discussion***

- Dale said the strategy discussed contiguous areas in a way that concerned the State of Oregon. Dale said the strategy seems to “create islands of clean in a sea of dirty,” rather than “leaving islands of dirty within a sea of clean.” Oregon felt that the language suggests that DOE prefers to fence off the Inner Area as a waste management area and leave shallow burial grounds. Dale said Oregon does not support this and does not think contiguous is a good word to define the Inner Area. Oregon supports shrinking the footprint of the site, but not leaving the Inner Area as a large waste area. Dale encouraged DOE to use Ecology’s exposure scenarios instead of creating new ones. Dale felt the cleanup objectives and levels should aim to be more conservative, instead of aiming for a minimum level because the issues at Hanford are complex and may require a larger buffer when setting cleanup limits. Dale said there is a tendency to approximate during characterization, and a bigger buffer on the cleanup level will prevent cleanup from going over the limit. Briant said DOE feels good about the footprint of the Inner Area. The CLUP advice was to shrink the footprint of the site to 20 square miles. This strategy aims for half that size or less. Briant said DOE is not aiming for good enough; they are aiming for as small as possible.
- Dale said the groundwater strategy has been labeled defense-in-depth and includes monitoring the vadose zone and working on new technologies. Dale thought that the pump and treat strategies to address the groundwater are good, but felt that the vadose zone needs to be addressed at the same time. Dale said the vadose zone will require additional funding for studies. Briant said DOE is exploring every technology available for the vadose zone. The defense and depth strategy includes tracking, monitoring, and studying the issues. Briant said their goal was to include everything they could to address the issue. He said if people have other suggestions, they will consider adding additional tools.
- Pam commented that Matt said during the morning discussion that pre-1970 TRU waste would be treated consistently with other TRU. Pam said Briant’s answer to the framing question did not seem consistent with what Matt said. Briant explained that he was trying to clarify Matt’s message that it will be considered the same as other buried waste in the area. Briant said that no commitment has been made to dig up pre-1970 TRU. The CERCLA guidelines require DOE to determine if there is a hazard. If the pre-1970 waste is not creating a problem that is unique, it will be treated the same as the waste next to it.
- Pam asked if all of the post-1970 TRU it is retrievable. Briant said there are drums that are being retrieved that are corroded, and other waste was disposed of in cardboard boxes. Pam clarified that she was asking if all post-1970 TRU has a path for disposal. Pam said it did not seem like DOE is committed to treating all TRU waste the same. Briant reiterated that the pre-1970 waste will be treated like other waste in the Inner Area. John Price read a section of the strategy that contradicted what Briant said. Moses Jarayssi, CHPRC, clarified that Briant was referring to buried waste. Briant explained that all waste in burial grounds will be treated the same; waste disposed of in the 1950-60s will be treated the same as other waste disposed of later, regardless of the TRU content. Moses added that in the past DOE

put a tag on pre-1970 waste because they were not ready to deal with it. DOE is removing the tag and is now saying if they find TRU waste buried in a waste site, they will treat it the same as other waste and evaluate the risk. Moses said the packaged post 1970s waste that is in retrievable format is different. Susan said the Board has consistently said they do not care if the waste is buried, or when it was disposed of, if it has a risk it should be considered the same. Susan suggested bringing this topic up at the upcoming Board meeting and resurrecting the Board's advice on this topic.

- Tom Carpenter asked how the BC cribs plays into the strategy. Briant said BC cribs themselves are included in a decision unit. The control area around the cribs is currently being cleaned under stimulus money. The BC crib will be included in the Inner Area and treated as a waste site. Briant said the BC crib was included in the Inner Area because it is a waste site and needs to be dealt with, but also because it has a deep vadose zone source. Briant said the CERCLA process will show that the contamination is deep (200 feet) and the cleanup options may include digging it up, or finding a better technology, or giving up. Briant said DOE is not giving up and will continue studying and monitoring the vadose zone so they will be ready with a pump and treat technology to stop any contamination before it hits groundwater.
- Ken said that in the past, Ecology, EPA, and DOE agreed with the State's decision to remove Hanford from the congressional legislation dealing with waste classification. Ken wanted to make sure that the CP strategy addresses this issue and reflects the agreement the State and DOE had in the past. Briant said the legislation was targeted at the contents of the tank. The tanks are being dispositioned through RCRA separately. The CP strategy addresses the soil contamination near the tank farms. For the soil contamination, it does not matter how the waste was disposed of, CERCLA requires an evaluation of the risk to come up with a decision. Ecology is working with congress and is treating Hanford as an individual site and will not be included in reclassification.
- Bob Suyama said the River and Plateau (RAP) Committee recently reviewed the criteria DOE used to do the 100 Area RI/FS. Bob asked if the requirements in the strategy for the Inner Area and outer area will be in agreement with the requirements in the RI/FS. Briant said except for IS-1, and SW-2, all of the RI activities are complete. The waste sites under the tanks are an exception because of the RCRA schedule. The CP strategy says decisions should be based on implementation of the remedy and what is happening in the immediate area.
- Bob asked if the strategy would feed into or replace the work that Boyd Hathaway is doing on the Long Term Stewardship (LTS) plan. Briant said the whole site is subject to long term monitoring. Briant said there is close coordination with Boyd's group, but the strategy and the LTS plan are different. Bob asked when the LTS plan would come out. Moses said the Mission Support Contractor is working on that and there will be some impact to the plan from this strategy but he was not sure what that will be yet.
- Harold Heacock asked what would happen to TRU waste that was dug up. John said that technically, TRU material is not classified as TRU waste until it is dug up. John

clarified that when they find TRU in the soil, is it considered TRU material, but is not actually considered TRU waste until it is dug up. DOE has a process for designating TRU and if it is dug up it will be categorized and sent to WIPP. Briant said there are six liquid waste sites where TRU material was discharged very deep in the soil because of the chemical process. The risk would say that you should cap it because of the depth, but DOE may dig up some of those materials. When the materials are dug up, they will become TRU waste and shipped to WIPP.

