



# **INL Site Environmental Management**

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C I T I Z E N S   A D V I S O R Y   B O A R D

## **Meeting Minutes**

June 22, 2017

## List of Acronyms

AMWTP	Advanced Mixed Waste Treatment Project	ICP	Idaho Cleanup Project
ARP	Accelerated Retrieval Project	IDWR	Idaho Department of Water Resources
ATR	Advanced Test Reactor Complex	INL	Idaho National Laboratory
CAB	Citizens Advisory Board	INTEC	Idaho Nuclear Technology and Engineering Center
CDC	Centers for Disease Control and Prevention	IWTU	Integrated Waste Treatment Unit
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act, also referred to as superfund	LINE	Leadership in Nuclear Energy
CFD	Computational Fluid Dynamics	NETL	National Energy Technology Lab
CPP	Chemical Processing Plant	NPL	National Priorities List
CWI	CH2M-WG, Idaho	NRC	Nuclear Regulatory Commission
D&D	Decontamination and Demolition	NRF	Naval Reactors Facility
DDFO	Deputy Designated Federal Officer	NWCF	New Waste Calcine Facility
DEQ	Department of Environmental Quality	PCE	Tetrachloroethylene
DFO	Designated Federal Officer	PVC	Polyvinyl Chloride
DMR	Denitration Mineralization Reformer	RH-TRU	Remote-handled transuranic waste
DOE	Department of Energy	ROD	Record of Decision
EIS	Environmental Impact Statement	RWMC	Radioactive Waste Management Complex
EM	Office of Environmental Management	SDA	Subsurface Disposal Area
EM SSAB	Environmental Management Site Specific Advisory Board	SNF	Spent Nuclear Fuel
EPA	Environmental Protection Agency	TAN	Test Area North
ET	Evapotranspiration	TMI	Three Mile Island
FACA	Federal Advisory Committee Act	TRA	Test Reactor Area
FOIA	Freedom of Information Act	TRU	Transuranic waste
ICDF	Idaho CERCLA Disposal Facility	USGS	United States Geological Survey
		WAG	Waste Area Group
		WIPP	Waste Isolation Pilot Plant

The Idaho National Laboratory (INL) Site Environmental Management (EM) Citizens Advisory Board (CAB) held its quarterly meeting on Thursday, June 22, 2016, at the Hilton Garden Inn in Idaho Falls, Idaho. An audio recording of the meeting was created and may be reviewed by calling CAB Support Staff at 208-557-7886.

**Members Present**

Josh Bartlome (membership pending approval by HQ)  
Herb Bohrer  
Keith Branter  
Brad Christiansen  
Marvin Fielding  
Jim Huston  
Kristen Jensen  
Talia Martin  
Trilby McAfee  
Betsy McBride  
Bill Roberts  
Cathy Roemer

**Members Not Present**

Bob Bodell

**Deputy Designated Federal Officer (DDFO), Federal Coordinator, and Liaisons Present**

Connie Flohr, U.S. Department of Energy Idaho Operations Office (DOE-ID)  
Brad Bugger, Acting Federal Coordinator, DOE-ID  
Fred Hughes, Program Manager, Fluor Idaho  
Susan Burke, State of Idaho  
Daryl Koch, Idaho Department of Environmental Quality (DEQ)  
Dennis Faulk, Environmental Protection Agency (EPA)

**Others Present**

Clark Jones	Shayna Martin, Shoshone-Bannock Tribes
Brandt Meagher, Fluor Idaho	Lori Howell, Shoshone-Bannock Tribes
Valerie Kimbro, Fluor Idaho	Kathryn Hitch, Office of Senator Crapo
Danielle Miller, DOE	Janice Stiteler
Kevin Trevellyan, <i>Post Register</i>	Tami Thatcher
Curtis Roth, DOE	Kerry Martin, I-DEQ
Kevin O'Neill, DOE	Mike Swain, Fluor Idaho
Amy Taylor, Office of U.S. Senator Risch	Chris Henvit, Navy
Steve Dwyer, Dwyer Engineering	Eric Schweinsberg, DOE
Nolan Jensen, DOE	Karin Brown
Jim Malmø, DOE	Ann Riedesel, Fluor Idaho
Joel Case, DOE	Brad Bugger, DOE
Rich Abits, Fluor Idaho	Cerrissa Honena-Rogers
Charles Sullivan, Fluor Idaho	Preston Abbott, Mirion Technologies
Gundar Peterson, Fluor Idaho	Marc Jewett, Fluor Idaho
Jim Kelsey, Fluor Idaho	Erik Simpson, Fluor Idaho
Scott Ferrara, DOE	Beatrice Brailsford, Snake River Alliance
Howard Forsythe, Fluor Idaho	Jordan Davies, Staff
Andrea Gumm, Facilitator	Kelly Green, Staff

## Opening Remarks

Facilitator Andrea Gumm began the meeting at 8:00 a.m. She reviewed the agenda and noted that the public comment periods would be held at 10:30 a.m. and 3:15 p.m. She reminded attendees of the process for public comments during the meeting, time permitting, or via question cards.

