

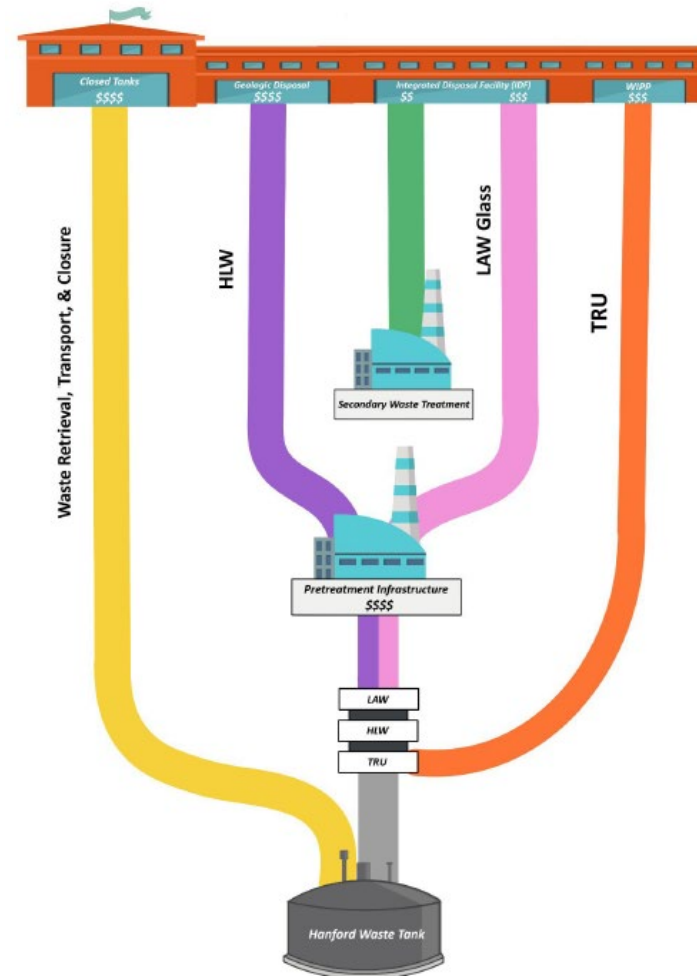
ENVIRONMENTAL MANAGEMENT
ADVISORY BOARD

Focused Review of the
Research & Development Roadmap
for Hanford Tank Waste Mission Acceleration

May 2023

Charge Overview - Background

- ▶ EM chartered the Network of National Laboratories for Environmental Management and Stewardship (NNLEMS) to develop a **Research and Development (R&D) Roadmap** to guide EM's Technology Development (TD) investment.
- ▶ In the R&D Roadmap, NNLEMS identified ideas for projects with near-term benefits for the cleanup program and prioritized research areas to develop breakthrough technologies that could **accelerate the Hanford tank waste mission over time**.
- ▶ EM requested that the **EMAB assess the NNLEMS focus areas** as proposed in the R&D Roadmap and provide input to reinforce and assist EM's development of the R&D portfolio for Hanford tank waste.



Baseline Hanford Tank Waste Mission Roadmap (NNLEMS-2022-00005, Rev. 0)

Charge Overview - Scope

- ▶ **EMAB had a constrained timeline** to provide a recommendation based on the timing of the budget cycle and a push to implement the \$50 million in funding for the TD portfolio as soon as possible.
 - ▶ Overall logic of the process, the extent to which appropriate factors have been considered, and how well the findings and recommendations flow from the information presented in the report were considered
 - ▶ Consisted of a **focused review** by subcommittee of three charge questions (discussed in the following slides)
- ▶ **Ming Zhu**, EM's Senior Advisor for Laboratory Policy, was a **resource for the subcommittee**, providing context and guiding the lines of inquiry for the recommendation.
- ▶ The subcommittee was **co-chaired by Amy Fitzgerald and Frazer Lockhart**. Members included Brent Gerry, Diahann Howard, Kim Kearfott, Nicole Martinez, Tracie McDaniel, Josiah Pinkham, Michael Shapiro, and Jake Washington.

Charge Question #1 - General

Generally, what does the EMAB think of the R&D Roadmap, does the roadmap represent a sound approach for acceleration of the tank waste mission?

- ▶ Overall, EMAB is **supportive** of the R&D Roadmap
 - ▶ Comprehensive scope and systematic process
 - ▶ Criteria-based ranking
 - ▶ Values-based to prioritize scarce resources
- ▶ Structure provides **rational and visionary R&D program** to overcome past ebb and flow cycle in R&D funding and priority

Charge Question #1 - Specifics

Generally, what does the EMAB think of the R&D Roadmap, does the roadmap represent a sound approach for acceleration of the tank waste mission?