### **Inner Area – Session I Feedback**

*(as captured on flip chart notes)*

- “Contiguous waste area” – not good language; want more clean, with smaller areas of residual contamination
- Use Ecology’s idea of exposure scenarios (e.g. industrial worker/”x” hours per week)
- Cleanup objectives/levels – work towards the amount you want to improve (more conservative buffer on approach level)
- Problem: Address the vadose zone as much as groundwater
- Look at advice for not making distinction about when waste was buried – just treat based on risk
- Address how dealing with issue of waste classification
- What is the impact from CP Strategy on LTS plan?

### **Inner Area Breakout Session #2 – Committee Discussion**

- Maynard Plahuta asked if DOE has considered any technologies from the mining industry to address the deep vadose zone contamination. Briant assured the group that DOE is considering all possible remedies including flushing, digging up, stabilizing material by binding it to the soil, and blowing air through it to dry it out and stop the movement. DOE will continue the science and technology effort and is looking at continued removal and disposal (R&D), putting caps on sensitive areas, and vadose zone monitoring to track contamination so they will be ready if it becomes a hazard in the groundwater. Briant said they have people from the mining industry on staff and they can share the information they have found with the Board if there is interest. Maynard and others said they would like to know about those technologies.
- Larry L. said that the contamination in the vadose zone could migrate out of the Inner Area. Larry L. asked if a buffer area is being considered. Briant said the exact boundary of the Inner Area is yet to be settled. Briant said the boundary will be defined in the CERCLA decisions, and they will consider an appropriate buffer. Briant said the area immediately around the Inner Area would be restricted to surface use to 15 feet; anything else would have to be specifically evaluated.
- Larry L. said DOE had an EM-21 program to evaluate technologies through universities in the past, but it seems like those technologies are often tabled and

nothing is done. Larry L. thought that there are technologies in other agencies that DOE has not tapped into because the federal government does not communicate very well amongst its agencies. Larry L. cited an example of a NASA technology that was used on a rover on Mars to characterize the soil. Larry L. thought DOE should do a better job of looking into technologies that other agencies are developing and capitalize on the funding they spent. Briant said this example is one that DOE clearly missed, but most of the technologies go through a regulatory program that alert other agencies about what is being worked on.

- Keith said when considering whether to RTD or implement a barrier, consideration should be given to the waste that would be sent to ERDF. Keith asked whether consideration had been given to making ERDF a more engineered place for disposal. Briant said the topic comes up frequently, and people have different opinions. Briant said there is a public process to deal with this issue. Briant said DOE will pose the different alternatives and hear public input on that process. Briant said a lot of the waste in Inner Area would most likely be low level waste and would be disposed of on site. Keith agreed that it is not likely they will find fuel elements on the CP burial sites. Keith said that people did not expect fuel at sites near the river either, but they found it there. Keith said when the discussions happen on those options, it will be important to consider the possibilities.
- Dick said it seems like remediation of the vadose zone is one of the largest problems the agencies have to deal with. Dick said he read about an option to flush the vadose zone in the feasibility plan. Dick said it seems like the contamination was originally deposited where the water took it and if you keep putting water in, it would eventually get to groundwater. Dick thought this option might be straightforward because you could then pump it out. Dick thought it would be worth considering removing the first 15 feet and then flushing the rest down the crib with water instead of excavating to 75 feet. Dick said some of the alternatives in the EIS must be very expensive given the complexity of digging soil under tanks, washing the soil, dumping clean soil, and shipping liquids to the WTP. Briant said the issues in the deep vadose zone will continue to expand and will be driven by immediate threats. Briant said work is progressed by immediate and less immediate threats to water/groundwater. Briant said DOE has modified and built three new pump and treat facilities this year, and three more are in construction.
- Larry L. asked about work on the carbon tetrachloride plume. Briant said they currently have a pump and treat operating at 200 gallons per minute to address concentrations at 100 times drinking water standards. DOE is working on a new pump and treat that will be operational within two years to remove carbon tetrachloride, uranium, and nitrate. The new pump and treat will remove eight key contaminants of concern. The contracts are out now, and they will be sited between the steam plant and T West.

