STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Richland Field Office
3100 Port of Benton Blvd., Richland, WA 99354 • 509-372-7950

July 30, 2026 26-NWP-110

Ricky Bang, Deputy Assistant Manager
Tank Waste Operations
Hanford Field Office
United States Department of Energy
PO Box 550
Richland, Washington 99352

Re: Transmittal of the Department of Ecology's (Ecology) Review Comment Record (RCR) for the *Phase 2 RCRA Facility Investigation/Corrective Measures Study Work Plan for Waste Management Area U*, RPP-PLAN-66053, Rev. 1 and Response to Letter 26-TWO-0053

Reference: See page 2

Dear Ricky Bang:

Ecology has reviewed *Phase 2 RCRA Facility Investigation/Corrective Measures Study Work Plan for Waste Management Area U (WMA U RFI/CMS WP)*, RPP-PLAN-66053, Rev. 1 received with the United States Department of Energy Letter 26-TWO-0053 (Reference 1). Ecology's RCR comments for Revisions 0 and 1 are enclosed.

Ecology's response to the applicability of DOE/RL-2019-46 will be addressed in the enclosed RCR.

In regard to resolving the disagreement on the determination for landfill closure, Ecology stands behind Washington Administrative Code (WAC) 174-303-640(8)(c)(i) that requires the owner or operator of a tank system that does not have secondary containment have a closure plan which must include both a plan for clean closure and a contingent plan for landfill closure. Determination of landfill closure will be made on a WMA-by-WMA basis as described in letters 21-NWP-090 and 21-NWP-006 (Reference 2 and 3, respectively). Per the regulatory requirements, each WMA must include both a clean closure and landfill closure plan.

Ecology has reviewed Appendix D, Sampling and Analysis Plan (SAP), of RPP-PLAN-66053 and have not found any issues that would impact sampling. Therefore, we approve of sampling the WMA U vadose zone as described in the SAP ahead of consideration of the entire WMA U RFI/CMS WP, because this SAP will inform our decision-making.

If you have any questions or concerns, please contact Jackson Davis, Single-Shell Tank Chemist, at jackson.davis@ecy.wa.gov or (509) 303-5558 or Luissa Johnston, Tank Systems Operation and Closure Coordinator, at luissa.johnston@ecy.wa.gov or (509) 975-1285.

Sincerely,

Amie Green
Digitally signed by amgr461@ecy.wa.gov
Date: 2026.07.30 14:51:47 -07'00'

Amie Green
Tank Systems Operation and Closure Project Manager
Nuclear Waste Program

lj/bp
Enclosure

cc: See page 3

References:

1. Letter 26-TWO-0053, dated June 29, 2026, "U.S. Department of Energy, Hanford Field Office Comment Responses for RPP-PLAN-66053, 'Phase 2 RCRA Facility Investigation/Corrective Measures Study Work Plan for Waste Management Area U,' Revision 0 and Updated Revision 1"
2. Letter 19-NWP-090, dated June 12, 2019, "Re: Transmittal of Supplemental Information to the *Clean Closure Practicability Demonstration for the Single-Shell Tanks*, DOE/ORP-2014-02-SUPP1, Revision 0"
3. Letter 21-NWP-006, dated January 14, 2021, "Re: Waste Management Area C (WMA C) Closure Performance Standard"

cc electronic w/enc:

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Steve Needles, Ecology
George Peck, Ecology
Eric Pierce, Ecology
Elizabeth Rochette, Ecology
Stephanie Schleif, Ecology
Noe'l Smith-Jackson, Ecology
John Temple, Ecology
Environmental Portal
Hanford Administrative Record
Hanford Facility Operating Record
H2C Correspondence Control
HAB Correspondence Control
HMIS Correspondence Control
USDOE Correspondence Control

Review Comment Record	Washington State Department of Ecology Nuclear Waste Program	Date: 6/2/2025 Permittee Response: 6/29/2026 Ecology Response: 7/30/2026 Page 1 of 25

-Document Title(s)/Number(s):

Ecology Comments on RPP-Plan-66053, Rev. 0 and Rev. 1, Phase 2 RFI/CMS Work Plan for WMA U – Primary Document

Document Manager	Telephone Number	Project Manager	Telephone Number	Facility Site ID	Cleanup Site ID
Luissa Johnston	509-975-1285	Amie Green	(509) 316-6873		

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
1.	General	PFAS chemicals. *DOE/RL-2024-23 Rev.0 The Preliminary Assessment of the Historical and Current Uses of Per- and Polyfluoroalkyl Substances at the Hanford Site* documents areas where PFAS are suspected to be in elevated concentrations. Page 2-9, Section 2.1.1.2 Diversion Boxes. Waste sites 241-U-A, 241-U-B, 241-U-C, and 241-U-D are mentioned in AR-34090 Preliminary PFAS survey on Hanford, Table 4-3. Text states that "The diversion box has been covered with unspecified protective foam" and references DOE/RL-88-30. Page 2-11, Section 2.1.1.3 Valve Pits. Text describes valve pits: "…241-U-A, 241-U-B, 241-U-C, and 241-U-D Valve Pits are designed to support waste transfers to U Farm tanks from the 242-S Evaporator…". These four valve pits are identified as areas with possible PFAS releases in Table 4-3 of DOE/RL-2024-23, "The Preliminary Assessment of the Historical and Current Uses of Per- and Polyfluoroalkyl Substances (PFAS) at the Hanford Site". Other U Farm facilities and structures mentioned in Sections 2.1.1.4 through 2.1.1.8 may be potential PFAS sources. Page 4-30, Section 4.4, Development of Constituent List for WMA U. Section lists various sources of information to develop a list of constituents.	PFAS chemicals in the WMA U area should be mentioned and an explanation given about plans to incorporate them into the Constituent List for WMA U. Add PFAS to a list of COPCs that contribute to unacceptable risks to human health or the environment at WMA U.	*DOE/RL-2024-23 Rev.0 The Preliminary Assessment of the Historical and Current Uses of Per- and Polyfluoroalkyl Substances at the Hanford Site* and waste sites and documents cited therein. The report summarizes what is known, assumed, or inferred about PFAS at the Hanford Site (including WMA U) and identifies potential locations of PFAS use and releases.	DOE/RL-2024-23, *Preliminary Assessment of the Historical and Current Uses of Per- and Polyfluoroalkyl Substances at the Hanford Site* was developed to support the goals and objectives of the PFAS 2 *Strategic Roadmap: DOE Commitments to Action, 2022-2025*. The three main PFAS sources identified in DOE/RL-2024-23 include aqueous film-forming foams, polymer-based PFAS use and disposal during Hanford Site operations, and perfluorocarbon tracers used in soil and groundwater tracer studies. The study identified high-priority, low-priority, and possible sites. The high-priority sites were further defined in DOE/HFO-2025-21, *Per and Polyfluoroalkyl Substance Sample Strategy* to assess the presence or absence of PFAS analytes in groundwater monitoring wells downgradient from the identified high-priority areas of interest listed in the PFAS assessment report (DOE/RL-2024-23). WMA U was identified in the possible site category in DOE/RL-2024-23 due to the presence of protective foam over the diversion boxes. Possible sites are defined as areas where unspecified foam or proprietary products were used. The use or release volume of PFAS is uncertain due to the lack of information, but these sites may be considered for further evaluation. It is currently neither warranted nor beneficial to add PFAS as a COPC to WMA U, given that it is only a possible site where PFAS use is uncertain. Rather than making this addition, HFO will continue working closely with the regulators to implement the PFAS sampling	GWP (7-8-2026): Permittee refuses to add information about PFAS stating it is "neither warranted nor beneficial". This is not acceptable to WA ECY NWP. Open.	Open (7-8-2026)	GWP

