



Nevada Site Specific Advisory Board (NSSAB)

Full Board Meeting

**Beatty Community Center
100 A Avenue South, Beatty, NV
6:00 p.m. – February 18, 2015**

Members Present: Amina Anderson, Michael Anderson, Michael D'Alessio, Pennie Edmond, Donna Hruska (Chair), Janice Keiserman (Vice-Chair), James Manner, Michael Moore, Donald Neill, Steve Rosenbaum, Edward Rosemark, William Sears, Thomas Seley, James Tallant

Members Absent: Cecilia Flores Snyder, Jack Sypolt, Francisca Vega

Liaisons Present: Ralph Keyes (Esmeralda County Commission), John Klenke (Nye County Nuclear Waste Repository Project Office [NWRPO]), Christine Andres (State of Nevada Division of Environmental Protection [NDEP])

Liaisons Absent: Phil Klevorick (Clark County), Richard Arnold (Consolidated Group of Tribes and Organizations [CGTO]), Vacant (Elko County Commission), Kevin Phillips (Lincoln County Commission), Frank Carbone (Nye County Commission), Jonathan Penman-Brotzman (U.S. National Park Service [NPS]), Mike Lemich (White Pine County Commission)

Department of Energy (DOE): Robert Boehlecke, Kelly Snyder (Deputy Designated Federal Officer [DDFO]), Bill Wilborn

Facilitator: Barb Ulmer (Navarro-Intera [N-I])

Public Signed In: Bill Barrackman (Amargosa Valley, NV), Greg Dann (Pahrump, NV), Dorothy Dolby (Amargosa Valley, NV), Trevor Dolby (Amargosa Valley, NV), Irene Farnham (N-I), Rebecca Hogaboam (Beatty, NV), Charley Lix (Beatty, NV), Sam Marutzky (N-I), Diane McGinnis (Beatty, NV), Mark McLane (NDEP), Dona Merritt (N-I), Greg Ruskauff (N-I), Chuck Russell (Desert Research Institute)

Open Meeting/Chair's Opening Remarks

Following the Chair's opening remarks, Vice-Chair Janice Keiserman moved to approve the agenda as presented. The motion was seconded and passed unanimously.

Public Comment

The following written comment was received in an email dated January 28, 2015:

THIS IS NATIONAL LAND IN NEVADA. IT IS BEING TREATED AS STATE LAND OR PRIVATE LAND AND THIS IS A COMPLAINT ABOUT THAT. NATIONAL LAND NEEDS TO BE PRESERVED AND KEPT IN A NATURAL STATE. THE LOCAL PROFITEERS ARE ALL OVER DEVELOPING IT INTO DOWNTOWN NEWARK NJ FOR THEIR OWN PROFITS. I HAVE A COMPLAINT FOR THE RECORD ABOUT THAT. I WANT NATURE PROTECTED. THIS IS NATIONAL LAND AND BELONGS TO 325 MILLION PEOPLE NOT JUST THE LOCAL PROFITEERS WHO APPEAR TO SWAMP THIS BOARD AND ARE LEADING IT IN THE WRONG DEVELOPMENT DIRECTION. WE WANT NATURE PRESERVED HERE. IT CAN BE PRESERVED HERE BECAUSE IT BELONGS TO ALL OF US. I AM OPPOSED TO DEVELOPMENT PLANS. I WANT WILD HORSES TO LIVE ON THIS LAND. I WANT THE ROBBER BARON CATTLE RANCHER CLIVE BUNDS THROWN OFF OUR NATIONAL LAND BECAUSE THEY PAY CHEAP CHEAP RATES SO UNDER PRIVATE LAND RENTAL RATES THAT THEY ARE LEACHING FROM NATIONAL TAXPAYERS. SECONDLY THEIR CATTLE ARE HUGELY DESTRUCTIVE TO THIS LAND AND THEY DON'T BELONG ON THIS LAND TAKING ADVANTAGE OF NATIONAL TAXPAYERS. THIS LAND NEEDS PRESERVATION FOR ALL OUR KIDS NOT LOCAL ENRICHMENT FOR A FEW ON THIS COMMITTEE. I THINK THE PROJECTS OF THIS COMMITTEE REVEAL A BIAS TO LOCAL PROFITS. THAT IS NOT THE PURPOSE OF THIS NATIONAL LAND. THIS COMMENT IS FOR THE PUBLIC RECORD. PLEASE REEPT. B.KERO BK1492@AOL.COM

U.S. DOE Update (*Robert Boehlecke, DOE*)

Robert Boehlecke stated that the President's fiscal year (FY) 2016 budget request of \$5.8 billion has been submitted to Congress for Environmental Management (EM). The Nevada EM budget request is \$62 million, which is in line with previous FY's budget requests.