## **Inner Area – Session 2 Feedback**

*(as captured on flip chart notes)*

- Use of mining technology in vadose zone cleanup
  - Annotated bibliography – make available to HAB
- Buffer zone attached to inner area (especially in consideration of vadose zone)
- Take advantage of technologies that may be successfully used by other industries, agencies, etc.
  - Cross-sharing technology broadens horizons
- Consider that ERDF is better engineered as a disposal site than in situ
- Option – remove soil to 15 feet, then water down rest (soil washing process)
  - Evaluate fully (concern of deep vadose zone issue)
- Value of human presence in Inner area

## **Second Breakout Session: Characterization**

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*Note: The text and footnotes in the agency response and regulator perspectives includes additional clarification provided by the agencies after the meeting.*

- 1. In what manner and how much characterization will be done to determine the amount, type and other characteristics (both rad - TRU and non-TRU - and chemical) of buried wastes in trenches, cribs and similar waste sites? Will RTD be the preferred option?**
- 2. How does the strategy ensure adequate characterization/data collection pre-and post-ROD? Is there a budget for post-ROD characterization?**

Matt combined the two framing questions on characterization. He said DOE has been completing characterization based on the supplemental characterization plan it has with regulators. He said in 2003-2004, DOE approved work plans for the majority of the remedial investigations for waste sites and burial grounds on the CP, and DOE decided more information was needed to reach a decision on the CP. DOE supplemented the characterization plan with additional boreholes and high-resolution resistivity measurements on the CP. Matt said the liquid waste sites on the CP, the supplemental characterization, and DOE's plan called for 54 deep bore holes, 62 shallow pushes, over 100 direct pushes, 29 test pits, and geophysical logging of over 250 existing boreholes. He said DOE has recently done high-resolution resistivity measurements that measure the electrical charge in the vadose zone. Based on this, DOE can determine whether there is salt in the soil<sup>5</sup>, which is an indicator of contamination coming from a crib or a tank, and assists in guiding the boreholes. Matt said supplemental characterization and the data it is providing will be the major foundation of the RIs for each decision unit. He said characterization is required to make a decision regardless of the size of the decision unit.

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<sup>5</sup> There are other factors than salt that can affect resistivity, e.g., the geology.

Matt said supplemental characterization did not cover characterization of solid-waste burial grounds undergoing CERCLA examination or the pipelines in the CP that transported or carried liquid waste from a facility like the Plutonium Uranium Extraction Plant (PUREX) to a liquid-waste-disposal crib or trench. He said he thinks the decision logic for pipelines is straightforward – DOE will dig up the shallow pipelines within a specified depth and dispose of the material in the Environmental Restoration Disposal Facility (ERDF) to eliminate uncertainty. For deeper pipelines, DOE will determine what went through the pipeline to see whether it is a material that is not a threat to the groundwater and could be left in place. Matt said characterization will be needed for materials that are a threat to ecological protection, human health and the environment, or the groundwater. Matt said DOE must work on the decision logic, but this will be part of the decision for the 200-West Area. He said many of the pipelines in the CP are shallow, so the preference is RTD. He said the only issue that could complicate this process is finding that some of these pipes have leaked.

Matt said DOE is looking at the approved work plan for the RI/FS on burial-ground characterization for solid-waste burial grounds and will discuss with Ecology work plan changes to help ensure there is the necessary characterization for decision-making. He said the likely decision will be containment and monitoring, or a barrier for most burial grounds. Matt noted that for any waste site, characterization does not start and end at the RI/FS, but is completed during the design, implementation and close-out of the remedy. He said the goals for burial grounds are determining whether any materials are a threat to the groundwater and whether there is anything that could jeopardize the performance of a barrier. DOE will work with Ecology for changing the work plan to reflect that overall strategy.

Regarding whether RTD is preferred, Matt said RTD is DOE's preferred option, especially for the Outer Area. He said CERCLA has a preference for RTD and this is DOE's goal in the Outer Area except for the two solid-waste burial grounds. DOE also has a preference for RTD in the Inner Area, especially for shallow waste sites. Matt said the exceptions of solid-waste burial grounds and non-hazardous-waste burial grounds are cases in which DOE does not look at RTD as preference. He said a majority of the sites in the Outer Area will be RTD because contamination is shallow in nature and contamination that is a threat to the groundwater is not at a depth where it would be exposed to human contact or ecological receptors. Matt said the decision-logic process for the Inner Area is more complicated. He said for shallow sites separated from other facilities, such as a waste site close to PUREX where there will be a barrier, the preference will be RTD.

Regarding the budget for post-ROD characterization, Matt said cost estimates for the remedy and design include taking and analyzing samples so it is built in any remedial action cost estimate. He said this will be budgeted through funding for characterization and will be an integral part of any remedy on the CP. The cost estimate includes the cost of implementation of the remedy and close-out, and is an important part of the annual budgeting and cost-estimating processes.

### **3. How does this strategy consider the contamination that has escaped the 200 Area?**

Matt said the CP strategy focuses on groundwater, including the iodine, tritium and nitrate plumes that came from PUREX canyon. OU PO-1 covers the groundwater plume that was created as a result of the last fuel runs from the PUREX plant in the late 1980s, which contains tritium and nitrates and has escaped the CP. Matt said high concentrations have declined over time, which is seen in the groundwater report, but DOE must address the plumes for East Area groundwater decisions under CERCLA. He said the regulators will be looking at whether these plumes require regulatory or treatment actions, but DOE is presently not taking action in terms of installing pump-and-treat systems or other cleanup actions. He said the concentration and size of these plumes are declining significantly and will eventually meet drinking-water standards. Matt said the likely outcome for contaminants left on the CP as a result of past actions is to allow natural attenuation to occur.