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		Page 4-41, Section 4.8 Risk Assessment Approach. Fourth Bullet starting at line 43: Develop a list of COPCs that contribute to unacceptable risks to human health or the environment.			strategy for the Hanford Site as described above. No change to document			
2.	Page 1-12 Section 1.4.2 Central Plateau Inner Area Cleanup Principles and 15 other instances in the document	WMA U does not currently have a landfill determination. Therefore, where DOE/RL-2019-46, *Central Plateau Inner Area Cleanup Principles and Parameters,* is inconsistent with WAC 173-303, Ecology will use WAC 173-303. For WMA U, Ecology will use WAC 173-303-610(2) Closure Performance Standard, and cited regulations therein for closure performance standards therein.	As an example of a typical revision: 'Per HFFACO Change Control Form F-20-01, *Addition of Principles and Parameters Document into TPA Action Plan Appendix F*, DOE/RL-2019-46, Rev. 0 is included as a fully enforceable part of this Phase 2 work plan where it is consistent with the requirements of WAC 173-303, including section -610 and cited regulations therein. Chapter 1 of DOE/RL-2019-46 describes the cleanup principles.'	WMA-U does not currently have a landfill determination. Therefore, ECY NWP will follow WAC 173-303-610(2) and cited regulations for closure performance standards for WMA U, as well as letter 20-NWP-132. TPA Article III, section 14 states that one of the purposes of the TPA is to "Ensure compliance with RCRA and the Washington Hazardous Waste Management Act (HWMA) (Ch. 70.105 RCW) for TSD Units including requirements covering permitting, compliance, closure, and post-closure care." TPA Article I, Section 4. states "The Parties agree that the generation, treatment, storage, and disposal of hazardous waste is regulated by the State of Washington, Department of Ecology pursuant to Ch. 70.105 RCW, the State Hazardous Waste Management Act (HWMA), and regulations governing the management of hazardous wastes are contained at Ch. 173-303 WAC, and finally that pursuant to Section 6001 of RCRA, 42 U.S.C. Sec. 6961, the United States Department of Energy (DOE)"	Risk and exposure scenarios will be evaluated as defined in Section 2.2 of DOE/RL-2019-46, *Central Plateau Inner Area Cleanup Principles and Parameters* which was adopted into the TPA Action Plan Appendix F (Supporting Technical Plans and Procedures) via Change Control Form Number F-20-01 in October 2020. As discussed in Section 1.2 of DOE/RL-2019-46, once a basis for action is determined for chemicals during the CMS process, cleanup standards will be based on MTCA Method C levels for direct contact. For WMAs, MTCA Method C is the appropriate closure performance standard for contaminated soils direct contact once landfill closure is required. As referenced in Section 1.2, DOE determined that landfill closure is a more appropriate approach for SST system closure than clean closure. The Tri-Parties developed DOE/RL-2019-46 to establish a standardized set of cleanup principles for the Inner Area of the Central Plateau that could be incorporated into work plans for Operating Units and SST WMAs. The objectives of DOE/RL-2019-46 are to (1) provide a consistent approach for assessment of risks to human health and the environment and evaluation of remedial alternatives within the Inner Area; and (2) identify and implement regulatory strategies that would optimize resources, streamline documentation requirements, and promote consistency in decisions. The substantive components of DOE/RL-2019-46 relate to land use, baseline risk assessment, applicable cleanup levels, and points of compliance. The Tri-Parties also agreed that DOE/RL-2019-46 will be included by reference	GWP (7-8-2026): Use and reach of DOE/RL-2019-46 is in continuing discussion, as is landfill determination. See text of comment for specifics. Open.	Open (7-8-2026)	GWP

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				If DOE or their contractors have identified an interpretation of DOE\RL-2019-46 that does not agree with RCRA or the Washington Hazardous Waste Management Act for TSD units, Ecology and USDOE should work together to revise the procedure as such an interpretation is both outside the scope of the TPA and counter to the purpose and foundational agreements of the document.	or as an insert to RFI/CMS work plans for SST WMAs and, when added by reference, is fully enforceable as an essential part of the work plan for all Parties. The proposed modifications are inconsistent with DOE/RL-2019-46 as adopted and incorporated into the TPA. No change to document.			
3.	Page 1-12 Section 1.4.2	Text on lines 23-26 state "Per HFFACO Change Control Form F-20-01, Addition of Principles and Parameters Document into TPA Action Plan Appendix F, DOE/RL-2019-46, Rev. 0 is included as a fully enforceable part of this Phase 2 work plan. Chapter 1 of DOE/RL-2019-46 describes the cleanup principles."	The Principles and Parameters document was intended for the central plateau region which had landfill closure plans and was subsequently applied to the SST tank farms without landfill closure plans. With the exception of WMA C which has a landfill closure designation, the remaining SST farms, including WMA U, do not have a landfill closure plan and are currently subject to regulatory "clean closure" standards and do not fall under the concept of application of the Principles and Parameters document. Correct text/delete statement that Principles and Parameters Document is a fully enforceable part of the Phase 2 Work Plan.	Clarity of text/basis of analysis.	See response to Comment #2.	Comment/Issue remains open as it addresses the P&P governance and application	Open	CDG
4.	Page 2-14 Lines 41-42	Text reads "The estimated leak and release inventory for cesium-137 (half-life of ~30 years) is 0 to 7,610 Ci (decayed to January 1, 2001)." Why is the original leak volume not reported and only the decayed fraction in the historic evaluation?	Include the original leak volume as well as the decayed value.	Clarity of text/basis of analysis.	The text on page 2-14, lines 33-34 identifies that the "estimated total leak volume [was] between 0 to 30,000 gal." The cesium-137 inventory is based on the range of leak volume (i.e., 0 to 30,000 gal). The following text change will be made for clarity: "The estimated ~~leak and~~ release inventory for cesium-137 (half-life of ~30 years) is 0 to 7,610 Ci (decayed to January 1, 2001)." The header in the table has also been updated as follows: "Tank ~~Leak/~~Release Volume and	Comment was to have the initial release values for cesium-137 (Ci) cited in the history of release not just the degraded value over time through – response is not consistent with request as it continues to only address citing degraded values of cesium-137 calculated for 2021. For	Open	CDG

