Oregon Department of Energy

See attached comment letter

Oregon
Tina Kotek, Governor

OREGON DEPARTMENT OF ENERGY

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August 27, 2024

Submitted online to comment portal https://tinyurl.com/TPA-CD-Changes

Attn: Daina McFadden

Ms. McFadden,

Oregon appreciates the opportunity to comment on the proposed Holistic Negotiations Agreement modifying the Hanford Nuclear Waste Site Tri-Party Agreement and Consent Decree. The agreement represents a long-awaited step towards risk reduction at the Hanford site. This set of proposed changes comes after nearly four years of confidential negotiations between the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency, and the Washington Department of Ecology. The scope and consequence of this agreement are among the most anticipated and significant revisions to the tank waste mission at the Hanford site in recent memory.

This letter transmits comments from Governor Kotek, a letter from the Oregon Department of Energy and members of the Oregon Hanford Cleanup Board, and includes technical comments from Oregon Department of Energy staff. Oregon looks forward to providing additional comments as the TPA agencies publish specific details about the preferred path to achieve the framework described in the agreement. Oregon is ready to help facilitate public information and engagement campaigns in our state regarding tank waste transportation, in particular.

The details of and manner in which the Holistic Agreement has been presented are of concern at the highest levels of Oregon Government (Attachment A). In a letter dated July 11, 20224, Governor Kotek expressed Oregon's position in three critical areas: solidifying waste prior to transport, the means of transport, and the clarity on NEPA requirements. We include Governor Kotek's letter for submittal as a formal comment, along with commitments made by US DOE in a July 26, 2024 response (Appendix B).

The lack of clarity on these key areas, coupled with a not-yet-conducted process for engagement along potential transportation corridors, is a significant concern. Offsite tank waste disposal requires close cooperation between several levels of government, some of whom have never previously been impacted by Hanford issues and must be consulted prior to decision-making. The current draft agreement leaves critical issues open for decision by the U.S. Department of Energy without assurance of further notice, engagement, or comment.

While DOE's response to Governor Kotek's letter assures a commitment to transparency and future public involvement, the effectiveness of these commitments will depend on their implementation. Transportation of Hanford tank waste through Oregon is our top issue and concern. The inherent risks of transporting treated tank waste liquids, the yet-to-be-determined plans for waste transportation methods and routes, and the uncertainty whether there will be any task-and-route-specific NEPA process are issues that require thorough public information-sharing and input, prior to decision-making. As additional preliminary decisions are made, timely outreach to and input from governmental entities, and Tribal governments potentially impacted by proposed transportation routes will be an important component of a decision process that is open and transparent.

While more detailed comments are included in Appendix C, a summary of Oregon's top issues is presented here:

- **Environmental Impact Assessment**: DOE should either conduct a full supplemental Environmental Impact Statement (EIS) for the proposed grouting campaign and off-site transportation of waste, or demonstrate with clarity how the requirements of NEPA are met in the absence of an EIS. Regardless of whether NEPA requirement will mandate an EIS process, DOE needs to undertake a comprehensive plan for the transportation and disposal of treated waste.
- **Emergency Responder Training:** Transportation planning needs to include clarity about how DOW will engage with potentially impacted communities (including sovereign Tribal Governments) to ensure they are prepared for the proposed shipping campaign and a potential transportation accident.
- **Treatment Strategy:** Oregon is opposed to shipping of liquid tank waste through our state. While Oregon supports offsite disposal for treated tank waste, the waste should be solidified on-site at Hanford before offsite shipment. This approach offers several advantages in terms of waste form stability, transportation safety, and local economic benefits.
- **Public Engagement and Transparency:** DOE should provide clear, accessible information to the public about cleanup strategies, timelines, and decision-making processes. This includes making key documents, such as System Plans and Analyses of Alternatives, readily available for public review. Regarding offsite shipping of tank waste, DOE should ensure that transportation plans and shipping options are analyzed and shared with the public, and public comments are actively solicited, prior to decisions. Oregon also recommends that this includes consultation with all potentially impacted Native American Tribes, including those along shipping routes. In Oregon, this may include Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of Warm Springs, and Klamath Tribes. The Oregon Department of Energy is ready to support DOE with an information and engagement campaign regarding transportation through our state.
- **Waste Retrieval Optimization:** DOE should build on the requirements of the agreement and continue to develop and implement technologies that maximize waste retrieval from tanks, particularly those that minimize the addition of liquids to leaking tanks. The goal should be to leave as little waste as practicable in tanks

declared "retrieved." The process for declaring a tank retrieved should reflect lessons learned over the decades of retrievals.

