

FINAL MEETING SUMMARY

**HANFORD ADVISORY BOARD
RIVER AND PLATEAU COMMITTEE MEETING
*April 13, 2010
Richland, WA***

Topics in this Meeting Summary

Welcome and introductions 1
K-Area Update 3
Draft TPA Change Packages 6
Treating Uranium and Technitium-99 in the Deep Vadose Zone..... 11
Reverse Wells 13
Action Items / Commitments 15
Handouts 16
Attendees..... 16

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

Maynard Plahuta welcomed the River and Plateau (RAP) committee and introductions where made. The RAP committee approved the March meeting summary.

Nina Menard, Department of Ecology (Ecology), provided an update on the 100-D Area waterline leak. She said in February there was remediation done in the 100-D Area and an inactive line was broken, causing the area to flood. She said a valve that was responsible for holding the water had failed and had to be replaced. The water was pumped into remediated holes to keep the flooding away from known chromium areas. Ecology is waiting for a lessons learned report from DOE before writing a letter regarding this incident.

Jean Vanni, Yakama Nation, said the waterline break was found to be between two plums and could be a contributing source separating a single larger plume. She was told a total of 600,000 gallons of water were released from the line, but she is not sure of the exact numbers. Shelley Cimon said the water was pumped into the reservoir; and she would like to get confirmation on the number of gallons released.

Larry Gadbois, Environmental Protection Agency (EPA), said the Remedial investigation/feasibility study (RI/FS) work plan for the 300 Area was approved on April

8 and the 100-F Area which includes the 100-IU-2 and 100-IU-6 was approved. The 100-D Area RI/FS was approved as well leaving the 100-N Area which is still in progress.

John Neath, DOE-RL, gave an update on the waterline leak in the 100-D Area that happened on February 22nd. He said Washington Closure was taking sampling near the flocculation facility and there were two water lines side by side. He said the waterlines were both supposed to be dry lines and while backfilling, the earth moved enough to break one of the pipes and the whole filled with water. He said Ecology agreed to pump the water to areas approved for new pipelines. DOE put 3,500 gallons of water into two areas to make sure it would not overflow in the area the pipe broke. He said Mission Support Alliance (MSA) shut off the valves. A total of 600,000 gallons of water was rerouted into the retention basin. He said the flanging off of the line took about a week to get into place. He said DOE tried to use a sprinkler effect to utilize evaporation processes during water distribution.

Discussion

Pam Larsen said there was a map that showed the location of the break with respect to the chromium plume. She wonders if this leak has been moving these plumes apart for a while. John Morse, DOE-RL, said there is a theory regarding this groundwater leak. He said DOE is doing additional remediation designs and bore holes to pursue the chromium sources.

Liz Mattson asked where the water came from. John Neath said the water came from the pump house in the D-Area and was used for operations in the central plateau. Liz asked if there is a gauge to see if the water has been leaking for a while. John said it is estimated that 600,000 gallons were released due to the size of the line, however there is no way to know how much water has leaked over the past 40 years.

Nina asked if DOE talked to contractors about potential leaking in other waterlines. John said not that he is aware of. He said monitoring the wells might be a way to keep track of leaking which is being done in some areas. He said the water leak analysis could be something that MSA takes on.

Larry said the main water supply comes from the BC reactor and about 25 % of the water does not make it to the 200-Area and these are old lines that do leak. He said all infrastructures have the same issues with leaking and knowing that water is being lost would not be new information.

Jean wanted to confirm that sampling was done and the results were shared with Ecology. He said the water was sampled but he is not sure if it was shared with Ecology.

Jean said she talked to Fred Biebesheimer and he talked about implementing wells in the 100-D Area. John said there have been no wells planned as a result of this leaking event in the 100-D Area.

Maynard asked if DOE replaced the valve. John said DOE bolted a blank to the pipe to isolate the water. Maynard asked if the valve was analyzed. John said he is not sure.

Shelley said there is not sufficient information informing people on this leak. John said there has been documentation and briefings. Jean said the story was confusing at the briefings. John said he was not at the briefings and cannot speak to what was said.

Wade said the RAP committee should follow up on the leak event and the potential leak analysis of the chromium plume.