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					Inventory Estimate[a]" For context, the values were decayed to 2001 to be consistent with previous versions of the Hanford Defined Waste Model and SIM (Soil Inventory Models) models.	understanding the past releases, the initial values should be included not just degraded values.		
5.	Page 2-14 Section 2.1.3 Last paragraph Lines 41-42	The text reads: The estimated leak and release inventory for cesium-137 (half-life of 42 ~30 years) is 0 to 7,610 Ci (decayed to January 1, 2001).	"decayed to January 1, 2001" is vague. Be more specific, state which tests were conducted on January 1, 2001.	Clarification.	The inventory values were decayed to January 1, 2001, to be consistent with previous versions of the Hanford Defined Waste Model and SIM (Soil Inventory Model) models. The values were mathematically calculated and did not involve testing.	See response to #4 – for understanding the past releases, the initial value should be included, not just the degraded values.	Open	MCM
6.	Page 2-19 Table 2-3	Table has tank loss value for 241-U-101 as 0 to 30,000 gal, Cesium-137 = 0 to 7,610 Ci[b] and footnote [a] addresses that this is a decayed fraction and not the initial release value.	Include the original leak volume as well as the decayed value. Verify the footnote cited	Clarity of text/basis of analysis.	The cesium-137 inventory is based on the range of leak volume at the time the release occurred (i.e., 0 to 30,000 gal). The decayed value does not change the original leak volume. The following text change will be made for clarity: "The estimated ~~leak and~~ release inventory for cesium-137 (half-life of ~30 years) is 0 to 7,610 Ci (decayed to January 1, 2001)." The header in the table has also been updated as follows: "Tank ~~Leak/~~Release Volume and Inventory Estimate[a]" The footnote is correct.	See response to #4 – for understanding the past releases, the initial value should be included, not just the degraded values.	Open	CDG
7.	Page 2-19 Table 2-3	There is a footnote ([a]) beneath the table. There is no information in the table that includes a footnote[a].	Explain the meaning of the footnote and whether or not it is appropriate for the table.		Footnote "a" appears in the far-right column heading ("Tank Leak/Release Estimate [a]"). Also see responses to Comments #4 – 6. The header in the table has also been updated as follows: "Tank ~~Leak/~~Release Volume and Inventory Estimate[a]"	Accepted	Close	JAR
8.	Sections 3.3 and 3.3.1 (General Comment)	The RFI workplan should include up-to-date and current information available on the hydrostratigraphy beneath WMA-U. However, much of the information in this section is generic and not specific to WMA-U. The RFI/CMS Workplan should include site-specific hydrostratigraphy to support vadose zone and groundwater modeling for fate and transport (site-specific heterogeneities	The RFI/CMS Workplan should be specific to pertinent information related to WMA-U.		Accept – Text in Section 3.3 ("Geology and Hydrogeology") has been revised as outlined below: The list of documents that describe the most current geologic interpretations relevant to the WMA U study area in the second paragraph of Section 3.3.1 ("Geology") has been revised to include a description of the recent (2021) CIE Vadose Zone Model developed for the U Farm Area (ECF-HANFORD-20-0131). The added	Accepted	Close	JAR

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		are also important to consider) yet these are not included.			text references the section in ECF-HANFORD-20-0131 that provides the U Farm Area model domain, the model hydrostratigraphy, and the three-dimensional representations of the hydrostratigraphic framework for the U Farm Area model. The text in Section 3.3.1 introducing Table 3-2 has been revised to clarify that the lithologic unit descriptions and approximate thicknesses in Table 3-2 are specific to the WMA U study area. Note that Rtf was added to Table 3-2 and Section 3.3.1.4 (“Ringold Formation”) based on GFM. Note that Figures 3-5 and 3-6 (cross sections for WMA U) have been updated to include the Rtf. Section 3.3.2 (“Hydrogeology”) has been revised to include hydraulic conductivity estimates of the Rwie underlying WMA U, based on CP-47631, *Model Package Report: Central Plateau Groundwater Model, Version 8.4.5*, and PNNL-13378, *Results of Detailed Hydrologic Characterization Tests – Fiscal Year 1999*. Section 3.3.2 has also been revised to include a description of the hydrostratigraphic units from the U Farm Area vadose zone model that supports modeling for the CIE no further action scenario (ECF-HANFORD-20-0131). A figure was added (now Figure 3-7) to Section 3.3.2 showing the hydrostratigraphic model for the U Farm Area. The list of documents in Section 3.3.2 providing additional information on the Central Plateau and the WMA U study area hydrogeology was revised to include the CIE Vadose Zone Model developed for the U Farm Area (ECF-HANFORD-20-0131).			
9.	Section 3.3.1 General Comment	Text says this section is to provide the most recent geologic information available and builds upon previous reports on the U Farm geology...but all it does is reference those reports and old information...there is no new information or "building-on".	Update the RFI/CMS Workplan as described in this section to include pertinent geologic information that builds on previous reports/work.		Accept – Text in Section 3.3 (“Geology and Hydrogeology”) has been revised as outlined below: The sentence starting with “This information builds upon previous reports on the U Farm geology …” (second sentence of Section 3.3.1 “Geology”) has been deleted and the final sentence of this paragraph has been revised as	Accepted	Close	JAR

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					follows: "This section summarizes the current understanding of WMA U study area site-specific geology and includes other pertinent information on the Central Plateau geology needed to inform the WMA U geologic framework model". Additional information has been updated per comment response #8.			
10.	Page 3-4 Section 3.3 2nd paragraph	Text states this section presents information pertinent to the geologic framework for WMA U contaminant migration evaluations, then goes on to say that the Graded Approach is not needed because there have been previous characterizations performed near (but not at WMA-U), then says a geologic framework model specific to WMA U has not been developed. The text also reads that site-specific modeling has been performed for other CP (Central Plateau) investigations. So there is no specific geologic framework model for WMA U but there is mention of modeling for other various CP areas...what is the point of including this in the WMA-U RFI/CMS Workplan? The RFI/CMS Workplan should be specific to pertinent information related to WMA-U.	The RFI/CMS Workplan should mention the CIE Vadose Zone Model for the U Farm Area (ECF-HANFORD-20-0131, Rev.0) that is already available.		Accept – Information has been updated per comment response #8.	Accepted	Close	JAR
11.	Page 3-4 Lines 24-26	Text reads "The geologic framework model specifically for the WMA U performance assessment has not been developed; however, recent site-specific modeling has been performed for other various Central Plateau vadose zone soil and groundwater investigations." It is noted that there is an existing CIE vadose zone model (ECF-HANFORD-20-0131, Rev 0) already developed for WMA-U, why is this not addressed.	Include pertinent and relevant vadose zone model for WMA-U including existing CIE vadose zone model (ECF-HANFORD-20-0131, Rev 0)	Clarity of text/basis of analysis.	Accept – Information has been updated per comment response #8.	Accepted	Close	CDG