In regard to the Nevada National Security Site (NNSS) Working Group formed by the Governor of Nevada and Secretary of Energy, Mr. Boehlecke gave an update that the group continues its discussions, but there is not a schedule at this time for future meetings.

In previous NNSS Working Group discussions, Mr. Boehlecke noted that DOE was asked to reconsider changes made to the NNSS Waste Acceptance Criteria (WAC), Revision 10, issued in June 2013. On February 18, 2015, DOE published Revision 10a of the NNSS WAC that reverts sections addressing plutonium equivalent grams limits per package to those published in Revision 9. Also included in Revision 10a is a revised map displaying the prohibited transportation routes for drivers. The language in the transportation section was changed to read, "Routes should be selected to minimize radiological risk" to "Routes are required to minimize radiological risk."

In March 2015, the national Transportation Emergency Preparedness Program, sponsored by EM, will be in Pahrump, Nevada, working with the Nye County Sheriff and Desert View Hospital's emergency preparedness personnel to film a training video. The NSSAB will receive an update at its next meeting.

Mr. Boehlecke noted that the contract for environmental program services is currently transitioning from N-I to Navarro Research and Engineering, Inc. The transition will be complete by the end of February 2015. DOE does not expect impact to current schedules. Additional scope for waste management services was included in the newly awarded contract. Contractor personnel decisions are made by the incoming contractor and will be finalized in the next couple of weeks.

Liaison Updates

Esmeralda County (*Ralph Keyes*)

Liaison Ralph Keyes reported that he has been reappointed by the Esmeralda County Commission as the NSSAB liaison. Liaison Keyes emphasized his interest in hydrogeology and hydrology of the NNSS, as well as the shipment of low-level waste through Esmeralda County to the NNSS. Liaison Keyes expressed interest in participating in emergency services training that DOE offers for emergency responders to be prepared in the case of an event within Esmeralda County.

NWRPO (*John Klenke*)

Liaison John Klenke had nothing to report.

NDEP (*Christine Andres*)

Liaison Christine Andres had nothing to report.

DDFO Kelly Snyder provided an update regarding a request by NSSAB leadership requesting liaison organizations to reconfirm continued interest in participating as a liaison on the NSSAB. DOE sent letters to each liaison organizations asking them to reconfirm their interest and each organization were given two options for participation on the NSSAB: 1. Full liaison - participates in meetings and has a voice in Board discussion and input into recommendations on EM activities, or 2. Limited liaison – does not participate in meetings, but receives communications on NSSAB activities by receiving minutes, recommendations, and DOE responses. Full liaison organizations confirmed to date are Clark County, CGTO, Esmeralda County and Nye County Commissions, NWRPO, NDEP, and the NPS. Elko, Lincoln, and White Pine County Commissions have until the end of February 2015 to confirm their liaison option. DDFO Snyder will provide a final status at the next NSSAB meeting.

Other NSSAB Business (*Donna Hruska, Chair*)

Chair Hruska started a review of the Groundwater Open House that was held prior to the NSSAB meeting. She was impressed by the presentations by the subject matter experts at each of the stations, and the computer model that improves each year. Member Michael Moore stated that the computer model was good, but that the frames per second could be higher. Member Edward Rosemark added that NSSAB recommendations were incorporated into the posters and as a result were better this year. Member Bill Sears stated that some participants did not visit the NSSAB display as it was located in the middle of the room. Member Rosemark suggested that

the NSSAB display be included in line with the other poster stations to ensure interaction with the NSSAB as participants make their way around the room.

Chair Hruska noted the lack of young participants at the Groundwater Open House and asked the Board to consider ways to encourage student participation and encouraged members to contact their local schools. After Board discussion, it was decided that the Membership Committee would meet and discuss a path forward for student involvement on the NSSAB. Members interested in participating on the Membership Committee are asked to contact the NSSAB Office.