K-Area Update

Tom Teynor, Department of Energy Richland Operations Office (DOE-RL), gave an update on the 100K basins closure project. He said there will be five topics covered: air monitoring, sludge treatment, reactor interim safe storage, lessons learned and facility demolition and waste site cleanup. He said EPA sent a letter to DOE-RL on behalf of the Department of Health (DOH) regarding the elevated airborne contamination levels near 105KE. He said the second half of Fiscal Year (FY) 2008 air data was influenced by the July 2008 chiller pipe incident; however the Pacific Northwest National Laboratories far-field air monitoring station indicated no abnormalities. He said near-field monitors are very close to the work zone and are more reflective than near-field monitors.

Tom said worker protection monitoring in the form of lapel air monitors indicated dust suppression controls are effective and serve as an early indicator of contamination. He said worker protection monitoring has indicated that radiological controls are effective.

Dotty Norman, CH2M Hill Plateau Remediation Company (CHPRC), referenced an aerial photograph of 100KE to indicate where the DOH air monitors are located. She said there were deactivation demolition activities in the area and this incident is believed to be due to a severed chiller pipe which was moved during the deactivation activities. She said there was no contamination detected prior to this incident because the pipe had been covered by soil. She said in cap 88 there was some dose modeling and the results came back at low levels. The proximity of the monitors, particularly the N402 monitor, is near the demolition deactivation activities. She said there has been a request to DOH to move the N402 air monitor because there has been soil remediation in the area. She said CHPRC has received tentative approval to move monitor locations and should get final approval soon. Once the monitors are moved it will be more representative of the near field conditions.

Tom said the contamination levels were never exceeded with the lapel monitors workers carry. He said the monitoring limits have been showing up as one tenth of regular limits and DOH has agreed to add another air monitor.

Tom Teynor gave an update on the sludge treatment project. He said DOE will retrieve the last three out of the ten settler tubes. He described the retrieval process saying there is a hose placed into the cleanout tubes and then a suction vacuum is used to remove the material. He said there are significant Radiation Absorbed Dose (RAD) readings and DOE is also monitoring the hoses that the materials go through. He said the completion date for the sludge retrieval and transfer is June 22. He said in phase I the contractor submitted the conceptual design for approval by DOE and RL which is in the review

process. Phase II is the alternative analysis of a potential sludge treatments and packaging technologies; the contractor is reviewing these proposals.

Tom said the construction has started on a 90,000 gallon fuel basin mock-up at the Maintenance and Storage Facility (MASF) in the 400 Area and is to be completed by 2013. He said the knock-out pot equipment development and testing at MASF is to make sure the processes will work in a similar environment. These activities will start in 2011 and be completed in 2012.

Tom Teynor showed a photograph of the 105KE reactor's front face and gave an update of the activities taking place for the core removal of the reactor. He said it is important to get the characterization done in order to have hard data for design. He said core sampling, surveys and laboratory analysis is scheduled to be in April. He said there is hazardous material and equipment removal in progress supporting characterization and core removal activities. He said DOE is working for a June 2010 approval for permission to proceed in order to have the core removed by the Tri-Party Agreement (TPA) milestone. He said the design work has not stopped and DOE should be starting core removal in 2013.

Tom reviewed the lessons learned from the 105KE basin demolition. He said after a debriefing it was determined that teamwork, safety, skill of craft, flexibility and problem solving worked well. He said there were only two instances of exposure during demolition. He said the As Low As is Reasonably Achievable (ALARA) approach could have been better integrated. He said DOE will do a better job managing and estimating collective worker doses and impacts to existing ambient air monitors. He said there could have been a better demolition strategy and sequence. He said there have been improvements on communication between CHPRC, Environmental Restoration Disposal Facility (ERDF) operations, heavy equipment operators and waste container drivers. He said demolition practices are getting better all the time.

Tom presented an aerial photograph of the 105KE reactor area demolition and soil cleanup from July. He said since July there has been a lot of work done and this is probably the source term of the Chromium 8. He said all the clean concrete from the demolition will be recycled.

Regulator Perspectives

- Rob Lobos, EPA, said in 100KE situation, contamination was released and it was picked up right away by air monitors and action was taken. He said every time he visits 105KE more work is complete, he said paperwork can be an issue but the work is getting done which is important.

Committee Discussion

- Tom Carpenter asked why the plan is to go from 8 to 6 air monitors at 100KE. Tom Teynor said this is due the removal of structures, the new air monitor locations will be more reflective of the work going on.