- **Timeline and Milestone Management:** DOE should regularly reassess the feasibility of established milestones, particularly considering technological developments, regulatory changes, and project progress. The agency should consider adjusting milestone dates, such as M-062-24-04, to account for the availability of crucial data from initiatives like the Test Bed Initiative (TBI).

The Hanford site cleanup presents complex challenges that require innovative solutions, ongoing technological development, and careful consideration of long-term environmental and public health impacts. By implementing the recommendations outlined above, the Hanford tank waste mission can progress more efficiently, effectively, and safely, while minimizing long-term environmental and public health risks. Continued adaptability, innovation, and commitment to thorough cleanup will be essential as this complex project moves forward.

If you have any questions, please contact Maxwell Woods (503-551-8209 or maxwell.woods@energy.oregon.gov) of my staff.

Thank you for your consideration,

Janine Benner
Director, Oregon Department of Energy

Jeff Wyatt
Chair, Oregon Hanford Cleanup Board

CC:
Dave Einan, U.S. Environmental Protection Agency
Stephanie Schleif, Washington Department of Ecology
Jennifer Colborn, U.S. Department of Energy, Office of River Protection
Mason Murphy, Confederated Tribes of the Umatilla Indian Reservation
Laurene Contreras, Yakama Indian Nation
Anthony Smith, Nez Perce Tribe
Oregon Hanford Cleanup Board
Susan Coleman, Hanford Advisory Board
Geoff Huntington, Office of Governor Tina Kotek

Appendix A:

Letter from Oregon Governor Kotek to TPA Agencies, July 11, 2024

TINA KOTEK
GOVERNOR

July 11, 2024

The Honorable David Turk
Deputy Secretary
U.S. Department of Energy
1000 Independence Ave. SW
Washington, D.C. 20585

The Honorable Casey Sixkiller
Regional Administrator, Region 10
U.S. Environmental Protection Agency
1200 Sixth Avenue, Suite 155
Seattle, WA 98102

The Honorable Jay Inslee
Governor
State of Washington
PO Box 40002
Olympia, WA 98504

Dear Deputy Secretary Turk, Governor Inslee, and Regional Administrator Sixkiller:

I am writing today to both support and express concerns regarding what is known as the "Holistic Negotiations Agreement" (hereafter "Draft Agreement") modifying the Hanford Nuclear Waste Site Tri-Party Agreement and Consent Decree. The scope and consequence of the Draft Agreement is one of the most anticipated and potentially significant risk reduction actions at the Hanford waste site in recent memory. That said, the ongoing process for receiving and accounting for input from the State of Oregon, Tribal governments, and the public on substantive issues relating to the solidification and transport of liquid tank waste is insufficient and risks undercutting support for the accelerated reduction of radioactive waste at the Hanford site that is in everyone's interest.

After nearly four years of confidential negotiations between the U.S. Department of Energy, the U.S. Environmental Protection Agency, and the Washington Department of Ecology, the Draft Agreement has been released for review and comment by early September in anticipation of completing final terms in late fall. Terms of the Draft Agreement, however, appear to leave at least three critical issues open for future decision by the U.S. Department of Energy without assurance of further notice or comment by the general public, Tribes, or the State of Oregon. These issues are as follow:

1. Treatment of Waste Prior to Transport. Terms of the current Draft Agreement leave as an open question whether liquid tank waste will be solidified into a "cake" form prior to transport to a final disposal site in Texas or Utah, or if that solidification process will occur after transport. Our understanding is that the U.S. Department of

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WWW.GOVERNOR.OREGON.GOV

Energy will be studying this issue and reaching a determination later this year without any obligation for further input or concurrence. Oregon has significant concerns about the inherent risk of transport of liquid waste, and I encourage you to commit now to an open and transparent process while considering and making this critical decision for implementing the pending Draft Agreement without materially altering the contemplated timelines.