### **4. How does the strategy's approach towards characterization support the plan to accomplish cleanup with fewer RODs?**

Matt said characterization must be completed to make a decision and DOE thinks the supplemental characterization plan will provide adequate characterization. He said it is not DOE's intent to configure the ROD structure in order to do more or less characterization. DOE is working with Ecology to adjust the characterization plan for burial grounds. Matt said DOE believes there is enough characterization to make decisions on the CP, and characterization will be verified as the remedy is designed and implemented. He said the remedy for many of the waste sites is RTD, so less initial characterization is required since these can be characterized during implementation. He said characterization is needed for the areas where contamination will be left in place. Matt said regardless of the number of decision units, DOE must comply with RCRA and CERCLA requirements and this must be included in the decision documents. He said the Tri-Party agencies are in agreement in terms of the characterization that is needed for waste sites and detailed discussion are needed, especially for the two solid-waste burial grounds.

### **5. Monitoring plumes (characterization, etc.) outside proposed Outer Area?**

Matt said DOE plans to monitor plumes outside of the Outer Area.

#### ***Regulator Perspectives***

- Craig said there are issues regarding the amount of characterization and he thinks there may be a disconnect on what characterization needs to be done to reach a decision. He said this may impinge on the timing of the RODs if areas are grouped into smaller RODs. The Tri-Party agencies will have to determine a balance between moving forward versus trying to be holistic and limit the number of decision documents. He said one issue is the solid-waste burial grounds and how long it will take to reach a decision. For the cribs and trenches, he said a decision

on excavating the surface material could likely take place soon. Craig said when DOE was proposing completing fewer decision documents it seemed that waste-site evaluation was taking place on a conceptual level, rather than specific to a particular site, and EPA tends to want to apply CERCLA on specific waste sites because of site-specific issues. He said EPA is glad DOE is budgeting for confirmatory sampling because that will be needed. Craig said it is important to avoid being pre-decisional about waste sites and their remedies before looking at individual attributes. Matt said DOE intends to do this.

- John said Ecology and EPA approved the supplemental RI/FS work plans and he thinks when DOE completes this work there will be enough characterization to make decisions, although there may still be disagreement on the appropriate remedy. He said the biggest difference may be on the pre-1970 burial grounds, since these are difficult to characterize. He said DOE could easily spend \$100 million characterizing these 45 linear miles of trenches and there would still be uncertainty. John said a public discussion about what decision it will take to be comfortable with is needed to reach a reasonable decision that accommodates public interest and regulatory requirements.

#### ***Characterization Breakout Session #1: Committee Discussion***

- Maynard expressed concern that DOE does not have enough knowledge for pre-1970 waste and other materials to make a decision on capping the solid-waste burial grounds. He said it is important to know what is in these burial grounds and the environmental threat. Maynard noted that there is a difference between some waste sites but adequate characterization is needed to determine these differences.
- Maynard commented that the Hanford burial prototype was found to be effective and asked whether DOE intends to look at the remedy or follow-on situation for this prototype. Matt said the cap was instrumented to eliminate infiltration. DOE recently did a test with a berm on top of the cap and is looking at how that naturally rebounds without any action from DOE. Maynard asked whether this is the vegetation barrier. Matt said DOE is looking at transpiration barriers that do not rely on different layers of caps to prevent infiltration. These have a different design than the Hanford barrier, which has an initial ET barrier. Craig said the four phases of characterization, including the RI/FS, design, confirmation and verification, are different names than he is used to using. He said the characterization phase spends the most money which makes other phases less important. This is also dependent on the remedy, since more up-front characterization is needed for capping. Matt said DOE is focused on characterizing deeper waste sites since shallow sites will likely be RTD.
- Keith asked what happens when a cap fails since they have a finite life. Matt said DOE is looking at barriers for ERDF that are self-healing and self-protective so do not require a great deal of maintenance to ensure future protectiveness. These barriers include natural soil that is conducive to vegetation and is at a thickness that provides a minimal effect on wind and other factors and are designed to self-heal. Matt said this type of barrier can be subsided by contamination present underneath it, which is why there are strict regulations for ERDF and is why DOE grouts.

- Keith commented that the regulations for ERDF and grouting are different than capping a crib or trench that has not been disturbed. Craig said he thinks the types of barriers proposed for Hanford are generally more well-suited for the site and do not have as much that can fail like liners that do not account for swelling and cracks, but that does not mean they do not need to be maintained. DOE does have experiences with barriers, but for risk purposes cannot assume the barrier will last more than 300 years.
- Laura Hanses asked whether the waste sites will be characterized based on assumptions. Matt said this is not the case. DOE has a characterization program built from boreholes and digs that includes intrusive and non-intrusive characterization. He said DOE also has a process history of liquid waste sites, including discharge records. DOE will use physical characterization to confirm what is already included in these past operational records. Laura asked who would complete this characterization effort. Matt said the plateau remediation contractor will complete this and has a work plan and procedures in place that include taking samples, analysis and certification. He said this process is rigorous and measures the types and concentrations of contaminants. The contractor must complete the procedures and requirements specified in CERCLA and RCRA protocols.
- Larry L. commented that funding for the groundwater program has traditionally fluctuated. The base funding for FY 2009 decreased, but due to American Recovery and Reinvestment Act (ARRA) funding, DOE was able to drill approximately 270 additional characterization and remediation wells that DOE will monitor it now. He asked what will happen to this groundwater monitoring program after 2015 when the footprint will shrink and whether funding for it would be drastically reduced. Larry L. said a long-term strategy on which wells will be monitored for plume movement is needed and asked who is developing this strategy. Matt said there is an ongoing groundwater monitoring process and CHPRC is responsible for monitoring groundwater at Hanford. He said the site has a mature groundwater monitoring program that includes a yearly report and is based on CERCLA, RCRA and the Atomic Energy Act (AEA). He said the contractor suggests new wells that need to be installed to reflect new systems or emerging plumes so the monitoring plan and process will change as cleanup progresses. Matt said monitoring is an integral part of the groundwater project and monitoring along the river and on the CP is included in the baseline for a long period of time. Matt said he expects that monitoring will be at the same magnitude it is currently. Larry L. said since historically the funding has fluctuated; a long-term strategy that adequately funds and supports the groundwater program is needed.
- Dick said the draft TC&WM EIS says the pipelines around plants and tanks that DOE plans to remove are high-level waste (HLW) that will be stored on-site. He asked what DOE will do with this material and how it is classified. Matt said the piping that is removed will be handled in accordance with CERCLA and ARAR requirements and will most likely be disposed of in ERDF as low-level waste (LLW). He said in most cases it will not be disposed of as HLW.
- Tom asked whether DOE conducted research and development on geology as well as monitoring and characterization. He said there is a variety of tools and transport