- Susan Leckband asked how much contamination was detected due to the severed pipe. Tom said that one tenth of the normal level of cesium was exceeded. He said workers that were tested came back with negative results.
- Shelley asked why the cat worker did not know about the chiller pipe being there. Tom said poor communications was responsible, it has not happened since and no punitive actions have been taken.
- Tom Carpenter asked where the public receptors are at 100KE. Dotty said the public receptors are at the river and the ringold areas which are standard locations for all dose construction modeling.
- Tom Carpenter said he read that DOE got involved because of a 26mr reading of cesium. Mike Priddy, DOH, said he is not sure about the 26mr. Tom Teynor said he is not sure about the 26mr number and he said he will follow up on this.
- Maynard asked if cesium is the primary contaminant in the sludge. Tom said DOE is reducing the volume of sludge and finding it to be a fuel material with uranium; the cesium is turning up in the water.
- Maynard said if core removal does not get approved, will it make it more difficult to do future core removals. Tom said the design work will still put DOE down the path of core removal, and he is not sure how this core removal will affect others.
- Pam asked how the core will be taken apart. Tom said a combination of tools will be used to break the bio shield from the side and then the core will be dismantle with a hammer and scooped out. He said DOE is looking at options for remote removal depending on the materials found and may not have to do the removal remotely.
- Liz Mattson asked why the core removal was not approved. Tom said budget constraints. He said there has to be a balance between other site priorities. He said there is a site investigation to see if an 88 million dollar expenditure for the core removal process would fit into site priorities. He said groundwater has needs and the central plateau is not fully funded. He said River and Plateau (RAP) committee input would be really helpful in this process.
- Dick Smith asked about sheering the settler tubes. Tom said DOE will go in from the side and dislodge them and then grab the graphite as they go. Dick said there is a lot of carbon and asked if it will go to ERDF. Tom said yes it will go to ERDF in containers.
- Wade said the graphite evaluation said graphite should be buried because it disintegrates on touch. This raises the issue of major airborne contamination. Tom said robotic excavation has gotten to a point where there will be no people on site. He said latex paint is used to keep the dust down and there is minimal dust control needed. DOE is waiting for characterization data to guide additional approaches.
- Susan said this core removal could be the poster child for removal of reactors. She asked about Critical Decision (CD)-1 approval and how long this takes. Tom said depending on costs it is approved by different people and can vary in time.
- Pam said the main risk to the river is Chromium and the Hanford Advisory Board (HAB or Board) should look at risk reduction with soil. Tom said the buildings have

to be taken down before the soil can be addressed. He said the main contributors to the contamination in the 100K Basins are cesium and strontium.

- Dave Rowland, Yakama Nation, asked if the 100K Area has boron steel balls. Tom said yes, however the balls have been removed and DOE is aware of the associated risk.
- Shelley asked about human resources. Tom said DOE plans to use as many Hanford workers as possible and there has been some contracting out as well. He said the waste handlers and crane operators will be Hanford workers and DOE is training them on mockup areas.
- Tom said the real concerns for this closure project is not dollars, it is the fact that there is political will for action right now that is not guaranteed to be there in the future.
- Wade said the Record of Decision (ROD) for the disposal of the reactors might be an issue. Tom said DOE is doing a supplemental analysis and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) document is being re-written and the paper work is moving forward. He said there is good cooperation with Headquarters (HQ).
- Dick asked if the reactors in safe storage have any affiliated documents. Larry said he is not sure if there is a document for the reactors in safe storage. He said there will be some solid contamination but not at the same levels of the K Basin.
- Shelley said the RAP committee should look at soil contamination values for K Basin and consider the risks.
- Liz asked if there are any simple diagrams that explain the core removal better. Tom said there is an excavation plan he can provide to the RAP committee.
- Tom said the removal process will come down to characterization and risk, and DOE is trying to avoid problems with sludge.
- Liz asked if the contamination has gotten worse. Tom said when DOE started it was so contaminated that remove treat and dispose was the process. The contamination levels have improved since then.
- Dick Smith volunteered to be the K basin issue manager.
- Shelley asked if excavation has stopped at this point. Tom said excavation has not stopped but has been temporarily halted. He said DOE is doing push samples to get an idea of where the chromium plume is.