2. Means of Transport. While we understand that transport of waste from the Hanford site is a necessary component of any agreement aimed at accelerating disposal, the plan for transporting the waste is not specified in the current draft and is left as an open decision for the U.S. Department of Energy to make without any clear commitment for further consultation or public engagement. This is problematic regardless of whether the waste is being transported in solid or liquid form, as it necessarily requires transport by either truck or rail through populated corridors in both Washington and Oregon (and quite possibly through lands of sovereign tribal governments) over multiple years. While we agree with the approach of the Draft Agreement to provide time for further study and refinement of a transportation plan, there needs to be assurance of a public process on this important decision before proceeding.

3. NEPA. We need clarity on how the federal agencies intend to address NEPA requirements for assessing alternatives for transport of the waste to the final locations for disposal. Here again, while the Draft Agreement is addressing the essential goal of expediting disposal of waste on the Hanford site, a roadmap for incorporating input and consultation on important implementation decisions in the future is missing.

Again, I thank you for the important work that has been done to date, and I assure you that my staff and Oregon's Department of Energy are ready to partner with you to ensure communities of interest benefit from an open, transparent, and meaningful process to discuss the important substantive implementation decisions that the Draft Agreement anticipates. I look forward to future discussions.

Sincerely,

Governor Tina Kotek

Appendix B:

US Department of Energy Reply to Governor Kotek's Letter, July 26, 2024

Department of Energy
Washington, DC 20585

July 26, 2024

The Honorable Tina Kotek
Governor of Oregon
254 State Capital
Salem, Oregon 97301

Dear Governor Kotek:

Thank you for sharing the State of Oregon's (Oregon) perspective on the Hanford holistic agreement and the transportation of treated tank waste for disposal out of the State of Washington (Washington). The Department of Energy (DOE) is committed to safe and effective cleanup of Hanford tank waste – a priority we share with Oregon. I appreciate Oregon's participation in recent public meetings held in Washington and Oregon as part of the 90-day public comment period on the holistic agreement. I also appreciated the opportunity to discuss your concerns personally on July 12, 2024, as I know Deputy Secretary Turk did as well.

As we discussed, DOE has not yet determined where the treated low-activity tank waste retrieved from the 22 tanks identified in the holistic agreement will be grouted (i.e., "alternative treatment" project). Further, the routes that will be used to safely transport the treated waste out of Washington to licensed disposal facilities have not yet been defined. We value your input and commit to public engagement as we conduct the necessary analyses and advance towards these future decisions.

The holistic agreement acknowledges DOE needs to complete applicable regulatory processes, such as those associated with the National Environmental Policy Act (NEPA). NEPA requires Federal agencies to assess the reasonably foreseeable environmental effects of proposed major Federal actions, prior to making decisions. The Department has initiated but not yet completed the development of a Supplement Analysis, which will be used to determine whether a supplemental or new Environmental Impact Statement should be prepared, pursuant to the Council on Environmental Quality and DOE NEPA regulations. The Department intends to complete this NEPA analysis and a business case analysis towards the end of the year. This will inform our path forward. We are available to provide you and your staff more information on our NEPA approach.

With respect to the immobilization of treated tank waste prior to transport, the DOE has not yet but intends to determine whether the treated tank waste associated with the proposed alternative treatment project will be grouted at a facility on the Hanford Site or off-site at a commercial facility. This determination will, in turn, inform future decisions about the facilities, infrastructure and mode of transport necessary to perform the separation, pretreatment, and/or treatment of the tank waste for off-site disposal. As previously stated, the specific details of how and where the waste will be transported for offsite disposal also have not been determined. Additionally, the proposed alternative

treatment project would not commence until at least the 2029 timeframe and will include public engagement. The current priority is to complete ongoing tank waste retrievals in the single shell tank farms A and AX through 2028.

With respect to the means of transport of treated waste, the Department has a long history of safely transporting radioactive materials, including significant quantities of liquid waste. The Department's NEPA analysis associated with these activities will include an analysis of transportation impacts from both normal transportation and accidents and will be made available to the public.

We encourage your staff to submit any additional comments and concerns through the ongoing holistic agreement public comment period (extended to September 1, 2024) so that they can also be considered in the decision-making process. Finally, DOE values public engagement and is committed to providing opportunities during this process. The Department appreciates Oregon's support for the overall agreement and understands your concerns. We want to continue to work with you to increase understanding of the holistic agreement and DOE's decision-making processes now and into the future.