mechanics that are not well understood and geophysics should also be included in characterization. Matt said DOE does look at geophysical characterization, especially in the vadose zone as boreholes are drilled. He said the northern 200-East Area is an example of this, since there were questions about the potential groundwater flow to the north and why the groundwater is so thin in that area. Matt said this is a good point, since a better remedy may become known if the chemistry and physical attributes of the vadose zone are better understood.

- Larry L. commented that one positive aspect of the interactive tool for the CP is capturing historical studies for areas like geology. He suggested that references could be added to the tool in order to show areas where research and development has already taken place.
- Maynard expressed concern that there has been insufficient characterization of the solid-waste burial sites, and those barriers were not designed like a regular barrier. He said this remedy works for the short term but for a longer-term solution then he suggests a different process for designing that barrier. Matt said the potential groundwater impact is a key aspect of the solid-waste burial grounds. He said a barrier can be protective of the groundwater so DOE needs to look at the environmental benefit of removing contamination and putting it in ERDF versus leaving it in place. Maynard said ERDF has liners and monitoring but there is not the same under-surface protection for the burial grounds. He said this assumption could be a topic for a future discussion at the workshop.
- Regarding radionuclides and their half life, Keith said radionuclides may be in a chemical and the chemical contamination needs to be considered. In some cases, this may be more important than the radiological contamination since it does not have a half life.
- Larry L. said the inventory of technetium-99 is an issue for ERDF and if this is tied up in a non-mobile form DOE could reduce the inventory and take on more in the ERDF repository. He said DOE needs to consider this as ERDF continues filling, especially for technetium-99 and uranium.
- Norma Jean Germond asked how DOE confirms that contamination is not moving for large facilities that are capped, such as U-Plant. Matt said the canyons are part of the decision units and for U-Canyon the decision was made to fill the voids with grout and put a barrier on top of this, which DOE thinks is a robust and effective remedy. He said DOE is looking at a similar process for PUREX and the Reduction-Oxidation Plant (REDOX) that includes examining the groundwater to see whether a similar decision is appropriate for these sites, with the exception of cases in which waste sites or cribs are adjacent to a canyon.
- Larry L. asked whether DOE plans to fill REDOX with grout and put a barrier over this site. Matt said this has not been decided and will be part of the decision for the 200-West units.
- Maynard asked the strategy for the Westlake Ponds. Matt said the plan is to RTD that waste site, most likely for unrestricted surface use. Maynard said he thought this site

would be an exception. Matt said the only exceptions he is aware of are the two solid-waste landfills, but there may be more exceptions.

### **Characterization - Session I Feedback**

*(as captured on flip chart notes)*

- Look at past documents/reports to help inform process
  - Might assist in decision making process
- Characterization not based on assumptions
- Funding for groundwater drilling and monitoring/characterizations
  - What will happen after 2015
  - What is the long-term strategy for groundwater monitoring?
  - What is the integration with the Inner Area (e.g. tank farms)
- Research and development on characterization of geological area
- Need to reference past documents/reports so you don't re-invent the wheel
  - Capture this in DOE's new mapping tool
- Sufficient characterization of solid waste burial ground
  - More needs to be done and confirmation of what has been done
  - Include this in assumptions workshop
- ERDF requirements as it relates to contaminants of concern
- What contaminants are underneath major facilities?
- What are the characterization and monitoring technologies?
  - How do you prioritize these?
- How do you do characterization during institutional controls?
- What is the perceived nexus between NRDA and energy/industrial parks?
- What are the homogeneous assumptions if plumes?
- What is the preferred pathway for vertical and horizontal transport?