Draft TPA Change Packages

Matt McCormick, DOE-RL, presented the change packages for the central plateau cleanup. He said this is a class one change, and the first of the series is the M-015-09-02 milestone. He said these milestones are to complete the RI/FS process by 2016. He said the proposed change packages are on the Hanford web site.

Matt said he wanted to coordinate to make sure the HAB has a chance to produce advice. He said DOE briefed the HAB on the change package in Portland last week at the Board meeting.

Matt said DOE is in the process of finalizing a tentative agreement between Ecology and EPA for the M-91 change package.

John Price, Ecology, said the deep vadose zone has 43 waste sites identified. The thinking for the M-15 change package is to identify waste sites until there are treatability results. He said there will be a public workshop regarding some of the changes in incorporated in M-015.

John said EPA will be the lead in the West and Ecology would be the lead in the East of the central plateau for these change packages.

John presented the M-37-10-01 change package. He said this is a series of milestones for DOE to re-submit closure plans. He said there are a couple of tank systems but most are land based units. Matt said this is an attempt to be comprehensive and these are old treatment, storage, and/or disposal (TSD) units that need closure plans.

John said C-09-07 will be skipped over.

John presented on the M-016-09-03 change package. He said DOE, Ecology and EPA have been in a dispute over the dates for the U-canyons and this change closes out that dispute. The ROD will be executed and be the prototype to see if this process should be used for other canyons. John said the M-016 changes are a big deal because the canyons have not been in milestone packages; these changes are setting dates for investigation of the canyons which will lead to dates for cleanup.

Matt presented on M-85-10-01. He said this is a new series of milestones that cover the remediation of the canyons and the 43 waste sites associated with the canyons. He said this milestone series establishes a new description called tier one and tier two facilities. He said the additional milestones cover the above ground structures and some below ground structures such as sand filters.

John said he will go into more detail on the M-085-01 change package because it is new. He said DOE has not agreed to a date to finish the response actions for these facilities. He said DOE will submit a change package to establish the dates and have two years to do all the response actions which is how these dates are establish. He said the next three milestones in M-085-10 are for submitting work plans to investigate the B-Plant, Putex and Redox canyons and the 43 waste sites. He said the next two milestones are dates to submit revised work plans for DOE to finish the proposed work on both the 224B Concentration Facility and the 224T Transuranic Storage and Assay Facility. The last change in the M-085-01 package is for a cost analysis for all tier two facilities.

Matt presented on P-00-09-02. He said the "P" stands for plan and this updates the action plan for the central plateau facilitates. He said this change describes how to decommission the facilities. John said changes were made to the TPA action plan to describe the decommissioning process. Matt said P-00-09-02 describes that DOE will be using the CERCLA process to take down the tier one and tier two facilities and match the milestones.

John went over the definitions for tier one and two facilities in P-00-09-02. He said there is a process to evaluate the facilities that are not included in the change package yet where there is a recommendation and then an agreement.

John went over the A-10-01 revised appendix. He said the Hanford site was split up into two types of waste sites Resource Conservation and Recovery Act (RCRA) past practice where the state is the lead regulatory agency and CERCLA past practices were mostly EPA and sometimes Ecology are used. He said there are dispute processes for different types of disputes and EPA has different processes than Ecology. Matt said the RCRA and CERCLA past practices are not talking about RCRA TSDs these are the past practices for waste sites and burial grounds. John said the TPA originally anticipated that the Hanford Permit would take care of the cribs and trenches however legal cases outside of the TPA have made it difficult to make decisions on radio nucleotides in the Hanford site wide permit. So these changes make it possible for a Corrective action of Decision (CAD) ROD. John said there have been changes in the legal agreement so that if there is a dispute between Ecology and DOE the two dispute processes will run concurrently.

Matt went over P-07-09-02. He said this assigns responsibility to draft the ROD and submit it to regulators after 60 days. It cannot change the regulatory requirements under CERCLA the change is just converting the proposed plan to a ROD. The ROD would be finalized within 100 days of the delivery of the draft ROD. John said DOE's contractors have drafted the RODs and the regulatory agencies revise it and try to draft an agreement with DOE.