I appreciate your leadership on behalf of Oregon and its citizens and look forward to continuing our discussions as we advance Hanford's tank waste treatment mission. If you have any questions, please contact me or Mr. Spencer Thibodeau, Deputy Assistant Secretary for Intergovernmental Affairs, Office of Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,

Candice Trummell Robertson
Senior Advisor for Environmental Management

cc: Governor Jay Inslee, State of Washington
Casey Sixkiller, EPA Region 10

Appendix C: Oregon Department of Energy Technical Comments on the Holistic Agreement.

Technical comments from the Oregon Department of Energy are presented below and organized by section of the Holistic Agreement document for ease of response. The specific agreement section or milestone is listed as a heading, followed by the comment(s) associated with that topic.

Attachment A: Waste Treatment Plant (WTP) Construction and Startup

The Waste Treatment Plant (WTP) is slated for a "hot start" on 12/31/2033, with "Initial Start-up" aligning with System Plan 10[1] Baseline and Scenario 1A start dates. By 2036, the WTP is expected to vitrify High Level Waste (HLW) at a rate of 4.2 metric tons of glass (MTG) per day. However, revisions to the plan proposed in the agreement resulting from the holistic negotiations raise concerns. Operating the vitrification plant in a two melter configuration with a direct feed waste form will impact operational efficiency and waste processing capabilities, especially when additional pretreatment capabilities are added as an afterthought once the melters are full of high-level glass.[2]

Until the Tank Waste Characterization and Staging Facility (TWCS) is completed, there is no plan for removal of aluminum from the waste. This limitation will likely lead to a 10% increase in the quantity of high-level glass logs.[3] Without the ability to pretreat the feed, it becomes more critical to select appropriate stock. With less suitable feedstock and more aluminum, there is more likelihood that the vitrification process will facilitate spinel crystal formation or generation of the mineral nepheline instead of more resilient glass.[4] Because this increased likelihood will need to be actively managed there is a risk that the 70% Total Operating Efficiency (TOE) established in the Consent Decree will not be met until after the TWCS is completed.

Additionally, it is an open question as to whether the resultant waste form meets the acceptance criteria for the eventual national repository without additional pretreatment capability. There should be a publicly available plan that addresses whether such non-compliant glass will be re-introduced into the feedstock, or if it will remain on the Hanford site as an orphan waste.

Under the AoA[5] there are three Alternatives that call for direct feed high level waste, Alternatives 15 through 17. In these alternatives, leaching aluminum is performed in double-shelled tanks (DSTs), the youngest of which is 38 years old, poses potential risks. The process involves adding sodium hydroxide and heating the solution, potentially causing thermal cycle strain on these aging tanks. To mitigate these risks and improve

[1] https://pdw.hanford.gov/document/AR-27710/
[2] https://fortress.wa.gov/ecy/ezshare/NWP/HN/HN-Agreement-Proposed-TPA-CD-Changes.pdf p.23
[3] https://pdw.hanford.gov/document/AR-27710/ p.xxvii
[4] https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-25835.pdf

efficiency, we recommend accelerating the construction of treatment facilities for better feedstock. This approach would lower the number of waste containers created, provide surety in meeting compliance criterion, and spare critical and aging tanks from thermal shock.

Attachment B and C: Reactivation of Cross-Site Transfer Lines and Build One Million Gallons of Storage in 200 West Area

The reactivation of cross-site transfer lines is crucial for efficient waste management at Hanford. These lines will be essential for moving tens of millions of gallons of existing supernatant and solubilized saltcake to vitrification facilities in the 200 East area. These cross-site transfer lines -line 3150 for liquid and line 3160 for sludge- are expected to be the only link between the 200W area and the WTP facilities. Even the future Waste Receiving Facilities for T-farm tanks, with the T-farm facilities will be linked via a new transfer line to the SY farm. Currently, all waste in 200W requiring treatment must utilize the cross-site transfer lines unless an alternative mode of transport is developed. Given the critical nature of these transfer lines and the potential for cost increases decisions, design, and construction must begin as soon as possible to meet the established deadlines.

We continue to support upgrades to the cross-site transfer lines as they have the potential to safely increase the utilization of available storage capacity. A missing piece of information to add context for comment on the various transfer lines that must be installed or updated is publicly available timelines for the construction of waste receiving facilities.