### ***Characterization Breakout Session #2: Committee Discussion***

- Susan L. said the Board has repeatedly determined that the dates that were placed on the burial grounds for decision use, such as pre-1970 or post-1970, have no relevance and all waste should be evaluated with risk as the determinant. She expressed concern about using barriers for the solid-waste burial grounds since these are not proven to work, and said a public discussion should occur on this subject. Susan L. said she had the impression that all waste would be treated the same and asked how the CERCLA criteria can be applied to these burial grounds to prove that a barrier is as effective as RTD. Matt said the CERCLA guidance on the remedy of landfills, including municipal, industrial and military landfills, may provide an idea of where DOE is coming from based on EPA guidance.
- Pam expressed concern that DOE is generalizing too much about what is buried adjacent to canyons that will be capped. She said for sites like PW-1, 3 and 6 she is

less concerned about where the sites are located than what is in them. Ron Skinnarland, Ecology, said the Tri-Party Agencies had discussed evaluating these sites to see what the environmental risks are, and if this is not clear than more evaluation is needed. Dale Black, CHPRC, said every site goes through an evaluation process and the remedy must be evaluated for sites near canyons. He said for sites with an interim risk such as contaminated tumbleweeds, this must be addressed to see if removal action is needed.

- Bob said a rough cost profile is needed that shows the outyear funding for the old characterization process and how initial characterization saves money in the future. He said showing the cost to do the new approach versus the old approach would give more weight to this area of the CP strategy. Harold added that there are two costs – the cost for RTD and the cost to leave contamination in place. Bob said LTS is an additional requirement that should be taken into account. Matt said for the 200-West Area ROD there will be cost information included as part of the CERCLA process, so he is hesitant to show the cost before decisions are made.
- Pam asked the phases of future characterization. Matt said first is the RI portion, in which a waste site is characterized as part of the decision-making process. After a decision is made the second phase is to conduct characterization as the remedy is designed, such as determining how to RTD or place a barrier. The third phase is when the remedy is implemented, which includes characterization in the field such as taking soil samples to confirm the concentration or determine the footprint. The fourth phase is confirmation that cleanup levels have been met after the remedy is implemented. John said this schedule is on page 3-10 of the CP strategy.
- Susan L. commented that more differentiation is needed between the Inner Area and Outer Area for public understanding and public support. She said there is contamination under ground between the Outer Area and the river, and there needs to be a larger conversation on the entire Hanford Site. After cleanup is completed in 2015, the Outer Area will not be completely cleaned up, and Susan L. said the public needs an understanding of this. Matt said unrestricted surface use needs to be defined, and Susan L. has a good point that this can be clarified. He said there will be unrestricted surface use but there will be restrictions beneath the soil. Susan L. said without barriers that clearly identify this there will not be anything to stop people from digging there.
- Dale said while it is great to have a clear, comprehensive strategy there are still some areas of concern. He said typically when designing a ROD under CERCLA all of the characterization takes place before the ROD, but the CP strategy includes post-ROD characterization. Dale said Oregon encourages doing as much pre-ROD characterization as possible to put the money ahead of the ROD and avoid doing post-ROD characterization to make sure the remedy is correct. Regarding caps, Dale said he is watching the slow failure of a 20-year cap that was supposedly designed to last 1,000 years. He said caps are dangerous and should probably be considered temporary and a last choice. The CP strategy includes the idea that small sites next to large buildings can be part of the caps, but Oregon thinks that caps will likely fail in the future. Dale said he has heard little about characterizing under the buildings that

will remain in place and underneath the tanks. He said he is glad so many wells are being drilled. Susan L. agreed that slant-well drilling is important.

- Susan L. asked whether these remedies are all subject to CERCLA five-year reviews and will be characterized on this specific basis. Matt said they are subject to five-year reviews and regular characterization is also part of DOE's defense-and-depth strategy. He said the five-year review and monitoring of the groundwater and vadose zone will be designed to ensure the remedy's effectiveness. DOE will be responsible for gathering and responding to this data to make sure it is effective. Larry G. said the requirement for the five-year review is to determine whether there is any new information that indicates that the remedy is not effective. He said the Tri-Party Agencies must ensure the operations and maintenance plans associated with the remedy include continued monitoring and evaluation so the data used for the five-year review is still available.
- Susan L. asked if there is a plan to ensure that DOE will request funds based on the confidence level of the remedy. She asked if DOE considers this in the budget request or is it included in the CP strategy since making comprehensive decisions and instituting remedies by 2015 should have this in the two-year pipeline. Matt said the risk is involved in DOE's cost estimates, especially in the performance baseline and implementing a remedy, and these estimates have a confidence level of at least 80 percent. He said DOE used this risk process on the River Corridor in case more contamination was found while implementing a remedy. Matt said emerging groundwater plumes is another aspect of this and there must be funds identified to quickly apply a new pump-and-treat system if a new plume is discovered. He said DOE's policy is to have an 80 percent confidence level of cost and schedule at the implementation phase, and DOE currently has rough order of magnitude costs but once a decision is made this confidence level will be more specific.
- Susan L. asked whether carbon tetrachloride has escaped the CP. Matt said it has not. Larry L. said a pump-and-treat system is containing it on the CP. Susan L. asked whether carbon tetrachloride will degrade like radionuclides. John said the remedy is if 25 percent of the mass is removed in the first years then the remainder will be taken care of by monitored natural attenuation (MNA) before it reaches the river.
- Dale asked DOE's plan for the uranium to the north, and whether a pump-and-treat system will be installed to treat this contamination. Matt said DOE will have an interim action that will be implemented by the end of 2010 and will go into the aquifer. He said the problem is that the groundwater is thin, so it is difficult to install a pump-and-treat and get enough water to treat efficiently. Matt said this system will provide an idea of how to remediate that plume, which is difficult due to geological features. DOE is conducting a treatability test that will be part of the 200-East Area ROD.