Keith Branter (CAB Chair) welcomed everyone to the meeting, particularly Bill Roberts and Herb Bohrer (past CAB members) who were invited to the meeting as special guests to the Board. Their terms ended on April 30, but their final meeting as CAB members was canceled. He also introduced Josh Bartlome, a pending board member, whose membership is subject to approval by DOE Headquarters. Branter commented that the day's agenda was full and said he was looking forward to the presentations.

Connie Flohr (DOE-ID) commented that Jack Zimmerman was unable to make the CAB meeting due to a death in the family. She provided a brief summary of her background: Flohr is the Associate Deputy Manager for the Idaho Cleanup Project (ICP) and Zimmerman's Principal Deputy. She spent much of her career at DOE Headquarters, most recently as the Office of Environmental Management's (EM) Budget Director and Deputy Assistant Secretary. While the latter was a great opportunity, it compounded her commute and she ultimately asked to be reassigned to Idaho. This coincided nicely with Headquarters' attempt to reduce the number of people in Washington, D.C. and increase the number of people at field sites. She was offered her current position and moved to Idaho in April. Flohr commented that she is very happy to be here and stated her appreciation to the Board for welcoming her to the day's meeting in Zimmerman's place.

Susan Burke (State of Idaho) commented that she enjoyed the tour of the Site the previous day and said thinking about INL as an archaeological site was a welcome shift in perspective. Burke noted that because the Site has been fenced off for decades, historical areas are undisturbed and well preserved, and drew a comparison to the nuclear cleanup issues that are more commonly dealt with at the Site. She said she was looking forward to the meeting.

Daryl Koch (I-DEQ) commented that he and his colleagues had been conducting field work at the Site the week of the meeting. They looked at the orange signs posted around the Site which mark it as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Site and provide information about the area. Koch noted that he, Dennis Faulk (EPA), and other agency employees are not merely desk dwellers, but that they perform fieldwork. He commented that he hopes there are good presentations throughout the day.

Faulk noted that he will speak to the CAB for the second time in 13 years during the meeting. He also commented that he witnessed the Big Lost River run during the archaeological tour the previous day. Faulk said he was glad to be at the meeting and looking forward to delivering his presentation to the Board.

Fred Hughes (Fluor Idaho) commented that Fluor Idaho had completed its first year of the contract. He provided a brief summary of the accomplishments thus far. In the last year, Fluor Idaho completed 17 shipments to the Waste Isolation Pilot Plant (WIPP) and moved 192 Advanced Test Reactor (ATR) spent nuclear fuel (SNF) elements out of the basin and into dry storage. Fluor Idaho will be taking over the last Accelerated Retrieval Project (ARP) structure from the construction subcontractor within the next month and putting it into operation. Finally, Hughes noted that Fluor Idaho has made excellent progress at the Integrated Waste Treatment Unit (IWTU) and stated that there is one major issue left to solve and three possible solutions.

## Recent Public Outreach Activities

Flohr reviewed recent public involvement activities. The presentation is available on the INL Site EM CAB website: [inlcab.energy.gov](http://inlcab.energy.gov).

## Idaho Cleanup Project Overview

Jim Malmo (DOE-ID) provided a presentation on the status of cleanup at the INL Site. The presentation is available on the INL Site EM CAB website: [inlcab.energy.gov](http://inlcab.energy.gov).

Malmo began his presentation with a safety share: He related that he was at his cabin over Memorial Day weekend and stressed about completing housework. When his 16-year-old son asked if he could take the Jet Ski out into the water, Malmo told him to proceed without him. Unfortunately, following routine maintenance, a hose had not been properly reinstalled and the Jet Ski began sounding an alarm and malfunctioning in the water. Malmo's son made it back to shore safely, and the hose was easily reattached, but Malmo commented that his stress caused him to skip an important step that would have prevented time spent later and a potential accident.

Betsy McBride (CAB Member) referred to Slide 9 of Malmo's presentation and asked the size of the plume pictured. Nolan Jensen (DOE-ID) responded that the area is approximately two to three miles from where it began to the outside edge.

Branter asked how much capacity remains at the Idaho CERCLA Disposal Facility (ICDF). Jensen responded that the facility is about 75 percent full. DOE-ID projects it will last 10-15 more years. However, that projection depends on the budget for decontamination and demolition (D&D) of the facilities. Once that begins, ICDF will be impacted quickly.

Flohr asked how long it took to build ARP IX. Malmo responded that it took a little less than a year.