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12.	Page 3-5 Section 3.3.1	Bulleted list of documents does not include existing CIE vadose zone model (ECF-HANFORD-20-0131, Rev 0) already developed for WMA-U, why is this not addressed.	Include pertinent and relevant vadose zone model for WMA-U including existing CIE vadose zone model (ECF-HANFORD-20-0131, Rev 0)	Clarity of text/basis of analysis.	Accept – Information has been updated per comment response #8.	Accepted	Close	CDG
13.	Page 3-6 (bulleted list) And Page 3-8 Table 3-2	The bullets on Pg. 3-6 do not match the information included in Table 3-2. Table 3-2 is missing descriptions of the Rlm (Ringold fm – lower mud unit) and Rwia (Ringold fm – unit A) The RFI should be precise to what is the specific geology (geologic units, contacts, thicknesses, etc.) beneath the WMA of interest.	Add descriptions of the Rlm and Rwia units in Table 3-2 if they are believed to present beneath the study area of WMA-U.		Table 3-2 is specific to formations in the vadose zone because the scope of the work plan is to address characterization of vadose zone soil n the WMA U study area. No change to document.	Accepted	Close	JAR
14.	Page 3-13 Figure 3-5	Figure depicts 2015 groundwater table. Why is the more recent water table data (within last 10 years) not depicted? This 2015 groundwater elevation is suspect given the significant groundwater extraction occurring in vicinity of WMA-U.	Update to include 2022 or 2023 groundwater data.	Utilize valid/recent data.	Accept – Will update Figure 3-5 to incorporate 2024 groundwater elevation data.	Accepted	Close	CDG
15.	Page 3-14 Figure 3-6	Figure depicts 2015 groundwater table. Why is the more recent water table data (within last 10 years) not depicted? This 2015 groundwater elevation is suspect given the significant groundwater extraction occurring in vicinity of WMA-U.	Update to include 2022 or 2023 groundwater data.	Utilize valid/recent data.	Accept – Will update Figure 3-6 to incorporate 2024 groundwater elevation data.	Accepted	Close	CDG
16.	Page 3-15 Figure 3-7	Figure depicts 2022 groundwater elevation data not used in Figures 3-5 or 3-6. Why is 2023 groundwater elevation data not used?	Incorporate 2022 or 2023 groundwater data in Figures 3-5 and 3-6.	Utilize valid/recent data.	Accept – Will update Figure 3-7 (now figure 8) to incorporate 2024 groundwater elevation data.	Accepted	Close	CDG
17.	Page 3-17 Figure 3-8	Figure depicts 2022 groundwater elevation data not used in Figures 3-5 or 3-6. Why is 2023 groundwater elevation data not used?	Incorporate 2022 or 2023 groundwater data in Figures 3-5 and 3-6.	Utilize valid/recent data.	Accept – Will update Figure 3-8 (now figure 9) to incorporate 2024 groundwater elevation data.	Accepted	Close	CDG
18.	Pg. 3-13, Figure 3-5 And	Figure 3-5: the cross-section depicts the water table in 2015. Pump and Treat Operations have affected the water table since 2015.	Figure 3-5: update the water table elevation to a more recent water table.		Accept – Will update Figures 3-5 through 3-8 (now 3-9) and 4-1 to incorporate 2024 groundwater elevation data.	Accepted	Close	JAR

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
	Pg. 3-14, Figure 3-6 And Pg. 3-15, Figure 3-7 And Pg. 3-17, Figure 3-8 And Pg. 4-24, Figure 4-1	Figure 3-6: the cross-section depicts the water table in 2015. Figure 3-7: the water table is prepared from ECF-HANFORD-23-0009, *Preparation of the March 2022 Hanford Site Water Table*. Figure 3-8: the water table is prepared from ECF-200W-22-0124, *Groundwater Elevation Mapping for 200 West Area – Quarter 1 Calendar Year 2022*. Figure 4-1: the water table is from 2022.	Figure 3-6: update the water table elevation to a more recent water table. Figure 3-7: update the water table to use the 2024 March water table. Figure 3-8: update the water table to use the Q1-2024 groundwater elevation mapping. Figure 4-1: update the water table to the 2024 water table elevation.					
19.	Page 3-19 Section 3.4 Environmental Resources	Text states that "The ecological setting has been characterized using data from numerous inventories of plant and wildlife species and ecological characterizations…" All the papers cited in the bulleted list on page 3-19 are useful and provide necessary and relevant information, however there are gaps in the overall Hanford response to ecosystem protection and conservation and/or restoration of key historical ecosystem services. Text states that the "Hanford biological resources management plan, which provides strategies and management action as necessary to sustain Hanford Site biological resources, including the protection of species and habitats of State and Federal concern (DOE/RL96-32, Hanford Site Biological Resources Management Plan)".	While the coverage of organisms in section 3.4 is broad, it could use a few citations and narrative focused on the Hanford assemblage of invertebrates, especially insects, as well as soil microbiota. Invertebrate and microbial scrub steppe biomass is usually orders of magnitude larger than vertebrate biomass, and invertebrates/fungi/soil prokaryotes perform key ecosystem services and functions, including food chain regulation, pollination, soil excavation, and biomass recycling.	More complete coverage of the natural Hanford ecosystem.	Accept - A narrative focused on the presence of terrestrial invertebrates within the Hanford site based on 1999 TNC report, *Biodiversity Inventory and Analysis of the Hanford Site* will be added in as section 3.4.3 "Soil Invertebrates".	GWP (7-8-2026): A new section was added to Rev.1 (3.4.3 Soil Invertebrates) but it only mentions old studies of insects (coleoptera, lepidoptera) that need updating and expansion to include more families of insects (e.g., Diptera, Hymenoptera, others) and other soil invertebrates, soil fungi, and soil microbiome. These updated studies need to be considered in the near future, especially with rapid climate change and the need to gather data on sensitive animal and plant communities to track population dynamics and inform possible conservation interventions.	Close (7-8-2026)	GWP