Vice-Chair Keiserman stated that she and Chair Hruska will attend the spring EM SSAB National Chairs' meeting, hosted by the Savannah River Site in Augusta, Georgia. Attendees will participate in a site tour on April 21 followed by meetings on April 22 – 23, 2015. The draft agenda includes an EM budget update, a Chairs' Round Robin, an update on the Waste Isolation Pilot Plant (WIPP) recovery, and discussion on public involvement. Chair Hruska noted that one of the roundtable discussions will involve the draft recommendation, *Initiate Process of Permit Modification for Additional Surface Storage at WIPP*. This draft recommendation was generated during the fall EM SSAB National Chairs' meeting that the Board reviewed and discussed at the November 19, 2014, Full Board meeting and decided to defer as the Board felt that it did not have enough information on WIPP.

Two letters were provided to Board members for informational purposes:

- NSSAB Recommendation for Annual Nevada National Security Site Environmental Report (NNSSER) ~ Work Plan Item #5 – dated January 21, 2015
- DOE Response to the NSSAB Recommendation Regarding Review of the NNSSER (Work Plan Item #5) – dated February 11, 2015

NSSAB Recommendation for Assessment of the Underground Test Area (UGTA) Quality Assurance Plan (QAP) Implementation (Work Plan Item #8)

A draft recommendation letter regarding the Assessment of the UGTA QAP Implementation (Work Plan Item #8) was reviewed and discussed by the Board. Member Amina Anderson moved to accept the draft recommendation letter with the language included on the letter in the member packet. The motion was seconded and passed unanimously.

Model Evaluation Completion and Moving to Closure in Frenchman Flat (Greg Ruskauff, N-I)

- **Outline**
 - Federal Facility Agreement and Consent Order (FFACO) Regulatory Strategy stages
 - Frenchman Flat timeline
 - Corrective Action Decision Document/Corrective Action Plan (CADD/CAP) Model Evaluation Results, "*Decision/Action Stage*"
 - Current status and path forward
- **FFACO Regulatory Strategy Stages**
 - Four major stages in the FFACO strategy:
 - Corrective Action Investigation Plan (CAIP) – "*Develop the Plan*"
 - Details the investigation plan and provides information for planning investigation activities
 - Corrective Action Investigation (CAI) – "*Investigation Stage*"
 - Gather new data to enhance models developed for each of the five (5) historic underground nuclear test areas (repeat as necessary)

- Review results: geology, hydrology, source term, groundwater and transport models, modeling approach (repeat as necessary)
 - CADD/CAP – “*Decision/Action Stage*”
 - Develop a model evaluation plan to challenge and refine model forecasts
 - Use model evaluation plan to identify locations for new wells or data collection activities
 - Use data collected to defend that the corrective action unit is acceptable for closure
 - Closure Report (CR) – “*Closure Stage*”
 - Negotiate use restrictions and regulatory boundary
 - Establish institutional controls and requirements
 - Develop long-term closure monitoring program
- **UGTA Activity Corrective Action Units (CAUs)**
 - Frenchman Flat – CAU 98
 - 10 Corrective Action Sites (CASs)
 - Yucca Flat/Climax Mine – CAU 97
 - Rainier Mesa/Shoshone Mountain
 - CAU 99
 - Central Pahute Mesa – CAU 101
 - Western Pahute Mesa – CAU 102
- **Corrective Action Strategy Background**
 - Defined in Appendix VI of the FFAO (1996, as amended)
 - Assumes active remediation is not feasible with current technology
 - Corrective action for each CAU is a combination of characterization and modeling, monitoring, and institutional control
- **Frenchman Flat Chronology**
 - 1950s onward
 - Geologic and hydrologic data collection and studies
 - 1999 - 2001
 - Phase I peer review
 - Revised investigation plan
 - Initiate Phase II CAI site characterization and modeling studies (*Investigation Stage*)
 - *NDEP review and approval received*
 - 2001 - 2003
 - Phase II site characterization studies
 - Five new boreholes in two clusters
 - 3-D seismic reflection survey
 - Multi-well aquifer test in central test area
 - 2003 - 2010
 - Data analysis and modeling reports
 - 2010
 - Phase II Peer Review
 - *“The [peer review] team notes that the sophistication and complexity of the modeling evaluations that have been conducted are state-of-the-practice analyses that go far beyond those conducted at other contaminated sites in the United States. The peer review team is of the*

opinion that potential processes that could affect the migration of radionuclides in groundwater have been thoroughly evaluated.”