Jim Huston (CAB member) commented that DOE and Fluor Idaho are two to three years ahead of schedule at the ARPs. He asked if they plan to finish early. Malmo responded yes, they plan to finish by 2020. He went on to say that when they finish early there will be pressure to D&D the ARPs so they can begin work on the cap. Huston asked if there will be an opportunity for the CAB to comment on the cap. Malmo responded yes.

McBride asked Malmo to remind the Board about the characteristics of the waste being left behind. Malmo responded that low-level waste still remains in the pits and trenches. That waste will stay. It is for this reason that a final cap will be installed over all 90 acres of the Subsurface Disposal Area (SDA). Malmo added that there are also some small areas containing isolated pockets of transuranic (TRU) waste. It did not make sense to go in and retrieve them, so the Record of Decision (ROD) focused on the areas with the highest concentrations of TRU waste.

Talia Martin (CAB member) asked if DOE plans to repurpose Chemical Processing Plant 666 (CPP-666) or decommission it. Malmo responded that the intent is to empty the facility, an effort anticipated to take until at least 2023. The facility will stay in operation until it is empty. Malmo commented that in the event that fuel (which must sit for 5 years) is still being received from ATR, closure of the facility will be prolonged. Additional shipments of ATR fuel must take place over the next two to three years. Navy fuel currently held in CPP-666 is in the process of being transported to dry storage at the Naval Reactor Facility (NRF), an effort that will continue through 2018. Navy fuel pieces, parts, and fines will be processed in 2018 and 2019. Once everything is removed, CPP-666 will be shut down as there will no longer be a need for wet storage.

McBride asked if spent fuel would be sent to Idaho in the event that Three Mile Island (TMI) is closed. Malmo responded that DOE does not foresee receiving those shipments. Brad Bugger (DOE-ID) added that the Idaho Settlement Agreement clearly defines what kinds of fuel are allowed in the state and what the sources and total volume of those shipments can be. McBride asked if that means there is still room underneath the cap. Burke responded no.

McBride asked if CPP-666 is as up-to-date as it needs to be. Malmo responded no. Because it is an aging facility, some maintenance issues must be addressed to keep it operational. The intent is to move all the spent fuel from wet to dry storage, so the canal will not need to be maintained. However, the facility still must process the remote-handled transuranic (RH-TRU) waste. The fuel pieces, parts and fines the Navy has in the pool will be transported through the canal and into the hot cell. Maintenance heavy activities will cease, but the facility must continue operating for many years in order to process waste in part of the facility.

Tami Thatcher (Idaho Falls) asked four questions. Her questions and DOE's corresponding responses are below:

1. Please clarify the scope of the SNF project.
  - The work at CPP-666 is only to move the spent nuclear fuel from wet to dry storage. Until the repository requirements are known, the only thing to be done with the waste is make it road ready.
2. At some point, DOE has said it will make two geologic repositories, one for commercial nuclear fuel and one for defense spent nuclear fuel. Has that gone the way of consent-based repositories?
  - This is one of many options that are still being considered. The decision will be made at a very high level.
3. There is a significant amount of waste being left at the Radioactive Waste Management Complex (RWMC). What is being removed is being removed because of the high chemical concentration. It is not accurate to state that DOE is focused on removing the highest amounts of TRU waste. Less than 10 percent of the buried TRU waste is being removed. Please provide a better characterization of what is being left in place at the RWMC.
  - This was all disclosed in the ROD and there were numerous public meetings that took place on this topic. These meetings drove the ROD and the current ongoing remedial action. The agencies have all agreed on this remedial action approach. The cap, the design for which is very important, will be placed over all 90 acres of the SDA.
4. Two years ago, multi-level wells (which are ten years old) were discovered to have excessive levels of tetrachloroethylene (PCE). How long will investigation into this finding last?
  - There have been numerous presentations on these wells. The United State Geological Survey (USGS) is continuing to evaluate the extent of the condition and how the contamination was caused as part of their sampling process.

## **Integrated Waste Treatment Unit (IWTU) Update**

Kevin O'Neil provided an update on the IWTU project. The presentation is available on the INL Site EM CAB website: [inlcab.energy.gov](http://inlcab.energy.gov).

McBride reported having heard that if calcine treatment had continued on the sodium-bearing waste, it would be finished. She asked if identification of sodium is what sparked the design of IWTU. O'Neil responded that the characteristics of the waste changed over time and the concentration of sodium increased. To make the process work, five times more volumetric additive needed to be introduced to the

waste. As such, the end volume was increasing. The process would not have worked well for this waste or met the environmental requirements. Joel Case (DOE-ID) added that there are many urban myths surrounding the calcine process. The New Waste Calcine Facility (NWCF) was designed to treat waste generated from reprocessing fuel. DOE stopped reprocessing in 1992, so all the waste going to the tank farm was D&D solutions. NWCF did not operate well with high sodium concentrations. It would have been very problematic to run the NWCF on this type of waste stream.