Given the critical nature of these transfer lines and the potential for cost increases decisions, design, and construction must begin as soon as possible to meet the established deadlines. Because the tank waste mission does not occur in entire isolation from cleanup activities elsewhere at Hanford, the planning and execution of these transfer line projects should be coordinated and optimized with other related and co-located initiatives, such as waste site remediation along the transfer line path and the construction of additional tank waste storage in the 200 West Area (as outlined in Attachment C). This integrated approach will ensure efficient use of resources and minimize potential conflicts, re-works, or delays in the overall waste management and cleanup strategy at Hanford.

Milestone M-042-03 3150 Supernatant Line

Line 3150, designated for supernatant transfer, is scheduled to be operational by 12/21/2030. As of 2017, the estimated cost for reactivation was $35,189,633, with a projected timeline of 5 years.[6] To meet the 2030 deadline, work must commence by the end of 2025. We note that due to the federal fiscal process, the soonest that this planning work can be funded is federal fiscal year 2027 (October 2026), with a corresponding budget

[6] https://pdw.hanford.gov/document/AR-26310

request from the Hanford office in spring of 2025. The cross-site transfer lines do not currently appear on the sites' 5-year vision.[7]

Milestone M-042-04 3160 Slurry Line

The slurry/sludge line, 3160, presents a more significant challenge. This line has never been activated or used. A 2011 evaluation estimated the cost to bring the line into modern compliance at approximately $10,000,000, with a 3-year completion time. The new milestone M-042-04 sets a due date of 12/31/2036 for this line, six years after the supernatant line. This timeframe appears reasonable, considering the 5-year project timeline of line 3150, for upgrading the existing line and making appropriate changes at the SY farm in anticipation of a new 1,000,000-gallon storage facility. Oregon supports these efforts, but would point out potential concerns with budgetary and workforce constraints to completing all these critical components in the allotted timeframe while still safely advancing the cleanup mission and recovering waste from tank farms. Indeed, the concern grows if additional tank capacity is needed before late 2040 expectation.

M-045-138 and M-045-139 re new 1,000,000 Gallon capacity in 200W

Accelerating the installation schedule for a new 1,000,000-gallon tank in the SY farm would have protective benefits to the mission, and it would enhance operations of the 200W waste treatment system. Milestone M-045-139 calls for an operational date of 9/30/2040 a mere three months before the 200W retrievals are scheduled for completion. The new tank will be used to support T-farm retrievals and the High-Level Waste (HLW) treatment mission. Under an accelerated schedule the new tank can support the low activity waste mission portion and be used as emergency space in case of SST or DST leaks.

Tank SY-103 is designated to receive waste from the 200W waste treatment system and must be processed before any other 200W tanks can be retrieved. With 323,000 gallons of supernatant and 410,000 gallons of saltcake[8], there is not enough spare capacity in the SY farm to absorb this volume without evaporation. This forces the retrieved LAW into temporary storage if treatment facilities are not available. Already, TSCR had to reprocess waste due to contamination that was still present in the receiving tank after retrieval.[9] There is significant potential that a similar situation arises in tank SY-103 requiring reprocessing of a liquid into a capacity limited system. Having a new tank eliminates the risk of contaminating treated LAW batches and lessens capacity restrictions. The extra capacity would enable 200W TSCR retrieval operations to start even if the transfer line or LAW treatment facilities are delayed. Without capacity to treat or store treated LAW all retrieved LAW would be shipped offsite in liquid form, which Oregon strongly opposes.

[7] https://www.hanford.gov/page.cfm/5-YearPlan2023-2028
[8] https://pdw.hanford.gov/document/AR-30176
[9] https://www.dnfsb.gov/sites/default/files/document/30026/Hanford%20Week%20Ending%20February%202%202024.pdf

Attachments J and M: New TPA Milestones for SST Retrieval and LAW Treatment in 200 West Area

1. These two new sets of proposed milestones are intrinsically linked, as the retrieval of 22 Single Shell Tanks (SSTs) in the S, SX, and U Farms cannot proceed without corresponding treatment capacity in the vicinity. This interdependence underscores the need for a comprehensive approach to waste management in the 200 West Area.