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20.	Page 4-11 Section 4.2.1.3 Paragraph 1 Lines 1-2	The text reads: "The gross gamma monitoring program was discontinued around 2004; however, it is anticipated that further gross gamma monitoring will be performed during the tank retrieval processes."	Provide a realistic estimate for gross gamma monitoring. "Anticipated" is open-ended and vague.	Gross gamma monitoring will need to be performed. The text provides an excuse to avoid the monitoring.	Monitoring requirements during retrieval will be specified in the tank waste retrieval work plan and is not included under the scope of this document. No change to document.	Accepted	Close	MCM
21.	Page 4-11 Lines 1-2	Text reads “The gross gamma monitoring program was discontinued around 2004; however, it is anticipated that further gross gamma monitoring will be performed during the tank retrieval processes.” It is noted that Table 4-2 only includes data up thru 1999. Is additional data between 1999 and 2004 available?	Include gamma logging data between 1999 and 2004 as available.	Utilize valid/recent data.	In U Farm gross gamma logging was performed between 1975 and 1994 (discussed in RPP-7729), whereas spectral gamma logging was performed between 1995 and 1999 (discussed in GJO-97-1-TAR/GJO-97-1-TARA). No documentation was found suggesting that any of the drywells in U Farm were geophysically logged after 1999. Historically, the gross gamma logging program provided the primary means of detecting leaks from the SSTs and was discontinued in favor of upgraded in-tank measurements, and reliance on gross gamma logging was eliminated for all but a small number of SSTs. The year “2004” is unrelated to geophysical logging performed in U Farm, as this statement is calling attention to when interim stabilization was completed for the SST System, signifying that the gross-gamma monitoring program as a general matter was no longer required. Text will be revised as follows: “The gross gamma monitoring program was discontinued ~~around~~ by 2004; when interim stabilization of the SSTs was completed, and it was deemed to be no longer required ~~however, it is anticipated that further gross gamma monitoring will be performed during the tank retrieval processes~~.”	Accepted	Close	CDG
22.	Page 4-22 Lines 44-46	Text reads “In 2020, DOE/RL-2009-74, Rev. 2 was superseded by DOE/RL-2019-74, Rev. 0, Interim Status Groundwater Quality Assessment Plan for the Single-Shell Tank System which revised the groundwater quality assessment constituents for ongoing sampling and evaluation…” DOE/RL-2019-74, Rev. 0 has been superseded by DOE-RL-2019-74_Rev3.	Identify that DOE/RL-2019-74, Rev. 0 has been superseded by DOE-RL-2019-74_Rev3.	Utilize valid/recent data.	Accept – Will update text to cite Rev. 3 of DOE/RL-2019-74.	Accepted	Close	CDG

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23.	Page 4-22 Last paragraph	The text discusses changes to the interim status monitoring plan for the SSTs, but does not identify DOE/RL-2019-74, Rev. 3 as the latest monitoring plan.	Include DOE/RL-2019-74, Rev. 3 (the current) monitoring plan, which updated a well drilled in 2024 (299-W18-261).		See response to comment #22.	Accepted	Close	JAR
24.	Page 4-23 Line 4	Text reads "Revision 2 of DOE/RL-2019-74 was issued in 2023." DOE/RL-2019-74, Rev. 0 has been superseded by DOE-RL-2019-74_Rev3.	Identify that DOE/RL-2019-74, Rev. 0 has been superseded by DOE-RL-2019-74_Rev3.	Utilize valid/recent data.	See response to comment #22.	Accepted	Close	CDG
25.	Page 4-24 Figure 4-1	Figure depicts 2022 groundwater elevation data not used in Figures 3-5 or 3-6. Why is 2023 groundwater elevation data not used?	Incorporate 2022 or 2023 groundwater data in Figures 3-5 and 3-6.	Utilize valid/recent data.	Accept – Will update Figure 4-1 to incorporate groundwater elevation data from March 2024 as shown in Figure 1-3 from DOE/RL-2024-29, *Hanford Site RCRA Groundwater Monitoring Report for 2024*.	Accepted	Close	CDG
26.	Page 4-25 Figure 4-2	Figure identifies that DOE/RL-2009-74, Rev. 2 was superseded by DOE/RL-2019-74, Rev. 0, but does not identify that DOE/RL-2019-74, Rev. 0 has been superseded by DOE-RL-2019-74_Rev3.	Identify that DOE/RL-2019-74, Rev. 0 has been superseded by DOE-RL-2019-74_Rev3.	Utilize valid/recent data.	See response to comment #22.	Accepted	Close	CDG
27.	Page 4-25 Lines 5-11	Text discusses groundwater remedial action for 200-UP-1 OU ROD for uranium and tech-99 originating from the U-Plant. It is not clear how this context relates to U-Farm.	Clarify relation of 200-UP-1 OU ROD groundwater remedial action to U-Farm.	Clarification.	Groundwater interim remedial action in the 200-UP-1 OU is included in this Chapter 4.0 (Additional Information Required To Define Data Needs) as relevant background information. As stated on page 4-23, groundwater COCs and COPCs are included in the 200-UP-1 OU interim ROD, which includes contaminants suspected to be in the vadose zone under WMA U. Active P&T may affect the overall concentrations of contaminants and flow or direction of groundwater in the area around WMA U. No change to document	Accepted	Close	CDG
28.	Page 4-27 Figure 4-4	Cannot locate text in document that references Figure 4-4 or determine the purpose of this figure in the document.	Clarify why this figure is included in the document and if it is essential provide text with appropriate clarifying context relative to WMA-U	Clarification.	Figure 4-4 is called out in text on page 4-23 (lines 30-31). The purpose of this figure is to show the extent of groundwater contamination in the 200 West Area which largely resulted from U Plant and REDOX liquid waste that were discharged to cribs, ditches, ponds, and trenches.	Accepted	Close	CDG

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					Figure 4-4 will be updated to show 2024 plume Data.			
29.	Page 4-28 Section 4.2.3 Figure 4-5	Looking at the ditch across the road from the tank farm, state whether water collection in the ditch and subsequent movement through the vadose zone will affect laterally dispersed contaminants.	Clarify whether water collection in the ditch will impact the transport of vadose zone contaminants.	Clarification.	The concrete curbing and gutters installed in 2002 to control run-on to WMA U from the nearby streets has not impacted vadose zone transport as no WIDS sites are located in the drainage area southwest of WMA U. In addition, the modified asphalt ISB installed in 2022 has its own evapotranspiration stormwater collection basin to the west of WMA U. No change to document.	Accepted	Close	MCM
30.	Page 4-34 Lines 2-3	Text reads "Groundwater constituents of potential concern exist with mappable extent in the 200-UP-1 OU above the drinking water standard."	Clarify what "mappable extent" is and how it relates specifically to WMA-U.	Clarification.	Accept –Text will be revised as follows: "Groundwater COPCs that are above the drinking water standard exist in the 200-UP-1 OU near WMA U~~Groundwater constituents of potential concern exist with mappable extent in the 200 UP 1 OU above the drinking water standard~~.	Accepted	Close	CDG
31.	Page 4-34 (**Step 1** continuing from Pg. 4-33)	The text reads "Groundwater constituents of potential concern exist with mappable extent in the 200-UP-1 OU above the drinking water standard." What is the mappable extent of these CPOC's within WMA-U, specifically? Is it known?	Clarify the CPOC's of mappable extent within WMA-U. Or clarify if the mappable extent of CPOC's within the 200-ZP-1 OU are for potential impact (or migration potential) to WMA-U groundwater.		See response to comment #30.	Accepted	Close	JAR
32.	Page 4-36 Section 4.6 Conceptual Exposure Models for Fate and Transport Evaluation	"A qualitative understanding of conceptual exposure models used to evaluate risks to human health and the environment for Central Plateau waste sites, UPRs, and similar contaminants within the surface soil and the vadose zone located at OUs and SST System WMAs is provided in Section 2.1 of DOE/RL-2019-46." Section 2.1 of DOE/RL-2019-46 does not offer a complete qualitative understanding of conceptual exposure models used to evaluate risks to human health and the environment. A more complete, but not exhaustive, understanding is found by reading Sections 2.1 ***and*** 2.2. Although beyond the scope of this current review, there are errors in DOE/RL-2019-46. In	Please expand quoted text to include reference to sections 2.1. and 2.2, and references linked therein.	Clarity of referenced documents.	Accept – Text will be revised as follows: "A qualitative understanding of conceptual exposure models used to evaluate risks to human health and the environment for Central Plateau waste sites, UPRs, and similar contaminants within the surface soil and the vadose zone located at Ous and SST system WMAs is provided in Section 2.1 and 2.2 of DOE/RL-2019-46."	GWP (7-8-2026): Accept.	Close (7-8-2026)	GWP