Bill Roberts (past CAB Member) commented that IWTU is now essentially where it was when he began his CAB membership six years ago. He asked O'Neil to tell him what he really thinks. O'Neil promised to do so throughout the presentation.

Cathy Roemer (CAB Member) asked O'Neil to explain Bullet 5 on Slide 5: "Validated the NETL CFD model of the DMR fluidization." O'Neil responded that this stands for: Validated the National Energy Technology Lab (NETL) Computational Fluid Dynamics (CFD) model of the Denitration Mineralization Reformer (DMR) fluidization. He went on to explain that the DMR is the steam reforming unit in which the liquid waste is turned into a solid. The NETL CFD is a computer model that simulates the function of the DMR.

Roemer referred to the original design and inventor of the steam reforming waste treatment technology and asked how far away from the original design and intent DOE can get before it behooves them to redesign or remanufacture the facility. O'Neil responded that they are performing modeling. That data is then compared to the empirical data acquired from running the facility. The original designer of this process vessel is still on the team, and working the pilot plant in Hazen. He is also helping with the redesign effort.

Branter noted that this plant was only designed to process the liquid waste held in the tank farm. He asked when they will wear out the facility by over-testing. O'Neil responded that this is part of Hazen's overall look at the facility. Hughes added that as part of Phase 1, Fluor Idaho performed a thorough review of all the components to ensure they were all in good working order and that the plant would function and operate for the timeframe needed. Fluor Idaho's charter was to take the plant as designed and make it operational, but not to stray from the design unless absolutely necessary. He commented that Fluor Idaho is making minor modifications to the design to ensure it operates as originally intended.

Flohr added that as a new DOE-ID employee she has been asking some of the same questions. The answer is that Fluor Idaho brought in many technical specialists that the previous contractor, CH2M-WG, LLC (CWI) did not and that all those experts have concluded that steam reforming is still the right approach. Steam reforming occurs inside a vessel, and the vessel itself is what needs to be fixed. Fluor Idaho is working on that. It is the right process and technology; some issues with the structural design just need to be resolved. She commented that Fluor Idaho has made substantial progress that CWI was unable to make.

McBride said she believed they had been told that one of the reasons to stay with this technology and ongoing investment was the possibility that it could be used beyond the 900,000 gallons of sodium-bearing waste. O'Neil responded that there had been some discussion in the past regarding calcine, but it is no longer being considered.

McAffee asked why construction of the pilot plant will be in Colorado. O'Neil responded that Hazen Research is an industrial facility based in Colorado and the home of the original IWTU pilot plant. It is already established and has the equipment, knowledge, and infrastructure. It is free of nuclear contamination, so it is faster and less expensive to test the equipment.

Roberts commented that frustration abounds on this project and that the Board is venting their frustrations. He asked O'Neil not to take it personally.



Huston asked if the use of a fluidized bed burner is still in the conceptual design phase. O'Neil responded no, this technology is known to work, but the fix for the replacement of the ring header is conceptual. Huston asked for an estimate of complete cost and time. O'Neil responded that the project is only priced out through Phase 2, which began last November and will persist through this December. Phase 2 will be approximately \$61 million.

Huston asked when a production run will occur. Case explained that Fluor Idaho proposed a four phased approach to IWTU when their cleanup contract began in June 2016. Each phase has a schedule and budget associated with it. Phase 1 aimed to identify any flaws in the process. Phase 2 involves three simulants runs. The second simulant run is nominal 30 days to test the changes that have been made. Fluor Idaho and DOE will evaluate the data derived from the second run before completing the final confirmatory run in Phase 2. Phase 3 will be validation and involves an additional, very short run. Phase 4 will be radiological operations. Schedules for each phase will not be provided until the preceding phase has been completed.

Huston commented that the citizens the CAB members represent are not engineers and said he was trying to understand the status of project. He added that IWTU is not a first-of-a-kind fluidized burner. O'Neil agreed, but commented that this situation, this facility, and this waste is unique. No one has treated this waste before.

Roemer asked when the process began. O'Neil responded that studies began before 2005, and construction was completed in 2011. Roemer then asked what the original construction price was estimated to be. O'Neil responded that \$571 million was the construction price. They began operating and commissioning in June 2012. There were some notable issues during initial start-up so DOE and CWI spent a couple years making modifications. The first successful simulant run was in December 2014. Roemer asked what responsibility the designer had in ensuring this particular unit would operate. She also asked how the software and the mechanics interact and if the software could be at fault. O'Neil responded that a distributive control system, which is heavily tested and controlled, is used to monitor and control the equipment in the plant. He stated that he does not believe it is a computer problem.