- *“...the peer review team strongly believes that the UGTA Activity should proceed to the next stage.”*

- **Peer Review**

- Element of the UGTA strategy
- Panel of recognized experts in the fields of geology, geophysics, nuclear chemistry and hydrology/ hydrological modeling with experience in planning and completing projects in applied science
- Four-day workshop and field trip kicked-off the six-month process
- Overview of the UGTA Activity, site characterization, and modeling studies for the Frenchman Flat CAU
- Concluded with recommendation to proceed to next stage

- **Frenchman Flat Chronology (continued)**

- 2011
 - CADD/CAP document approved by NDEP
- 2012
 - Drilled Wells ER-5-5 and ER-11-2
- 2013 - 2014
 - Additional data collection and model evaluation
 - Model evaluation report accepted by NDEP, approved going to closure stage
 - First UGTA CAU approved to move to closure stage and to reach this major milestone
- 2015
 - Developing closure approach and report

- **Purpose of the CADD/CAP Stage**

- Identify CAU regulatory boundary objectives
- Identify initial use restriction boundaries
- Collect additional data
- Evaluate CAU model (numerical and conceptual)
 - Assess confidence in site understanding
- Decision: Is the CAU model acceptable for closure?

- **Regulatory and Use Restriction Boundaries**

- Regulatory boundary - objective is to protect potential receptors down gradient of the Rock Valley fault system from radionuclide contamination
 - Rock Valley fault system is the expected pathway of groundwater flow out of the basin
- Use restriction boundaries - purpose is to protect on-site workers and ensure the hydrogeologic system is not disturbed

- **FFACO CADD/CAP Process**

- Flow chart available on page 28 at <http://www.nv.energy.gov/nssab/documents/handouts/fy%202015/FB/Total%20Handouts%20RED.pdf>

- **Model Evaluation Process**

- Flow chart available on page 29 at <http://www.nv.energy.gov/nssab/documents/handouts/fy%202015/FB/Total%20Handouts%20RED.pdf>

- **Data Collection**

- Drilled wells:

- ER-11-2 near PIN STRIPE
 - ER-5-5 near MILK SHAKE
 - Collected:
 - Geologic data
 - Water levels
 - Water chemistry
 - Hydraulic tests
 - Radiochemistry
 - Surface geophysics
 - Extra data helped demonstrate understanding of groundwater flow direction
- **MILK SHAKE Evaluation**
 - Models with low groundwater velocity were consistent with observed rock properties
 - Tritium observed to be ~10,000x below the maximum contaminant level simulated in the most conservative models
 - Observation of leading edge of the MILKSHAKE plume consistent with direction and magnitude of groundwater velocity calculated with high-quality, water-level monitoring data collected during CADD/CAP (*Decision/Action Stage*)
- **PIN STRIPE Evaluation**
 - Well ER-11-2 (model evaluation well) shows that the transport pathway for PIN STRIPE is not continuous - indicates that models have too much transport to the east
 - New conceptual model was required
 - Honored the geology that limited contaminant migration to the east (toward the regional flow system)
 - Consistent with observed water levels that demonstrated a hydraulic barrier
 - Flow and transport to the south and very slow because of rock properties
- **Refined PIN STRIPE Contaminant Boundary**
 - Based on refined conceptual model developed from Well ER-11-2 geologic data
 - Conceptual contaminant boundary uncertainty includes:
 - Up to a factor of 2 higher velocity
 - Groundwater flow direction
 - Approximated contaminant boundary as saturated two cavity radius footprint at water table, and invoke upper-bound uncertainties to give results shown
 - NDEP and the Department of Energy have agreed that the PIN STRIPE contaminant boundary presented in 2010 needs to be revised
- **Modeling Team Recommendations**
 - Groundwater velocity is slow, and observed radionuclide transport is confined to regions near tests based on the model evaluation.
 - The evaluation demonstrated that there is sufficient confidence in the site conceptual model and its numerical representation to guide the development of a long-term monitoring network and institutional controls.
 - For these reasons, the modeling team recommends advancing Frenchman Flat to the CR stage (*Closure Stage*) of the UGTA strategy.
- **Review Committee Recommendations**
 - There is sufficient confidence in the Frenchman Flat model to advance to the closure stage of the UGTA strategy.
 - The committee concludes that the current understanding is sufficiently reliable to design a monitoring system and develop effective institutional controls.
- **Current Status and Path Forward**