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		particular, in Section 2.1.1," Health Exposure Scenarios" are NOT described in Section 2.2.2.1. They are described in 2.2.1.1.						
33.	Page 4-38 Section 4.8 Conceptual Ecological Exposure Model Figure 4-7	Figure 4.7 is incomplete and missing pathways for soil biota, invertebrates, and plants (missing X or x) in some cases. For example, aquatic insects in pools (standing water, ephemeral or vernal pools) ingest water along with food. Also soil dwelling insects (collembola and their foods), and herbivorous insects eating emergent plants from standing water pools.	Incomplete and missing pathways in referenced document: CHPRC-01311, *Tier 2 Risk-Based Soil Concentrations Protective of Ecological Receptors at the Hanford Site*, Rev. 2. Add a note saying that CHPRC-01311 may need revision to reflect the complete WMA U ecosystem.	Complete transparency with all possible biotic and abiotic interactions within the WMA U ecosystem.	Partially accept. Standing water can be present on the Hanford Site. However, exposure of aquatic plants and insects from contaminated standing water is minimal due to two key factors: their inherently temporary nature (wet only during winter and spring, and dry during the summer and fall) and considerable distance from U Tank Farm. Most invertebrate species are consumed by aquatic species such as fish which do not reside in standing water. Terrestrial receptors such as birds and small mammals may forage and ingest contaminated invertebrate species, but consumption would be minimal since they are not a primary food source due to the pool's temporary nature. The long distance between these pools and the waste site significantly reduces the likelihood of contaminant transport via surface runoff, groundwater flow, or atmospheric deposition. Given these spatial and temporal buffers, the potential for adverse ecological impacts from exposure to standing water, including vernal pool, is noted as complete but insignificant in the updated CSM (Figure 4-7). The ecological risk assessment for WMA U will use the same methodologies performed for WMA C (RPP-RPT-58329, Rev. 3) and WMA A-AX (RPP-ENV-64037, Volume 3). However, based on the comments, Figure 4-7 will be updated as suggested above.	GWP (7-8-2026): There are a number of potentially incorrect statements in the Permittee Response: *Exposure is not "inherently minimal" since many soil invertebrates (e.g., fairy shrimp) are adapted to live out their entire life cycle in the short period of time that vernal/ephemeral pools exist. *What studies show that any ephemeral pools are a "considerable distance" from U Tank Farm? *The statement "Most invertebrate species are consumed by aquatic species such as fish…" is completely incorrect. *The statement "Terrestrial receptors such as birds and small mammals may forage and ingest contaminated	Open (7-8-2026)	GWP

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						invertebrate species, but consumption would be minimal since they are not a primary food source due to the pool's temporary nature." is generally false since invertebrates that inhabit ephemeral pools lay desiccation resistant eggs that can be a food source for birds and small mammals. *For the statement ". The long distance between these pools and the waste site significantly reduces the likelihood of contaminant transport via surface runoff, groundwater flow, or atmospheric deposition." What ephemeral pool census data do you cite? *For the statement "Given these spatial and temporal buffers, the potential for adverse ecological impacts from exposure to standing water, including vernal pool, is noted as complete but insignificant in the updated CSM (Figure		

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						4-7).", the Figure 4-7 is still incomplete. For example, Standing Water>Uptake by plants/soil biota > RECEPTOR (Herbivores and Insectivores) should not be left blank. Uptake by soil biota can amplify up the invertebrate food chain without the need for a vertebrate link.		
34.	Page 4-39 Section 4.7 Exposure Scenarios Bullet 4, Lines 30-34	"Exposure scenarios" is an incorrect header for this bullet point. What is being discussed here are 'Exposure Assessments' not 'Exposure Scenarios'. This can be verified by reading Sections 2.2.1.4 and 2.2.2.4 of the Central Plateau Inner Area Cleanup Principles and Parameters DOE/RL-2019-46 Rev. 0.	Please revise bullet appropriately.	"2.2.1.4 Exposure Assessment. The exposure assessment will address methods for…as described below." "2.2.2.4 Exposure Assessment. The exposure assessment will use exposure parameters, representative species, and transfer factors found in the most recent versions… as presented for the HHRA."	Partially Accept – Text will be revised to reference the human health exposure scenario subsections as follow: "The scenarios are defined in the principles and parameters document (DOE/RL-2019-46), Section 2.2.1.1 for human health exposure and Section 2.2.2.2 for ecological receptor exposure ~~Section 2.2.1.4 for human health risk, and Section 2.2.2.4 for ecological risk~~."	GWP (7-8-2026): Accepted.	Close (7-8-2026)	GWP
35.	Page 4-39 Section 4.7, Exposure Scenarios Line 33	Section 2.2.1.4 of DOE/RL-2019-46 does not define the human health risk.	Section 2.2.1 and its subsections within DOE/RL-2019-46 define human health risk. Please revise to correct.	Correction in reference to DOE/RL-2019-46.	See response to comment #34.	GWP (7-8-2026): Accepted.	Close (7-8-2026)	GWP
36.	Page 4-39 Section 4.7 Exposure Scenarios Bullet for Fate and Transport Lines 39-40	"…whereas the groundwater protection evaluation is described in the principles and parameters document (DOE/RL-2019-46)." WMA U does not currently have a landfill determination. Therefore, where DOE/RL-2019-46, *Central Plateau Inner Area Cleanup Principles and Parameters,* is inconsistent with WAC 173-303, Ecology will use WAC 173-303.	Revise any reference to groundwater protection and add that until WMA U gains certification of landfill closure it will follow the clean closure (unrestricted land use) regulations outlined in WAC 173-303-610(2)(a and b) Closure and Post Closure. Specifically, 610(2)(b)(i): "For soils, groundwater, surface water, and air, the numeric cleanup levels calculated using unrestricted use exposure assumptions according to the Model Toxics Control Act Regulations, chapter 173-340	WMA U does not currently have a landfill determination. Therefore, ECY-NWP will follow WAC 173-303-610(2)(a and b) Closure and Post Closure performance standards.	Partially accept – Text will be revised as follow: "…whereas the groundwater protection evaluation is described in the principles and parameters document (DOE/RL-2019-46) and Section 4.8 of this document." Also see response to comment #2 regarding closure performance standards. During groundwater protection evaluation, analyte-specific groundwater action levels are	GWP (7-8-2026): Same ECY Response arguments that applied to comment #2 above as well as ECY arguments in this comment under 'modification needed'	Open (7-8-2026)	GWP