Branter asked how much DOE has spent so far on this project and how much they are willing to spend. O'Neil responded that through May, \$852 million had been spent. A spending cap has not been imposed. O'Neil added that DOE-ID does receive calls from the Office of Management and Budget as well as the House and Senate Energy and Water Committees.

## **Waste Isolation Pilot Plant (WIPP) Update**

Jim Malmo (DOE-ID) provided an update about the WIPP Facility. The presentation is available on the INL Site EM CAB website: [inlcab.energy.gov](http://inlcab.energy.gov).

Burke commented that she would like to see a correlation between frequently used terms such as shipments, containers, and cubic meters. Malmo responded that every shipment represents two overpacks. Each overpack contains 10 55-gallon drums, or two cubic meters. So, every shipment is 20 55-gallon drums, or four cubic meters. With 20,000 55-gallon drums awaiting shipment, Idaho should be sending 25 shipments to WIPP every week, not two.

Huston asked how many hours a day employees are working at WIPP. Malmo responded they are working 12-hour shifts, but they are only working days. They could be doing back shifts to work 24/7, but they would need more employees. Until they bring the ventilation system online and dig out Panel 8, they have a limited amount of space to work in.



Marvin Fielding (CAB Vice-Chair) commented that the presentation at the EM Site-Specific Advisory Board (EM SSAB) meeting in May communicated that the contamination has been addressed and that it is technically feasible they could return to unfiltered ventilation. He asked whether a recommendation from the Idaho CAB might encourage a look at unfiltered ventilation operations or excavation of Panel 8 and resumption of emplacement in Panel 7. Flohr responded that it may not be feasible as WIPP has an agreement with the State much like the Idaho Settlement Agreement. Malmo added that track record and credibility will be a major factor. If they can complete Panel 7, close it, prove that the contamination cannot escape, and then demonstrate that Panel 8 is clean, perhaps the case can be made. However, this will take a while.

## Public Comment Session #1

Thatcher referred to buried waste at RWMC and thanked the CAB for writing a letter with a timeline. She commented that a 1998 study of the soils showed that RWMC TRU waste had been dispersed throughout the area. She also stated that she believes it is important to recognize that the burial of long-lived radioactive waste has never ceased. She pointed to a study completed by a consultant to the Energy Employee Occupational Wellness Program. That study made the case that worker radiological control programs at burial grounds are extremely poor. She encouraged everyone to visit the Centers for Disease Control and Prevention (CDC) website and view that report. Thatcher added that the detailed study passed 10,000 years because the EPA arbitrarily stopped looking at that point and said the models were tuned to prevent the wastes from migrating. She commented that those reports were not made available until she submitted a Freedom of Information Act (FOIA) request. Thatcher concluded by saying the cap does not stop migration of waste but simply slows it. The model assumes perfect cap performance for millennia, but the public does not get the full story.

## Calcine Update

Mark Shaw (DOE-ID) provided an update about Calcine. The presentation is available on the INL Site EM CAB website: [inlcab.energy.gov](http://inlcab.energy.gov).

McBride referred to the required proof of principle and asked if they are using a technology that has never been used before. Shaw responded that he will cover each of the tests and allow the CAB to determine whether it is simple or complicated. Betsy commented that John Grossenbacher, head of the Leadership in Nuclear Energy (LINE) Commission, believes DOE-EM should be using the money set aside for calcine to accelerate removal of TRU waste. She asked if this approach is being considered. Shaw responded no.

McAffee asked how much the core weighs. Shaw responded a couple hundred pounds.

Branter asked if there is any potential that the calcine in Binset 1 is solidified. Shaw responded no.

Herb Bohrer (past CAB Member) asked, hypothetically, if this project were canceled or delayed and the money were available for other work at the Site, what it would be used for. Burke responded that removal of high-level waste from Idaho by 2035 is stipulated in the Settlement Agreement. DOE's ROD mandates that they must hot isostatic press the material. Retrieval of this waste is just the first step in removing the high-level waste, and with 2035 nearing, it is time to begin work on this project. Bugger added that DOE-ID is able to apply the necessary resources to all of its priorities right now. DOE-ID and Fluor Idaho are ahead of schedule on buried waste, have enough resources to support the TRU program here (the holdup is at WIPP), and resources to continue moving forward on IWTU. The additional funding would not relieve pressure on any other milestone.

## SDA Cap Design

Nolan Jensen (DOE-ID), Marc Jewett (Fluor Idaho) and Jim Kelsey and Dr. Craig Benson (Daniel B. Stevens and Associates) provided a presentation about the SDA cap design. The presentation is available on the INL Site EM CAB website: [inlcab.energy.gov](http://inlcab.energy.gov).