John said the last page in the document is an agreement in principal. The last line referring to Appendix I describes the closure process for Single Shell Tanks, coordinating regulations and cleanup of past practice waste sites with deep vadose zone contamination. DOE would like to make changes and this says that the TPA will look in to changing this in the future. It was agreed upon to not negotiate changes to Appendix I while a settlement is under legal agreement.

John presented on the M-91 change package. He talked about the acquisition of capabilities for processing Transuranic Mixed Waste (TRUM) and said this milestone is based on acquisitions of robust remote-handled processing capabilities. He said this came out of a legal case about storing waste. The agreement was for DOE to make changes in order to deal with hard to handle waste. The 2010 milestone for this change was replaced by a design to deal with remote-handled and contact-handled waste by 2016 and have a definite design due by 2018. He said the facility DOE was to build would have been really expensive and maybe not the best for all the waste it would handle. He said it makes sense to wait and see what kind of facility to build or if an offsite contractor is needed.

John went over the annual milestones established for retrieval of suspect retrievably stored waste. He said this is the waste that can be more easily retrieved. He said even though it is considered easy it still can be difficult to deal with for geographic reasons.

John said there is also remote-handled retrievably stored waste. He said this is waste that is radioactive enough to require a way to retrieve the waste remotely. He said the completion date for retrieval of 200 Area caisson waste is December 30, 2018 and there is no change to this milestone.

John presented on treatment of contact-handled small container mixed low-level waste. He said DOE agreed to produce a plan by 2011 to deal with “no path forward” waste. He said DOE will treat the waste within one year to prevent a backlog of legacy waste.

John talked about the treatment of contact-handled large container and remote-handled mixed low-level waste. He said this is the mixed level waste that is harder to deal with which sets up the necessary milestones.

John discussed the certification and shipment of contact-handled small container TRUM. He said this waste can be disposed of at the waste isolation plant. This sets up milestones for DOE to deal with the waste and complete shipment of contact-handled small container TRUM for offsite disposal by 2018 and DOE has agreed to this.

Matt said DOE coordinated the milestones with the Waste Isolation Pilot Plant and there will be shipment milestones.

John went over the milestones regarding the treatment of contact-handled large container and remote-handled TRUM waste. He said DOE is going to pick up the pace on treatment and certify 300 cubic meters per year. He said DOE is happy to have a commitment to get the waste off site.

Regulator Perspectives

- Rob Lobos, EPA, said the U and T Plants are not included in these milestones because there are already milestones established.

Committee Discussion

- Wade Riggsbee said there needs to be some sort of map or guide to look at the categories and how the milestones are broken down. Matt said this is a good point, and DOE is modifying a tool to reflect the change packages. The tool is geographically based and will show the background information as to what decisions are being made. Matt said in May DOE can walk the RAP committee through the software. He said it will be on the web by April 26. Maynard asked if the progression of how the problem is being tackled will be visible. Matt said yes. Gerry Pollet said the change packages should be in a form that the public can understand. Matt said the program will be user friendly.
- Jean said she is concerned that Ecology has not issued a site wide permit. She is concerned that the TPA process is being used and not the RCRA process. John said this is just a compliance schedule that is needed to close these units. Gerry said Jean’s question is important and it should be set aside to be addressed by the RAP committee. He asked when the draft permit will be seen for the context of the closure

plans. John said he does not have that date. Gerry said the RAP committee needs to follow up on this.