- Per the FFACO:
 - Step one – revise contaminant boundaries – completed
 - Step two – establish/negotiate use restrictions and regulatory boundaries
 - Step three – closure report is in progress – due to NDEP in March 2016

In response to Board questions, the following clarifications were provided:

- A contaminant boundary is not the best estimate of the amount of groundwater that could be contaminated; it is a 5% chance or more. At the border of the contaminant boundary (the blue boundaries found on the image on page 14 of the presentation), there is a 1-in-20 chance that the groundwater could be contaminated above the maximum contaminant level (MCL) in the next 1,000 years. Inside the contaminant boundary, that concentration necessarily rises as you move closer to the origin point of the test. It does not express the concentration, rather, a probability. The cutoff is the MCL, which was set by the U.S. Environmental Protection Agency under the Safe Drinking Water Act of 20,000 picocuries per liter for tritium. This is not the amount of groundwater that will be contaminated within the next 1,000 years, but a probabilistic estimate from a calculation.
- The contaminant boundary is a key element that is utilized throughout the entire UGTA closure strategy and will be continuously evaluated.
- A change in the contaminant boundaries could take UGTA back into the decision-making process if the water resource was used in a different manner. For example, if water was pulled from the boundary's local area, the flow direction and the velocity of radionuclide migration may potentially be altered, impacting the currently established models. The models would then need to be reevaluated and could possibly change the contaminant boundary due to the unforeseen impacts.
- There is a certain level of confidence in the current models. If the model meets a long-term monitoring strategy that is defined in the CR, UGTA will manage the identified site in perpetuity with that strategy. If things change in the future that could potentially impact the decisions made in the long-term monitoring strategy, it would be DOE's responsibility to address those changes.
- If sampling results show contamination UGTA was not expecting in a well, both NDEP and DOE would reevaluate the assumptions that went into the current contaminant boundary calculations and decide upon a path forward. DOE has ultimate responsibility, but NDEP provides input into these decisions.
- For the contaminant boundary, DOE did utilize a Monte Carlo analysis.
- Tritium is sampled as a contaminant of concern for all sample locations. Other radionuclides sampled at Frenchman Flat are carbon-14, chlorine-36, technetium-99, and iodine-129.
- When putting the closure report requirements together and defining the regulatory boundaries, DOE utilizes samples from current wells and once there is a certain concentration of tritium in those wells, then DOE may be required to drill an additional well in the more predominant flow direction. At this time, DOE determined that the resources for another well south of PIN STRIPE would not be beneficial based on the confidence of current models.
- There are additional wells south of Frenchman Flat drilled for other activities that would show potential flow shifts to the south of Frenchman Flat.
- The UGTA closure process is an iterative process and changes as more information becomes available.

- If a feasible technology becomes available for groundwater remediation in the future that is safe for the worker and the public, DOE would actively pursue and research the technology.
- A new technology would not nullify the CR, but DOE would readdress and produce an addendum for a different long-term closure procedure.
- If conditions change, i.e. land use, technology, etc., DOE and NDEP would revisit and reevaluate the closure strategy.
- Additional technologies review may be included in the post-closure monitoring reports.

Communication Improvement Opportunities (Work Plan #10)

In response to providing recommendations on ways that DOE can improve/enhance communication to the public, Vice-Chair Keiserman suggested that the NSSAB Office contact editors of media outlets with the NSSAB's meeting dates after the schedule has been approved at the annual September planning meeting. This will provide editors the NSSAB meeting dates in advance to include in the community calendars section. This recommendation will be combined with other communication improvements throughout the FY and will be presented to the DOE for consideration at the end of FY 2015.

Meeting Wrap-Up/Assessment/Adjournment (*Barb Ulmer*)

The next Board meeting will be held on Wednesday, March 25, 2015 at 5 p.m. at the National Atomic Testing Museum, Las Vegas, Nevada. An educational session will be held at the same location at 4 p.m. on Radioactivity and Radioactive Decay.

Members shared thoughts on improvements/suggestions for future meetings.

Vice-Chair Keiserman moved that the meeting be adjourned. The motion was seconded and passed unanimously.

Meeting adjourned at 8:14 p.m.