McBride asked how cultural/archaeological issues are managed. Jensen responded that the area has been surveyed very carefully with assistance from the Tribes. DOE believes they can manage cultural sites by either avoiding them altogether or watching them carefully. No archaeological resources should be disturbed. McBride asked what types of resources they are protecting. Jensen responded that he believes portions of the Oregon Trail and some burial sites are within the area. Martin added that BEA has performed intensive surveys of the areas they are looking to excavate for soil. They found one potential archaeological site in Spreading Area B. They performed a test excavation and ultimately cleared it so it is no longer considered an archaeological site. Martin commented that she does not believe there are burial sites, but said in this case BEA cleared the excavation of soil.

McBride asked what the planning assumptions for rainfall change due to climate change are. Jewett responded they must look at extreme event scenarios. Some climate change, design rainfalls, and extreme snowfall will be considered, but overall the performance must hit the goals laid out on Slide 17.

Josh Bartlome asked what type of environmental monitoring will need to be performed on the evapotranspiration (ET) cap and how long that monitoring will last. Kelsey responded that the initial monitoring period, which looks at performance of the cap, can sometimes last up to five years. Jewett added that following the initial monitoring period, long-term monitoring of groundwater, as well as any cap maintenance, will occur indefinitely.

Fielding asked what the potential for settlement is on the 5.6 acres that will have been excavated. Will that be addressed in the ongoing maintenance plan or in the design? Kelsey responded both.

Roemer asked if they will be pulling materials from the areas depicted on the map and if there will be a mixing of materials to achieve the proper composition. Kelly responded that the data indicates there is enough material nearby for the cap. The top soil is “gold” so it will be stripped off to ensure it goes back on the top layer of the cap. The fill can be anything, such as debris and gravel, which will bring the cap to grade and provide the desired slopes. Roemer also asked when man-made materials might need to be used. Kelly responded that synthetic materials will not be used on the cap proper. Rare cases such as storm events with flooding through a nearby channel would call for synthetics.

Brad Christensen (CAB Member) asked if there will be any modifications made off site, such as a canal to redirect water. Benson responded that control of inflow is important. Water that is falling on the cap as part of the natural ecosystem as well as any water that may run on will be managed through different strategies that have been largely effective. Vegetation, soils and climate are balanced to achieve the objective. Runoff control is part of that as well.

## DEQ and EPA Regulatory Insights

Dennis Faulk (EPA) and Susan Burke (State of Idaho) provided presentations about DEQ and EPA Regulatory Insights.

Faulk did not prepare slides for the meeting. The following are notes from his presentation:

CERCLA (superfund) work is the cleanup of contaminated soils, groundwater and old buildings.

Faulk compared the Idaho and Hanford sites:

<b><i>Similarities between the Idaho and Hanford Sites</i></b>	<b><i>Differences between the Idaho and Hanford Sites</i></b>
<ul style="list-style-type: none"> <li>• DOE has agreements with both Washington and Idaho for the Hanford and INL sites, respectively</li> <li>• EPA is the final decision maker on all CERCLA work</li> <li>• Both sites are cleaning up to an unrestricted status to allow for future residential use</li> <li>• Specific areas at both sites have been designated for industrial use into the future (the center part of the Idaho Nuclear Technology and Engineering center, or INTEC, and part of TRA at the INL)</li> </ul>	<ul style="list-style-type: none"> <li>• Hanford's agreement with Washington has been modified thousands of times; Idaho's has never been modified</li> <li>• Under Washington state law, Hanford must dig to 15 feet; under Idaho state law, DOE must dig to 10 feet</li> <li>• INL allowed for 100 years of compliance; Hanford has no compliance timeframe               <ul style="list-style-type: none"> <li>– Because there are 100 years at the Idaho Site, the goal for Cesium is 18 parts per million, whereas in Hanford it is 6 parts per million</li> <li>– There are downsides to having no compliance timeframes, too, as Hanford was supposed to finish cleanup in 2018, but has at least 40 years remaining</li> </ul> </li> </ul>

Waste Area Group (WAG)-1 covers groundwater issues at Test Area North (TAN). In the 1970s, trichloroethylene (TCE) was directly injected into the aquifer as a way of disposal. Slow progress is being made on this, and a well is being drilled on the outskirts of a distill plume to see if the TCE concentration is curbing as it should be.

WAG-3 represents the Chemical Processing Plant (CPP), also known as INTEC. The active work in this WAG is down to a few CERCLA projects:

1. Capping the tank farms – Due to IWITU's revised schedule, an interim cap will be installed.
2. D&D of INTEC buildings and surrounding soils – At some point ICDF may need to be expanded to accommodate this refuse.
3. Closure of ICDF – Once this last step occurs, INL will be deleted from the National Priorities List (NPL).