2. Oregon has consistently advocated for disposal of Hanford waste outside the Northwest region, preferring conservatively engineered facilities underlain by favorable, protective geologies.[10] We maintain that incorporating a pathway for offsite disposal of the grouted portion of the low activity tank waste may be a viable component to complete the overall Hanford tank waste mission. This approach would reduce the risk budget burden for the Hanford Central Plateau, particularly concerning key radionuclides like Tc-99 and I-129, and hazardous chemicals such as nitrate species and heavy metals.

   Several key aspects remain unresolved and will be crucial in meeting milestone M-062-24 by 12/30/2024. As the information provided as part of the current comment period largely consisted of a plan to announce a plan, we look to the National Academies of Science Engineering and Medicine (NAS) study on Supplemental Treatment Approaches of Low-Activity Waste at Hanford to provide insights applicable to the treatment of 200W tanks.[11] The NAS study suggests that solid grouted forms are safer and more resilient for shipping. They offer natural self-shielding, improved safety, and consistency in volume and dimensions. The mixing with grout components dilutes the radioactive portion and fixes it while also reducing mobility and controlling other chemical hazards such as RCRA heavy metals and corrosivity. More materials can be shipped as Class A waste with low concentration of radioactive material and greater ease in meeting applicable regulations. In the event of an incident during transport, solid materials are more easily retrievable and less prone to cause catastrophic damage to human health and the environment.

   While grouting increases the volume shipped, our analysis shows that it results in fewer overall rail transportation events, thereby reducing accident risks in the transportation corridor and simplifying logistics. Standardized shipping volumes would aid onsite administration and help delineate site needs for storage space. Moreover, on-site grouting would retain construction, staffing, and operation budgets in the local region and allow for DOE onsite management and oversight.

[10] https://www.oregon.gov/energy/safety-resiliency/Documents/2022-05-NAS-SLAW-Study-Oregon-Comments.pdf

[11] https://www.nationalacademies.org/documents/embed/link/LF2255DA3DD1C41C0A42D3BEF0989ACAECE3053A6A9B/file/DB760207C1E4245E165FB35070A0676193DF3E673310?noSaveAs=1

Given these considerations, Oregon expects that if grouting is deemed an acceptable treatment for Low Activity Waste (LAW), that treatment will be performed on-site at Hanford and then shipped for final disposal off-site. We also expect further analysis of accident scenarios involving liquid shipments to better understand potential risks and cleanup costs, and to ensure that first responders along the transit route have the resources needed to respond to any incident.

3. A full supplemental Environmental Impact Statement (EIS) should be performed for the full grouting and offsite disposal transportation campaign. The impact of a comprehensive off-site transportation and disposal campaign has not been thoroughly assessed. The scale of potential grouting at 200W, tens of millions of gallons, far exceeds scenarios assessed in prior impact evaluations. The most recent submission to the Federal Register was AR-23306,[12] and the 2013 Record of Decision stated, ''DOE has decided to implement Waste Management Alternative 2, which includes disposal of LLW [low-level radioactive waste] and MLLW [mixed low-level radioactive waste] at IDF [Integrated Disposal Facility]-East from tank treatment operations.'' and "***While the TC&WM EIS did not anticipate a large increase in the amount of secondary waste sent offsite for treatment and potential disposal, it did acknowledge that it could occur.***" The above statements were made as justification for the lack of a supplemental EIS for at most 332 m^3 of mixed low-level waste (LLW) offsite. Tens of millions of gallons of liquid would be well over 100,000 m^3 grouted if as suggested by System Plan 10 approximately 71,000 m^3 of LAW is generated by S, SX, SY, and U tank farm. This volume, if shipped, is more than two orders of magnitude higher than previously considered offsite shipping campaigns. Population densities and the standard of care for such evaluations including environmental justice assessments have also changed since the TC&WM EIS was completed. Because of the significant scope change, previously unassessed factors, and time elapsed since the last full EIS and NEPA evaluation, Oregon expects an updated assessment with full public participation and comment, including route-specific analysis of potential transportation options.