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		For WMA U, Ecology will use WAC 173-303-610(2) Closure Performance Standard, and cited regulations therein for closure performance standards therein.	WAC as of the effective date or hereafter amended. Primarily, these will be numeric cleanup levels calculated according to MTCA Method B, although MTCA Method A may be used as appropriate, see WAC 173-340700 through 173-340-760, excluding WAC 173-340-745…"		selected by identifying the lowest of the applicable Federal (40 CFR 131) and State DWS (WAC 246-290-310, "Group A Public Water Supplies," "Maximum Contaminant Levels (MCLs) and Maximum Residual Disinfectant Levels (MRDLs).") and 2013 Standard Method B groundwater cleanup level calculated in accordance with 2013 WAC 173-340-720, "Ground Water Cleanup Standards".			
37.	Page 4-41 Section 4.8 Risk Assessment Approach Lines 10-11	In lines 10-11 "DOE is required to assess human and ecological risk under CERCLA, RCRA/HWMA, NEPA, and DOE orders.", there is no mention of state environmental regulations such as WAC 173-303 Dangerous Waste Regulations or WAC 173-340 Model Toxics Control Act. WA ECY has EPA State authorization under RCRA giving WA ECY primary responsibility of implementing the RCRA hazardous waste program. Therefore, WAC has primacy over RCRA/HWMA and, at the very least, should be part of DOE assessment requirements.	Revise to "…assess human and ecological risk for closure and post-closure under CERCLA, RCRA/HWMA, NEPA, WAC 173 as applicable, and DOE orders."	WAC 173-340-357 Quantitative risk assessment of cleanup action alternatives. (2) Human Health Risk Assessment. WAC 173-340-705 Use of Method B. (7) Remediation Levels WAC 173-340-708 Human health risk assessment procedures.	Lines 10-11 of Section 4.8 reference "RCRA/HWMA," i.e., both federal RCRA and the Washington State Hazardous Waste Management Act, pursuant to which the State promulgates and implements WAC 173-303. Provisions of WAC 173-303 in turn refer to the requirements of WAC 173-340, as applicable. For clarification, the following text was added to the 4th sentence in the first paragraph to address groundwater protection: ", in accordance with WAC 173 340 747, "Deriving Soil Concentrations for Groundwater Protection," Also see response to comment # 2.	GWP (7-8-2026): Accept. Comment was drafted without full understanding of the acronym HWMA.	Close (7-8-2026)	GWP
38.	Page 4-41 Section 4.8 Risk Assessment Approach Bullet 2	Bullet 2 states "A construction worker exposure scenario for radiological contamination below 15 ft bgs."	Please include a construction worker scenario for non-radiological contamination below 15 ft bgs. Alternatively, please explain why excluding a non-radiological contamination scenario for construction workers below 15 ft bgs is protective of human health and the environment.	DOE/RL-2019-46 lacks any non-radiological contamination scenario for construction workers below 15 ft bgs.	The exposure scenario for the construction worker is limited to radionuclides in Section 2.2.1.1 of DOE/RL-2019-46, *Central Plateau Inner Area Cleanup Principles and Parameters*. This scenario will be used to inform decisions about selection of corrective measure alternatives, specifically site controls and the length of time site access would need restrictions. DOE/RL-2019-46 is required to be included in WMA work plans and is fully enforceable as an essential part of the work plans under the TPA. DOE, EPA and Ecology approved the document to define a consistent approach for all Central Plateau Risk Assessments. Therefore, this analysis is consistent with DOE/RL-2019-46 and the construction worker scenario defined therein. Based on WAC regulation, WAC-173-340-740, "Unrestricted Land Use Soil Cleanup	GWP (7-8-2026): Accept. Draft comment did not consider that based on WAC regulation, WAC-173-340-740, "Unrestricted Land Use Soil Cleanup Standards"), the point of compliance for soil cleanup levels based on the direct contact pathway is defined as the zone extending from the ground surface to 15 ft below ground surface (bgs).	Close (7-8-2026)	GWP

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					Standards"), the point of compliance for soil cleanup levels based on the direct contact pathway is defined as the zone extending from the ground surface to 15 ft below ground surface (bgs). Pursuant to DOE/RL-2019-46, human health risks will be assessed using the outdoor worker exposure scenario for both radionuclides and chemicals within that standard point of compliance (0 to 15 feet bgs). A construction worker scenario is only used to evaluate radiological contamination below 15 ft bgs. Therefore, no non-radiological risk assessment was done for construction workers. Also see response to comment #2. No change to document.			
39.	Page 4-42, Section 4.8 Risk Assessment Approach Lines 9-11	At lines 9-11, text states: "The ELCR values within or exceeding this target range require a risk management decision that includes evaluating site-specific characteristics and exposure scenario factors to assess whether remedial action is warranted." This sentence is confusing. When only one hazardous substance is identified, the ELCR remedial action threshold value is 1 x 10^{-4}, but when more than one hazardous substance is identified, the ELCR remedial action threshold value is 1 x 10^{-5}? What "target range" is being referred to? If the range is 1 x 10^{-4} to 1 x 10^{-5} then add that to the sentence for clarification. Where the sentence says "exceeding" does that mean a number greater that 1 x10^{-4} when only one hazardous substance is identified? A number greater than 1 x 10^{-5} when more than one hazardous substance is identified? Will these ELCR value rules hold over the entire WMA U or specific parts?	Revision of the ELCR range value sentence for clarity and understanding. Where excess lifetime cancer risk (ELCR) is used in the first paragraph, add "cumulative" since it is used in the second paragraph and it is used throughout the rest of the document.	Ambiguous or unclear language. Confusion reduction.	Accept - The word "cumulative" will be added in front of "ELCR" as suggested.	GWP (7-8-2026): Accept.	Close (7-8-2026)	GWP