WAG-7 includes pre-1970 TRU waste, the ARPs. For the past 13 years, the focus of this project has been not only on removal of the TRU waste, but on the organic chemicals and radionuclides such as iodine 129 and technetium 99, which are mobile and capable of migrating to the aquifer. CWI and DOE came up with wax grouting to immobilize these contaminants. The ultimate remedy for WAG-7 is the cap as it will stop the percolation of water through the system. About 200,000 pounds of organics have been removed from the soils, and three of the 5.69 acres of targeted waste exhumed. ARP IX is the last remaining area containing high organics.

WAG-10 comprises the miscellaneous projects, primarily long-term stewardship and institutional controls which are tracked as a system. Site-wide groundwater is also in this group. Two places have impacts to groundwater: There is TCE at TAN and perched water at INTEC.

Faulk concluded his presentation by saying that the Idaho workforce is competent, positive and great to work with. Of the 22 projects in his portfolio, INL is far and above the best.

McBride referred to the ET cap. She asked if Faulk could conceive of a time when the contaminants had migrated because there was no synthetic barrier and the cap would need to be removed and the remaining waste excavated. She commented that it seems Idaho is setting itself up for another round in the future. Faulk responded that he is relatively confident that the ET barrier will work well over the SDA, provided there are not enormous impacts from climate change. If Idaho becomes a rainforest in the next 1,000 years, it is possible the cap will not perform as intended. Faulk commented that he believes the cap as designed is the correct approach given what is known now. He added that ET barriers make so much sense because they take advantage of what nature already does.

Martin asked why a 100 year timeframe for compliance was set for the Idaho Site, but not for Hanford. Faulk responded that two different groups of people within EPA Region 10 had different views. EPA never considered that the cleanup of Hanford would not be finished. INL took the tact that its site is very remote and the mission is ongoing. Martin asked if this timeframe could be revised in the ROD. Faulk responded that it could be changed for the groundwater at TAN if DOE was amenable, but not for anything else.

Martin asked how many caps will be installed at the INL. Faulk responded that three caps are envisioned for the Site: One over buried waste, one over the tank farms, and one over the ICDF. He added that removal from the NPL does not alleviate DOE's maintenance and monitoring responsibilities.

Faulk commented that the EPA is looking to lose 1200 employees by September 2, 2017. He said he would be offered early retirement and is agonizing over whether or not to take it.

Burke delivered her presentation. Her slides can be found on the INL Site EM CAB's website, [inlcab.energy.gov](http://inlcab.energy.gov).

Koch referred to McBride's earlier question regarding threshold dates for the stored and buried wastes. He commented that under CERCLA all the waste that has been retrieved is supposed to leave the state by December of this year. McBride asked Burke what the penalty is if those dates are not met. Burke responded that while there is no monetary penalty under the Settlement Agreement, the current status would be maintained and no fuel would be allowed into the state.

## **New Site Process**

Nolan Jensen (DOE-ID) provided a presentation about New Site Process. The presentation is available on the INL Site EM CAB website: [inlcab.energy.gov](http://inlcab.energy.gov).

Faulk asked if there are any nearby wells. Jensen responded that there is no evidence of a PCE plume. Specifically, water from the rest area up gradient of the well was sampled and shown to be totally clean. This means the issue that led to the presence of PCE would have occurred between the rest area and the well. Jensen added that there is no evidence to suggest anything happened to contaminate the well.

Bartlome asked what the well casing is constructed of. Jensen responded Polyvinyl Chloride (PVC).

McBride asked how confident DOE is that the water in the Snake River Plain Aquifer is flowing in the direction they think. Jensen responded that this Aquifer is very unique. Some perched water goes different ways, but the consensus is that the water flows in one general direction.

Thatcher commented that the West Bay wells are very deep multilevel wells. She asked at what depths in the rest area well the readings were taken. Jensen responded that the high hit in November 2015 was shallow in the well, but very deep when they sampled in June 2016. The concentrations had dropped from 800 micrograms/liter to less than one. He stated that the data collected so far has been sporadic, a characteristic unbecoming of a plume. This is why they have been conducting an investigation.

Thatcher added that it is conceivable the waste came from TAN. Jensen responded that it is possible, but not probable. PCE is not one of the INL's major contaminants upstream, so one must ask why PCE and none of the others. He commented that the data will speak for itself this fall.

## **TMI-2 License Renewal**

Scott Ferrara (DOE-ID) provided a presentation about TMI-2 License Renewal. The presentation is available on the INL Site EM CAB website: [inlcab.energy.gov](http://inlcab.energy.gov).