4. As is the case with Test Bed Initiative TBI treatment, the Direct-feed Low Activity Waste portion of the waste treatment plant has yet to produce materials using treated tank waste. During public meetings, DOE was confident that there will be sufficient mixed low-level waste in 200 east to ensure that DFLAW can continue to operate using tank waste, once started. However, glass scientists at Pacific Northwest National Laboratories have continued to improve glass formulations and efficiencies.[13] The DFLAW melters have the potential to produce 15 metric tons of glass (MTG) per melter but are only expected to make 40% total operating efficiency (TOE) or about one full waste container of glass per melter per day. If DFLAW performs at its least efficiency, Oregon's calculations show that DOE will have exactly enough feed to operate in 200E until 2040. Any improvement to efficiency realized through post-startup operation would result in a potential lack of

[12] https://pdw.hanford.gov/document/AR-23306
[13] https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-30932Rev1.pdf

feedstock. If this occurs, DOE may find itself in the position where there is insufficient feed waste to support DFLAW operations. Instead, 200W tank waste is directed to make grout for offsite disposal with no intention of having a way to transport treated low level waste liquids to serve as feed for DFLAW until 2031 at the earliest. To be clear, while Oregon supports disposal of tank waste off site in grouted form, it is more important to ensure that the DFLAW facility which the nation invested in is operated to the fullest possible measure that it can within safety standards. Rather than restricting DFLAW operation, fully utilizing the facility and adopting modeling updates would feed the virtuous circle and demonstrate efficient use of federal funds. Completion of upgrades to the cross-site supernatant transfer line should include the option to reach DFLAW feed tanks. Improving DFLAW operations and integration with the 200W mission would also serve a role in reducing the technicium-99 and iodine-129 risk budget on the site, as DFLAW condensate enriched in those isotopes can be incorporated into the grout that is transported off-site.

Milestone M-062-24-04 Selection of facilities to support 200W LAW disposal

Oregon is confused by the timing of the Test Bed Initiative, compared to the date in the Holistic Agreement for deciding on where to treat Hanford tank waste. The Test Bed Initiative process has not even begun physical operations, let alone test and ship the treated supernatant. Washington Ecology issued a permit that expires in 2025[14] with the assumption that TBI will start in the middle of calendar year 2025 and the test data available by the end of 2025 or early 2026. And yet, Milestone M-062-24-04 calls for a date of 12/31/2024 to; "Make alternative selection for facilities and infrastructure needed to perform separation, pretreatment, and/or treatment, and mode of transport, for off-site disposal of low-activity waste (LAW) from 200 West Area Single Shell Tanks (SST) and apprise Ecology of that selection." In the absence of any TBI data making this selection so soon means it will not be supported by the most up to date site-specific data. The date for M-062-24-04 should be moved back a minimum of one year for this reason alone.

Milestone M-045-135 Complete retrieval of 22 SST in S, SX, and U

The timeline for treating 22 tanks in 200W by 2040 appears optimistic, as several issues could cause serious delays. These include the limited capacity of the as yet undesigned 200W treatment system, the need for additional storage capacity, limited available capacity in the SY farm, and potential regulatory hurdles. It's crucial that these challenges are addressed proactively to ensure the successful implementation of the new milestones for 200W tank retrieval and treatment.

Several regulatory and administrative hurdles must be addressed. Each tank has a unique chemistry and the process for determining how many Waste Incidental to Reprocessing (WIR) determinations will be required has not been established. The dissolution of saltcake for retrieval further complicates characterization and tank chemistry. These varying chemistries will necessitate additional EPA variances, requiring more time for analysis and

[14] https://fortress.wa.gov/ecy/nwp/permitting/TBI.2024.1F/Start.html

public input to ensure compliant off-site disposal. We advocate for one EPA variance for every tank or group of tanks covered by a WIR determination. This is critical for confirmation that each load meets safety requirements for shipping, public transparency, disposal requirements, and associated waste acceptance criteria.

Attachment I: Establish New TPA Milestones for Retrieval Technology Work Plan and Implementation

1. The current formulation of these milestones suggests that the technology evaluation may cease once this milestone is met. To address this, we recommend developing a longer-term committee or program to ensure continual technological assessment. The proposal for DOE and Ecology to meet periodically (at least every six months) throughout the evaluation and development process is a good start, but this collaborative effort should be extended beyond the initial milestone completion. This encourages longer term innovation and technology development which has the potential to extend beyond Hanford and provide benefit elsewhere in the nation. Opening the process earlier to all stakeholders would assist DOE in fulfilling their own stated conclusion; "... the Office of EM's adaptive management framework can provide ongoing opportunities for stakeholders to engage in risk-reduction decisions regarding tank treatment R&D prioritization. This iterative process is vital for affected local governments, regulators, tribal representatives, and the public to convey their views and engage DOE as the agency pursues a sustainable and effective R&D Roadmap."[15]

   Continuing these periodic meetings and inviting experts from Federally Funded Research Development Centers, academia, and private industry for "State of Science" discussions would help ensure the best available technology is employed throughout the cleanup process. Including some of the most difficult tank waste problems into a DOE challenge grant concept could expand the number and experience base of those interested in providing innovative solutions. This long-term technology review component would benefit additional milestones as well, such as the retrieval of Tanks A-104 and A-105, scheduled for completion by the end of 2040.