- Gerry asked if the major change is that the canyons are now exempt. John said that DOE proposed that if waste sites are by canyons it does not make sense to clean them up and then put a barrier over them. He said it was determined that there are 43 out of 1,000 waste sites that should be covered by a barrier if that was the remedy, and this change says that the 43 waste sites do not have to be dealt with until 2021.
- Dick asked if the waste sites are characterized. John said this is addressed in the RI/FS work plan.
- Wade asked if the Purex tunnels will be addressed in this milestone. John said there will be a closure plan with the RCRA permit, and everything else will be addressed with the CERCLA process.
- Wade asked about the C Facility. John said the C Facility has been demolished. He said he will check to see if it is a waste site. Wade said it would be good to follow up on if there is a milestone for the C Facility.
- Liz asked if tier two were dangerous facilities. John said the tier two facilities are still significant and determine a response action. Gerry said these tier two facilities are dangerous for reasons such as falling roofs. John said the tier two facilities are significant enough to require a response action from DOE by 2018. However, tier two facilities are not as significant as the canyons which are considered tier one facilities.
- Shelley asked if RCRA TSDs will still be closed by RCRA not CERCLA with tier one facilities. John said the Purex is a RCRA unit in a bigger building that is why the word coordination is used, so that the proposals work well together and can be modified. Matt said the closure process still has to be used and the TPA has to be followed.
- Shelley asked if she will know if it is a RCRA closure or a CERCLA decision unit. Nina said that has not happened.
- Jean said there needs to be integration between RCRA permit and new milestones. Matt said DOE makes sure there is coordination.
- Gerry said there needs to be discussion on how to coordinate RCRA and CERCLA decision units. Matt said DOE is taking down facilities such as PFP safely and on time and following the CERCLA process. John said if comments are made on the change packages they will be addressed. Gerry said there should be a discussion on RCRA units being classified as CERCLA units and it is important. He said in RCRA there are things in place that are not in place with CERCLA. Susan said this topic would be good for the Board to understand.
- Gerry suggested using a word besides Facility under RCRA for the tier one description to avoid confusion. John said Hanford is a RCRA facility and this is to make it clear the document is not talking about all of Hanford. Gerry said to change the definition for tier one to use something other than facility.
- Jean said she would like Ecology to outline the regulatory pathway to do the CAD ROD. Susan said there needs to be a briefing on CAD RODs.

- Susan asked if this changes authority to approve or not approve. John said no EPA still makes the decision to approve the ROD. Matt says it does not change CERCLA.
- Dick asked about the waste from PFP. Matt said the glove boxes from PFP have been decontaminated and buried at ERDF. He said the scope of this milestone is to treat that waste. Dick does not think there are capabilities to treat the waste. Matt said DOE is looking to make designs to achieve the capability.
- Gerry said the waste will be on site for 17 years and if the waste is on site for more than 12 months a permit is needed. He said if the waste is on site for a long time it needs to be treated, that is what it says in the settlement. He asked if treatment will be required. John said the plan is that DOE will have a schedule to treat or ship the waste and some waste might stay on site until 2035. Susan said as long as there is treatment to have safe storage. John thinks this is a good compromise and it saves money for designation of treatment. Susan said the RAP committee needs to follow the waste storage issue.
- Jean asked about the 2Y condition to the Hanford RCRA modification and asked for a review of this.

Treating Uranium and Technetium-99 in the Deep Vadose Zone

John Morse said DOE did a deep vadose zone test plan that focused on technetium 99 and uranium. He said the first area DOE has looked at is drying out the vadose zone where the technetium 99 accumulates and focusing on the BC Area. DOE ran an initial test and the report was just released which helped change the test design. The test plan will start in October with two wells investigating the drying front to see how the plan is working. He said DOE has been looking at uranium sequestration using natural gas, and ammonia gas has shown the most promise. DOE will not select a site for the field test, there will be a team of experts doing a step approach with characterization around the UA crib, and then the team will fine tune the actual test. He said gas will be injected into the bore hole to see if the Uranium is affected.

John said DOE has done a literature review to find data gaps. He said there will be analysis and potential lab work and DOE is looking to the office of science and other studies on deep vadose zone work. He said DOE is also investigating foam technology. He said DOE is developing a deep vadose zone strategy and this looks at the whole site, which includes setting up a test site on the plateau.

John said there is a planning meeting in May and there will be a technetium exchange workshop to look at the range of technetium and approaches that could be added to the program. He said DOE will move ahead programmatically and there is a lot of interest from EM-1 and the secretary of energy. He said DOE's goal is to be shovel ready.

Regulator Perspectives

- Dib Goswami, Ecology, presented on the deep vadose zone treatment technologies on behalf of EPA and Ecology. He said the agencies agree that focus on the deep vadose zone is a high priority and there needs to be a holistic approach. He said the RI/FS work plan is to include these technology screenings. He said the new M-015 milestones are to help continue uranium and technetium-99 remedy development. He said regulators, DOE, contractors, stakeholders and tribal nations should be involved early in the process on the development of deep vadose zone remedies. He said to explore and test multiple treatment technologies. He said to make sure the different site conditions are addressed and that the concept of “one size fits all” is not utilized. He said when EPA and Ecology looked at the history of technetium for groundwater one of the successes was the N-Area which should be looked into. He said dealing with technetium in groundwater is a very involved process and all available tools need to be used for the deep vadose zone. He said the technical panel’s involvement with deep vadose zone is an important step. He said there should be a more aggressive path forward and lessons learned from previous technology demonstrations which should be integrated along with information from other sites outside of Hanford.