Burke asked why DOE pursued a Nuclear Regulatory Commission (NRC) license for this fuel. Ferrara responded that because it was commercial spent fuel and put power on the grid, the Atomic Energy Act dictated that NRC would be the regulatory agency and body. He added that DOE made the decision to license it under NRC in 1995 so shipment out of the state to a licensed NRC repository, when available, would be easier and more efficient.

Burke asked if this is the first NRC license ever granted to DOE. Ferrara responded yes.

Martin asked if there is a process in place that mandates the oldest waste must go to the repository first. Ferrara said he is not aware of one.

## **Public Comment Session #2**

Thatcher commented that the TRA percolation ponds were replaced with a lined evaporation pond. The liquid warm waste sent to the lined evaporation pond is filtered but has high concentrations of tritium because it cannot be removed through filtration. It was reported last year that BEA sent radioactive waste other than tritium to the pond which it was not designed to receive. Thatcher asked if the pond will be considered for CERCLA Site status and if BEA will be required to clean up the area. She referred to a previous presenter's assertion that most of the contamination is cesium 137 and will decay in a few half-lives and said the dozens of forever contamination sites in Idaho should be remembered and reviewed. They are documented, include radionuclides with very long half-lives, and as such require institutional controls for an indefinite period. Saying cesium 137 will decay in a few half-lives is unsatisfactory.

Beatrice Brailsford (Snake River Alliance, Pocatello) commented that she believes more new facilities will come before the CAB in future years. A treatment facility for calcine will likely be one of them. She stated that DOE has a propensity to build one-of-a-kind facilities without testing their theories at a pilot plant. She encouraged the CAB to insist that future technology is more fully and completely tested before an exorbitant amount of time and money is spent on a new facility.

Bohrer asked for the status of the future mission of the Advanced Mixed Waste Treatment Plant (AMWTP) and encouraged the Board to continue pursuing it. He added that he enjoyed his time on the CAB and thanked the members for their support during his membership. He commented that the Board performs an important function and said he believes DOE is committed to listening to them.

## **EM SSAB Chairs Meeting Report and Recommendations**

Branter commented that he and Fielding attended the spring EM SSAB meeting in Paducah, Kentucky. The meeting was well attended and members of DOE Headquarters delivered presentations regarding the budget process and waste disposal, among other topics. Branter noted that there was quite a bit of time spent on product development and said there were two resulting EM SSAB recommendations to discuss.

Fielding commented that one of the interesting things he learned during the Paducah site tour was that the cost of maintaining old facilities awaiting cleanup is sizeable. He also said that sites like Paducah are worried about future employment once cleanup is completed.

Branter added that in 2011, the electric power bill to run the Gaseous Diffusion Plant in Paducah was \$500 million, which is probably why gaseous diffusion was shut down. The new centrifugal method of fuel enrichment is far less expensive to operate.

Branter referred to the first EM SSAB recommendation regarding the performance roadmap. He commented that EM Headquarters has no way of measuring standardized progress across the different cleanup sites and that this recommendation encourages them to come up with a way of tracking all the progress made in cleanup.

After much discussion, the CAB could not reach consensus on the performance roadmap recommendation. While some members believed the document would encourage increased accountability and improved funding negotiations, others struggled with it conceptually, saying it would be impossible to standardize cleanup successes and that it should be DOE presenting a resolution and asking the CABs for input, not the other way around.

Branter commented that the CAB did not achieve consensus, so the recommendation will be submitted to EM Headquarters without Idaho's signature.

Branter introduced the second EM SSAB recommendation regarding WIPP. The document encourages the creation of more above ground storage in the form of approved CERCLA storage modules so sites can continue sending TRU waste shipments even when maintenance and other activities temporarily shut down WIPP operations.

McBride asked if this recommendation is an auxiliary document that goes with a conversation already happening in New Mexico and at DOE. Branter responded that the Northern New Mexico CAB was at the meeting and present for the product development sessions. They agree with the recommendation.

McAfee asked if this might jog the possibility of being able to use Yucca Mountain. Branter responded that Yucca Mountain, if opened, will be for high-level waste (such as SNF and calcine), not TRU.

Following no objections, Branter confirmed that consensus on this recommendation was reached.

### **INL Site EM CAB Recommendation: WIPP**

Branter referred to the Idaho CAB's recommendation regarding WIPP and opened it up to discussion.

McBride asked if this recommendation suggests more trucks are needed for WIPP shipments. Borher (the original author of the document) responded no. Branter added that it simply reiterates that the Idaho CAB does not want to miss the milestone and would like DOE to do everything possible to meet it.



Huston added that this recommendation speaks more to increased shifts at WIPP to improve efficiency.

Following no objections, Branter concluded that the Idaho CAB agreed on this recommendation.

## **Conclusion**

Flohr concluded the meeting.

Keith Branter, Chair  
Idaho National Laboratory Site Environmental Management Citizens Advisory Board  
HB/ar