## **Characterization - Session 2 Feedback**

*(as captured on flip chart notes)*

- Dates for decision is not useful
  - Waste is waste
  - Importance of SW burial grounds
  - CERCLA criteria to burial grounds – remedy of landfills
- Concern of what is in PW 1/3/6
  - Too broad of generalization of what is next to canyons
- Need rough order of magnitude
  - What is the cost?
  - Will costs drop off?
  - What is the out-year budget forecast?
  - New versus old approach (RTD vs. leave in place)
- What happens with Outer Area in regards to contamination for entire site after 2015?
  - Encourage larger conversation with public
  - What is DOE's intent?
- Characterization happening post-ROD – would like to see more pre-ROD characterization
- What is the characterization happening underneath tanks and existing structures?
- What is the confidence level needed to request funding in cost estimates (e.g. 80%)?

## **Board Impressions, Next Steps and Action Items**

Susan H. noted that there would be a sounding board on the CP Cleanup Strategy at the Board meeting the following week and topics identified for the technical workshop were noted during the workshop discussions.

### ***Committee Discussion***

- Pam said it would be helpful to capture the answers to the workshop framing questions since there may be different interpretations of some answers. She said it would be helpful to have this before the Board meeting for HAB members who could not attend the workshop. Paula said DOE would like to review this. EnviroIssues will provide the framing questions and responses to the agencies on Tuesday and the agencies will send it back to EnviroIssues by Wednesday for distribution at the HAB meeting.
- Susan L. requested electronic copies of DOE's display materials from DOE. Liz Mattson said it would be helpful to borrow the larger versions of the display materials for discussion at a future PIC meeting.

- Pam suggested that the HAB sounding board could be used as feedback for the agencies in lieu of advice. Susan L. said the RAP should determine whether to do future advice. Pam said with the TC&WM EIS and closure document to review it is unlikely the Board will have time to issue advice. Maynard said this should be decided after the sounding board, since the workshop may have narrowed the discussion to a few items worthy of advice, such as the vadose zone.
- Susan L. suggested that the introduction at the November Board meeting contain an overview of the workshop as well as a list of questions and input requested by the agencies. Dale, Wade and Bob are the IMs and will introduce the topic prior to the sounding board. John said he would prefer to cover the burial-grounds issue in a future workshop, rather than during the sounding board. This will be noted in the IM introduction.
- Susan H. asked if any HAB members have additional topics for the technical workshop. Keith said what to do if a cap fails needs to be highlighted and further refined. He said he would also like to look more at the section of the strategy that evaluates RTD versus an alternate such as a cap. Bob said as part of the cap discussion it would be helpful to have historical information on how long previously built caps have lasted.
- Susan L. suggested that lessons learned from other sites be a topic for future discussion. Shelley Cimon said the U.S. Nuclear Regulatory Commission (NRC) is going to open up rulemaking 61, which deals with making decisions on changing waste classification as well as blending, performance assessment and configuration controls. She said there is a suite of issues and NRC feels it needs to have framing for these issues so when they go out programmatically there is something to pin the decision against. Pam asked whether this only applies to landfills, or if it includes tank waste as well. Shelley said it applies to all sites. She asked if, through DOE Office of Environmental Management (DOE-EM), the HAB could have a presentation from NRC. She said the issue of waste configuration over time is a technical workshop topic.
- Al Boldt said he heard that performance assessments on the groundwater are contingent on administrative control of offsite issues like Black Rock. He said one issue is how to install a barrier on Gable Mountain to start flushing waste.
- Pam said she would like to provide information to the rest of the HAB on the interactive tool for the CP that was demonstrated at the workshop. Susan H. suggested that the PIC could talk about how to make this more accessible for the public, too.
- Al said the two DOE offices are currently using two different models for vadose zone and groundwater flow performance assessments, and asked whether there is a plan to merge these. He said he thinks a presentation on this issue is needed. Pam suggested that this could include how the modeling for the EIS was done. Matt said one model for groundwater was used in the TC&WM EIS as a large-scale groundwater model and there is a different model for the vadose zone. He said DOE could talk about how to transfer this to the groundwater contractor.

- Liz commented that it would be helpful to have a translation workshop for the technical workshop that slows down the discussions for those without a technical background. Susan L. said the Board has talked about re-instituting the public tutorials. Liz said a workshop format would be helpful in order to make it more of an interactive discussion.
- Susan H. said there were initial issues that Greg DeBruler and the other IMs wanted addressed at the base assumptions workshop, including the ecological protection standard, the 150-year rule, the highest beneficial use drinking-water standard, restoring land to unrestricted surface use rather than unrestricted use, capping, ICs, characterization, the land-use assumptions in the CLUP and NRDA. The HAB members agreed that all of these issues still need to be addressed in the base assumptions workshop.

### **Other Technical Issues for Review**

*(as captured on flip chart notes)*

- Design of caps and barriers
  - What is the historical information on how long caps last?
  - What are the lessons learned from closed sites?
  - What if they fail?
  - What is the impact on groundwater?
- High level waste as implied in the TC&WM EIS – how is waste characterized as HLW? (e.g. pipelines)
- What is the decision making process for RTD versus capping
- NRC waste classification
  - NRC presentation to HAB
- Waste configuration performance over time
- Gable Mtn cap barrier – administrative control
- Models for groundwater and vadose zone
  - How is DOE-RL and DOE-ORP use models for integration ?