Committee Discussion

- Shelley asked why nitrogen is being used instead of air. A representative from DOE said he found that liquid nitrogen was better for technology and cost.
- Pam said for desiccation, with only 7 inches of rain per year the soil cannot be very moist. John said if you look at the natural moisture profile the Hanford site varies and the infiltration depends on the soil type. He said there is moisture movement in the soil even if it is a small amount. He said with a desiccation, if the soil is dried out then there is more potential to get a reactive gas into the soil. He said there was an airflow test where DOE pulled contaminate out of the ground with air which is another technology being considered.
- Dick said the contamination is being held and if rewetted the contamination could move again.
- Wade said he wants to make sure that industry outside of Hanford is engaged because there are companies that are making a lot of money extracting uranium from the soil. He said it would be helpful to have this regulatory perspective and look at these technologies. John said there is a group working on certain technologies and DOE is making sure not to reinvent the wheel.
- Paul Shaffer, Oregon, asked about the ammonia reaction that takes place when natural gas is injected and what the product is. He was told that the reaction forms uranium silica.

- Shelley asked how much money DOE will ask for regarding the deep vadose zone. John said approximately 100 million dollars.
- Tom Carpenter asked about the long term assumptions DOE is acting under to come up with these strategies. He said there have been flooding events in the past which are cyclical; he asked if this is considered. Dib said the long term modeling goes up to 10,000 years into the future and the flooding events do not have a specific exercise at this point, however predictive analysis does address these types of topics. He is not sure if the issue with potential flooding is in the RI/FS and this might be something to consider. John said these extremes are considered, but if there was a massive flood there would be many worries.

Reverse Wells

Mike Thompson, DOE-RL, presented on the 216-B-5 reverse wells. He said that at Hanford there were 11 wells used as reverse or ejection wells for waste disposal. He said 3 of the wells are in the K Area and the rest are in the 200 Area. He said the 216-B-5 reverse well has been best studied. He said this well is about 1,000 feet from B Plant and received about 4.3 kg of plutonium from 1945 to 1947. He said the 216-B-5 reverse well is 20 cm in diameter, 92 meters deep and waste was pumped from the B Plant to a settling tank and then into the well similar to a crib in use. He said about 50% of the plutonium remains in the settling tank. He said there is lateral spreading in the vadose zone which is shown in the report.

Mike showed the geological cross section for the distribution of the contaminants found in the reverse well. He said that the groundwater levels varied and there was some saturation which then wicked laterally. He said a lot of the contaminants went out at the water table. He said the Strontium-90 did not travel laterally as far as other contaminants. He said plutonium stayed in the same area fairly securely. He said in the 1990's DOE did two treatability tests in the area for cribs and the reverse well for removal efficiency for the primary contaminants. He said the test ran for six months and the decision was made to not proceed with the pump and treat system. He said the test provided all the information needed for long term goals; however the TPA decided not to go forward on the interim ROD.

Regulator Perspectives

- Dib said he was involved with the pump and treat and one of the difficulties was the water yield because it was not cost effective.