1. Demonstrates EM's commitment to complete the Hanford tank mission in an **integrated manner** to accelerate cleanup
2. Comprehensive in scope and consideration of alternatives that include **incremental and transformative** developments
3. Improvement and results-focused with **clear criteria framework and contracting plan** to implement
4. **Flexible and responsive** to adapt to R&D setbacks or emerging opportunities
5. **Logical and factual** with collection of past R&D and systematic consideration of competing technology projects
6. Includes broad laboratory and university experience
7. Organized with **understandable language** and helpful analogies

Charge Question #2 - General

Generally, do you agree with the priorities represented in Table 4? Which priorities deserve the most attention? Does the EMAB have other suggestions on priorities that do not appear to have been considered?

- ▶ Table 4 is well done - comprehensive with **key comparison metrics** to support comparisons by reviewers
 - ▶ Complex, but necessarily so for the scope of the R&D
 - ▶ “Transformational” term provided some confusion with usage, but clarified by one of the authors
 - ▶ EMAB encourages further consideration of priorities for **supplemental low-activity tank waste** (SLAW) per NDAA 2017 and NDAA 2021

Charge Question #2 - Specifics

Generally, do you agree with the priorities represented in Table 4? Which priorities deserve the most attention? Does the EMAB have other suggestions on priorities that do not appear to have been considered?

1. High priority for R&D for **grouting and offsite disposal of SLAW**
2. Maximize efforts to **remove low-level waste from high-level waste** for efficiency
3. Continue to seek **out-of-the-box** “disruptive” technologies, such as spent fuel recycling in support of energy and national security
4. Consider **combined tank-side pretreatment and grouting** to respond to emergent tank leaks (such as B-102)
5. **Include regulators and stakeholders** in “risk-based waste retrieval sequencing” discussions as top or high priority
6. For WRT&C consider raising TC-3 to first high priority
7. For WI&D consider moving DL-3 ahead of IM-4 as top priorities
8. For SWT consider moving SW-1 to a top priority
9. For ME consider moving Hanford-1 to a top priority

Charge Question #3 - General

Are there any metrics the EMAB would recommend to measure success of the R&D program to implement the Roadmap?








- ▶ Metrics supporting “key considerations”
 - ▶ Risk reduction for Hanford communities, site workers, environment
 - ▶ Reducing number of cross-site transfers to the treatment facilities
 - ▶ Support improvements to baseline with cost or schedule escalation
- ▶ Metrics important to Congress to ensure **consistent funding and support** for R&D Roadmap

Charge Question #3 - Specifics

Are there any metrics the EMAB would recommend to measure success of the R&D program to implement the Roadmap?

- ▶ Intangible measurement of regulator and stakeholder acceptance
 - ▶ Relative acceptability of competing technologies
 - ▶ Use of survey methods for large and diverse populations
 - ▶ EMAB recommends **consideration of consulting organizations skilled in gathering public opinion for complex issues**
- ▶ Regulator and stakeholder acceptance can influence Congress, thus important to include
- ▶ The very act of measuring stakeholder acceptance demonstrates its importance
- ▶ Consider lessons from Office of Legacy Management Adaptive Management Plan stakeholder engagement at Rocky Flats
- ▶ Use of “quick win” metric to advance near-term support

Additional Comments & Recommendations

-  1. Create an implementation timetable for the near-term
-  2. Develop and maintain ongoing community and stakeholder engagement as a high priority throughout the roadmap process
-  3. Use public forums to ensure availability of information and regular meetings with local officials
-  4. Work to build consensus and avoid “decide and inform” meetings
-  5. Emphasize critical link between R&D progress and mission success
-  6. Continue and expand use of analogies and models (such as railway model) to assist stakeholder understanding of complex issues
-  7. Maintain emphasis for high-level waste definition at Hanford as means to dramatically reduce cost and accelerate schedule

Summary and Conclusion

- ▶ Hanford tank waste mission **will benefit** from investments in research through the R&D Roadmap
- ▶ EM should continue to **analyze and leverage tank cleanup at Savannah River and Idaho** that is applicable to Hanford
- ▶ The R&D Roadmap should complement and integrate the Congressional directive to develop an **analytic decision-making framework for SLAW**
- ▶ **Stakeholder engagement** for R&D can and should be enhanced using an iterative process such as **Adaptive Management Framework**
- ▶ The R&D Roadmap should be used as a model for **addressing other cleanup challenges** in the EM portfolio
- ▶ The EMAB is willing to provide **on-going or more in-depth review** of the R&D Roadmap and its implementation