2. Technologies developed for problematic tank retrievals should also be evaluated for their potential application in future tank waste recovery efforts, even when those recoveries are being conducted in non-problematic tanks. Minimizing the waste remaining in tanks when declared closed is a critical aspect of any closure plan. According to Washington Administrative Code (WAC) 173-303-610[16], closures must minimize the need for further maintenance and controls and minimize or eliminate human or environmental exposures to contaminants. Fully retrieving tanks before closure is the best method to meet relevant Washington Ecology and EPA requirements.

[15] https://www.energy.gov/sites/default/files/2023-07/EMAB-Hanford-Tank-Waste-Roadmap-2023-07-10.pdf
[16] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-610

It is worth noting that in the 22 tanks declared retrieved, mostly from AX and C farms, there is still an estimated 100,000 gallons of waste left behind.[17] Until the WMA-C WIR determination is completed, all 100,000 gallons of that waste is managed as high-level waste. This underscores the importance of continued technological development and assessment, and the importance of the TPA agencies in refining the definition of a complete recovery.

3. Considering Attachment F, which establishes new TPA milestones for the closure of various Single-Shell Tank Waste Management Areas (WMAs), it's noteworthy that DOE anticipates using landfill closures for tank farms, following completion of WIR evaluations. The expectation is that once tanks are declared retrieved and a WIR is completed, remaining waste will be landfilled place, with the contaminant load accounted for through other controls such as filling the tank with grout, impermeable caps and/or pump and treat systems. The non-radioactive components of such a landfill would be subject to permitting by the WA Department of Ecology. Additional public dialog is warranted to ensure that landfill closure meets applicable regulatory and legal requirements.

In conclusion, we recommend establishing a long-term, ongoing process for technology evaluation and development. This approach would ensure that the Hanford cleanup effort continues to benefit from the latest advancements in retrieval and treatment technologies, potentially leading to more complete waste removal and safer, more efficient closure options, minimizing the amount of contamination left in unlined landfills on the central plateau.

Milestone M-045-136 and 137 Retrieval Technology Workplan and written technology evaluation development

The inclusion of technological innovation and testing as a milestone is a commendable development in the Hanford cleanup effort. Oregon has long advocated for research into dry mining of tank waste to allow for maximum recovery from non-competent tanks. Of note is the upcoming deadline of 3/30/2025 to submit a work plan for constituting an expert panel on tank retrieval technologies. While the only method explicitly mentioned is salt-well pumping - a previously used and highly rated retrieval technology[18] when there are recoverable liquids present -, it would be beneficial to also include updates on other potential techniques.

Specifically, there is interest in the status of potential dry-mining or other methods that do not require the addition of water into leaking tanks. Such innovative approaches could significantly improve retrieval timelines, especially for tanks of questionable integrity. The continuous technological innovation driven by DOE laboratories[19] means that many technologies are improving, and methods previously deemed ineffective may become viable options. At a minimum dry-mining should be included in Milestone M-045-136 and

[17] https://pdw.hanford.gov/document/AR-30176
[18] https://pdw.hanford.gov/document/AR-04419
[19] https://www.energy.gov/em/hanford-tank-waste-research-and-development

137. The use of dry mining to accelerate the Hanford Tank Waste Mission has been published previously, with techniques that could be useful on site.[20] As both salt-well pumping and dry-mining have a preexisting knowledge base the limitations of “at least 2 new, or refined, existing retrieval technologies” is restrictive. We believe a change in the milestone to “at least 2 new, or refined, existing retrieval technologies in addition to salt-well pumping and dry-mining” would provide assurance of a broad and inclusive technology review.

[20] https://www.energy.gov/em/rd-roadmap-hanford-tank-waste-mission-acceleration