Next steps:

1. Add other framing questions from COTW agenda development
2. How to apply technical information for PIC translation – less talking at and more talking with

### **Next Steps for Board Meeting**

*(as captured on flip chart notes)*

- Provide agency responses to framing questions from two breakout sessions and committee discussion
  - EnviroIssues will provide framing questions and summary by COB Monday, November 2

- Agencies will review summary by Wednesday morning, November 4
- EnviroIssues will provide excerpted summary to full Board Wednesday at noon, November 4
- Provide PDFs of Boards for Board members with notes
- Wait until after Sounding Board at Board meeting to determine if advice is warranted
  - May also make this determination at November RAP meeting
- Provide agency input questions at the beginning of Sounding Board and talk about framing questions used for COTW meeting (issue managers Bob Suyama and Dale Engstrom)
- HAB member and alternates will have two minutes each to provide perspective at Board meeting

### **General Next Steps**

*(as captured on flip chart notes)*

- CPCS interaction tool will be posted on Hanford website to make available to public within the 1-2 months
  - How will information about tool be given to HAB members?
  - Suggestion for demonstration at November Board meeting
  - HAB members to provide suggestions on tool to Paula Call
  - Steve Hudson to follow up with PIC on making this tool easy/accessible for public use
  - DOE contact person: Paula Call
- Detailed discussion on solid waste burial grounds
  - Maybe another COTW meeting or RAP meeting topic
  - RAP will follow up on next steps at November RAP meeting
  - Provide agencies with additional framing questions from COTW agenda development process
- CP Strategy boards available for PIC review
  - PIC to review messaging of boards
  - PIC leadership will work with DOE to see if possible
  - DOE contact person: Paula Call

### **Action Items / Commitments**

- The CP Cleanup Strategy interactive tool will be posted on the Web for public availability within a month. Any HAB members with changes or suggestions for this tool will send them to Paula. DOE will also provide a brief presentation on the tool at a Board meeting.

- The RAP will provide framing questions for the discussion on solid waste burial grounds.
- EnviroIssues will provide the framing questions and answers section of the summary to DOE by Tuesday morning. The agencies will provide edits by Wednesday morning. EnviroIssues will distribute these to the Board before the HAB meeting.
- DOE will provide an electronic copy of its display boards to distribute with the meeting notes. The boards will also be made available at future PIC meeting for discussion. EnviroIssues will check with Paula.

**Handouts**

*NOTE: Copies of meeting handouts can be obtained through the Hanford Advisory Board Administrator at (509) 942-1906, or [tgilley@enviroissues.com](mailto:tgilley@enviroissues.com)*

- Central Plateau Cleanup Strategy, Matt McCormick, October 29, 2009.
- Summary of HAB Advice Related to the Central Plateau, HAB, October 29, 2009.
- Central Plateau Cleanup Completion Strategy Regulatory Perspective, John Price, October 29, 2009.
- Committee of the Whole Workshop Framing Questions, HAB, October 29, 2009.
- Hanford Advisory Board - Groundwater Values Flowchart, HAB, May 31, 2007.
- Hanford Advisory Board - Central Plateau Remedial Action Values Flow, HAB.

**Attendees**

**HAB Members and Alternates**

|                    |                   |                 |
|--------------------|-------------------|-----------------|
| Al Boldt           | Harold Heacock    | Nancy Murray    |
| Tom Carpenter      | Rebecca Holland   | Maynard Plahuta |
| Shelley Cimon      | Steve Hudson      | Wade Riggsbee   |
| Sam Dechter        | Mike Korenko      | Keith Smith     |
| Dale Engstrom      | Pam Larsen        | Dick Smith      |
| Norma Jean Germond | Susan Leckband    | Bob Suyama      |
| Kenneth Gasper     | Larry Lockrem     | Gene Van Liew   |
| Laura Hanses       | Elizabeth Mattson | Steve White     |

**Others**

|                           |                          |                             |
|---------------------------|--------------------------|-----------------------------|
| Paula Call, DOE-RL        | Rick Bond, Ecology       | Floyd Hodges, CCEW          |
| Briant Charboneau, DOE-RL | Brenda Jentzen, Ecology  | Dale Black, CHPRC           |
| Matt McCormick, DOE-RL    | Nina Menard, Ecology     | Sonya Johnson, CHPRC        |
|                           | John Price, Ecology      | Janice Williams, CHPRC      |
|                           | Ron Skinnarland, Ecology | Tom Bailor, CTUIR           |
|                           | Cheryl Whalen, Ecology   | Susan Hayman, EnviroIssues  |
|                           | Ginger Wireman, Ecology  | Molly Jensen, EnviroIssues  |
|                           | Craig Cameron, EPA       | Cathy McCague, EnviroIssues |
|                           | Larry Gadbois, EPA       | Emily Neff, EnviroIssues    |
|                           | Emy Laija, EPA           | Barb Wise, MSA              |

|  |                 |                                 |
|--|-----------------|---------------------------------|
|  | Robin Paul, EPA | Stan Sobczyk, Nez Perce<br>ERWM |
|  |                 | Mark Triplett, PNNL             |
|  |                 | Annette Cary, Tri-City Herald   |
|  |                 | Jeff Lerch, WCH                 |
|  |                 | Earl Fordham, WDOH              |
|  |                 | Mike Priddy, WDOH               |
|  |                 | Dave Rowland, YN ERWM           |
|  |                 | Moses Jarayssi, CHPRC           |