Committee Discussion

- Pam asked if the 216-B-5 reverse well was investigated due to plutonium. Mike said yes along with other contaminants.
- Dick asked if anyone has looked at remediation of the reverse well. Mike said not since the treatability test and there is a lot of information in the test document. He said pump and treat in this case is not effective because plutonium binds to the soil. He said attempting retrieval could make the plutonium more mobile. He said it will likely be there forever.
- Dick asked about the french drains adjacent to the canyons. Mike said he is not sure about the french drains; he has been focusing on the 100 and 300 Areas. He said it is early in the process so the drains may not have been considered yet.
- Liz asked about the concept of the reverse well. Mike said it was industry practice at the time. Liz asked if there was just no understanding of what would happen as a result of pumping contaminants into the soil. Mike said it made sense to meet deadlines and this was done to get rid of waste and it was known that the waste decayed and binds with the soil well.
- Liz asked when the lateral wicking was discovered. Mike said the study on this area was done in 1979 and there was a lot of soil science going on for agricultural reasons and wicking due to soil suction and gravity seemed to be common knowledge.
- Liz asked if this knowledge gained from this reverse well helped with knowledge of groundwater. Mike said yes it is a great test area.
- Wade said there is a RI/FS with three reverse wells in the study. He said the bigger issue is that there has not been a lot of characterization. He said there are other wells that might be of interest to follow up on. Mike said the 216-B-5 reverse well was better characterized due to plutonium.
- Tom Carpenter asked if there is an inventory for cesium and strontium 90. Mike said yes; he did not have the exact numbers however based on information gathered during the well analysis it is a lot. Tom said there should be more characterization for these wells.
- Pam said she was under the impression that there was a past attempt to retrieve contaminants. Mike said that there was a past attempt; however it was hard to pump the contaminants out from the soil because they had bonded with the soil.
- Mike said the plutonium will stay still unless it is acidified and then it moves until the acid is buffered. Wade said there are more technical possibilities and issues with the injection of waste deep in the aquifer that should be looked into.
- Liz asked if there is a designated groundwater group. Mike said yes there are many groups dealing with groundwater and they communicate with each other. Liz asked if there is agreement between these groups on what contaminants move in groundwater. Wade said it depends on who you ask and this issue will change with new technology.

Committee Business

Susan Hayman went over the follow up items to discern whether they are action items. Pam said she does not think that she has seen the Hanford Priority list. Pam said this list would be good to have at the retreat and she said she would take on tracking it down. The committee was reminded that Dick and Harold are the issue managers for the Reactor removal ROD/EECA issue and the soil contamination values at K-basin risk. Tom said he is looking at the K-Basin excavation plan. The committee wants someone from MSA to come talk about if water distribution system being comprehensively evaluated for valve leaks. Shelley said it is more than MSA, checking the water lines should be protocol. Maynard said MSA should do this. Liz suggested getting a map of the distribution system. Maynard said it might be good to have an issue manager for Infrastructure. Pam said there needs to be issue manager work for the TPA change packages. The committee decided to have Wade be the Issue manager for the reverse wells. Maynard said he would be the issue manager for infrastructure. The RAP committee reviewed their 6 month work plan.

Action Items / Commitments

- Insert action items or commitments.

- Insert action items or commitments.

Handouts

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

- 100K Basins Closure Project Update, Tom Teynor, April 13, 2010
- Deep Vadose Zone Treatability Test Status, John Morse, April 12, 2010
- 216-B-5 Reverse Well, Mike Thompson
- Status of Tri-Party Agreement Changes to Central Plateau Cleanup Work, Matt McCormick, April 8, 2010
- Tentative Agreement on Hanford Federal Facility Agreement and Consent Order Change Forms Implementating Changes to Central Plateau Cleanup, March 2010
- Tentative Agreement on Hanford Federal Facility Agreement and Consent Order Change Forms Implementating Changes to Central Plateau Cleanup, Quick Guide, March 2010

Attendees

HAB Members and Alternates

Tom Carpenter	Susan Leckband	Bob Suyama
Shelley Cimon	Liz Mattson	Dick Smith
Harold Heacock	Gerry Pollet	Maynard Plahuta
Pam Larsen	Wade Riggsbee	Eugene Van Liew

Others

Paula Call, DOE-RL	Rick Bond, Ecology	Mark Bench, CHPRC
Matt McCormick, DOE-RL	Dib Goswami, Ecology	Glen Caronister, CHPRC
John Morse, DOE-RL	Nina Menard, Ecology	Sonja Johnson, CHPRC
Tom Teynor, DOE-RL	John Price, Ecology	Dale McKenney, CHPRC
K. Michael Thompson, DOE-RL	Ginger Wireman, Ecology	Janice Williamson, CHPRC
Margo Voogd, DOE-RL	Larry Gadbois, EPA	Susan Hayman, EnviroIssues
	Emy Laija, EPA	Blair Scott, EnviroIssues
	Rod Lobos, EPA	Barb Wise, MSA
		Jim Mothers, Nez Peirce Tribe
		Paul Shaffer, Oregon
		Mark Triplett, PNNL
		Annette Cary, Tri-City Harold
		Peter Bengtson, WA closure
		Mike Priddy, WDOH
		Dave Rowland, Yakama Nation
		Jean Vanni, Yakama Nation