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40.	Page 4-42 Section 4.8 Risk Assessment Approach Lines 25-35	Text describes a screening level ecological risk assessment, ending the paragraph with Section 2.2.2 of DOE/RL-2019-46. Section 2.2.2 of DOE/RL-2019-46 states that Ecological Risk Assessments or ERAs "…will include explanations of how the methodology conforms to guidance and requirements identified in MTCA."	An explanation of how the WMA U ecological risk assessment methodology conforms to guidance and requirements in MTCA (WAC 173-340) is absent. The text, when referencing methodology that conforms to guidance and requirements identified in the MTCA, should cite specific parts, i.e., WAC 173-340-7492, "Simplified Terrestrial Ecological Evaluation Procedures" and WAC 173-340-7493, "Site-Specific Terrestrial Ecological Evaluation Procedures".	Adherence to DOE/RL-2019-46, a component of the TPA Action Plan, Appendix F, stipulations on Ecological Risk Assessments.	A brief summary of the ecological risk assessment approach is presented in this section. For clarification, the following text will be added: "The ecological risk assessment will be done in accordance with the procedures in WAC 173-340-7490, "Terrestrial Ecological Evaluation Procedures;" WAC 173-340-7491, "Exclusions from a Terrestrial Ecological Evaluation;" WAC 173-340-7492, "Simplified Terrestrial Ecological Evaluation Procedures;" and WAC 173-340-7493, "Site-Specific Terrestrial Ecological Evaluation Procedures."	GWP (7-8-2026): Accept.	Close (7-8-2026)	GWP
41.	Page 4-42 Section 4.8 Risk Assessment Approach Lines 28-30	Text states "The ecological receptors that will be evaluated include plants and wildlife for radionuclides (soil invertebrates not evaluated for radionuclides) and plants, soil invertebrates, and wildlife for nonradiological contaminants." No justification or reference cited for invertebrates not evaluated for radionuclides.	Please give a reason why invertebrates are not evaluated for radionuclides in text or give a reference to a document supporting this statement.	Radionuclides are absorbed and concentrated in invertebrates just as easily as in plants and vertebrates.	Accept - The following text will be added: "Soil invertebrates were evaluated for non-radiological analytes only because ecological risk-based radiological screening values are only available for vertebrate animals."	GWP (7-8-2026): There are decades of scholarly research studies focused on the effect of radiation on invertebrates, especially insects. These results of radiological effect studies on insects support derivation of "ecological risk-based radiological screening values" for a screening level ecological risk assessment here in Section 4.8. The permittee needs to explain what sources they are searching for radiological effects on insects so that ECY NWP can evaluate whether the permittee has conducted an exhaustive search. While WAC does not aim to regulate radiological materials, it does stipulate searching multiple toxicological resources when	Open (7-8-2026)	GWP

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						performing risk assessment studies and calculations.		
42.	Page 4-42 Section 4.8 Risk Assessment Approach Lines 37-38	Text states "As described in Section 2.2.1 of DOE/RL-2019-46, soil sample analytical results will be used to evaluate the exposure of human and ecological receptors to COPCs." Section 2.1.1 of DOE/RL-2019-46 does not address soil sample analytical results. Section 2.2.1.4 of DOE/RL Exposure Assessment, Development of Exposure Point Concentrations in Soil, explains how exposure point concentrations (EPCs) will be developed for soil using the data quality objective process.	Revise "2.2.1" to "2.2.1.4" in line 37.	Accurate citation of DOE/RL-2019-46 section that relates to exposure point assessment, exposure point concentrations, and soil samples.	Accept – Will revise text as suggested.	GWP (7-8-2026): Accept.	Close (7-8-2026)	GWP
43.	Page 4-43 Section 4.8 Risk Assessment Approach Line 2	Text states: "…EPA software ProUCL6 version 5.1 or later (https://www.epa.gov/land research/prouclsoftware)."	Link to EPA ProUCL yields a webpage that does not exist. Please recheck link (accessed 10-22-2025).	Website links must be usable.	Accept – Will update website link to: https://www.epa.gov/land-research/proucl-software	GWP (7-8-2026): Accept.	Close (7-8-2026)	GWP
44.	Page 4-43 Section 4.8 Risk Assessment Approach Lines 6-8	Text states "During the first evaluation, five types of screening—(1) Detection Screening, (2) Exclusion Criteria Screening, (3) Background Screening, (4) Distribution Coefficient (Kd) Screening, and (5) Derived Soil Concentration Protection of Groundwater Screening—will be performed to retain COPCs for groundwater protection evaluation." Five types of 'Screening' are mentioned. However, none of the five are defined in this WMA U Phase 2 RFI.	Add clear and complete definitions for the five screening types or alternatively, cite a document where those definitions are found.	Transparency and completeness. Reviewer understanding.	The framework for performing groundwater protection evaluation was developed in the following documents. (1) ECF-200IA1-20-0092, Rev. 2, *200-IA-1 Operable Unit Human Health Risk and Kd screen* (2) RPP-RPT-58329, Rev. 3, *Risk Assessment of Contaminated Soils and Vadose Zone Sediments at Waste Management Area C at the Hanford Site, Southeast Washington.* Each of the five steps will be defined in detail within the WMA U Phase 2 RFI document. No change to document.	GWP (7-8-2026): The Permittee cited "ECF-200IA1-20-0092, Rev. 2, 200-IA-1 Operable Unit Human Health Risk and Kd Screen". That document and a link to it in the Hanford AR needs to be incorporated into this Work Plan in the text in Section 4.8 and in the References Cited section. The Permittee needs to provide specific sections/figures within ECF-200IA1-20-0092 Rev.2 that help explain how the five types of screening called out in Section	Open (7-8-2026)	GWP

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						4.8 were derived. The Permittee cited "RPP-RPT-58329, Rev.3 Risk Assessment of Contaminated Soils and Vadose Zone Sediments at Waste Management Area C". That document and a link to it in the Hanford AR needs to be incorporated into this Work Plan in the text in Section 4.8 and in the References Cited section. Rev. 3A of RPP-RPT-58329 (10-6-2021) added an Appendix K (Rev.3 RCR from ECY NWP, e.g., Table K-1). ECY notes that there are unresolved (OPEN) comments within Table K-1 and questions the use of RPP-RPT-58329, Rev.3 as a reliable source of baseline risk assessment methodology. The Permittee ends their response with "Each of the five steps will be defined in detail within the WMA U Phase 2 RFI document." This statement is self-referential and misses the whole point of this comment: None of the five types of screening are defined.		

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45.	Page 6-93 Section 6.4.4 Exposure Area-Specific Risk Characterization	Sum of fraction (SOF) for radiological COPECs. The Hazard Quotient (HQ) is defined as an equation where nonradionuclides or radionuclides can be substituted into the numerator or denominator (units of microg/kg or pCi/g). Inclusion of the units pCi/g in the explanation implies that the same mathematical equation applies to HQ as well as SOF. ECY notes that the SOF is incidentally defined in footnote b of Table 5-2 (page 5-6) but the text could benefit from an obvious and complete treatment suggested above.	If HQ (units of microg/kg) is defined mathematically the same way as SOF (units of pCi/g), then say so here. If not, clearly define mathematically how SOF is calculated, much the same way as HQ was defined.	Complete explanation of terms for non-radionuclides and radionuclides.	Based on general guidance from ICRP-60, *Recommendations of the International Commission on Radiological Protection*; IAEA 332, *Effects of Ionizing Radiation on Plants and Animals at Levels Implied by Current Radiation Protection Standards;* and *Sources and Effects of Ionizing Radiation* (UNSCEAR, 2000), radiological doses to aquatic animals (including vertebrates and invertebrates) and to terrestrial plants and terrestrial animals (invertebrates and vertebrates) should not exceed 1.0 rad/day for terrestrial plants and 0.1 rad/day for terrestrial animals, respectively. Those acceptable dose limits were considered during the selection threshold values for radionuclides. Hence, the term SOF is limited to dose-based metrics, whereas the HI is the sum of fractions for non-cancer hazard. No change to the document.	GWP (7-8-2026): The actual material being referred to is on page 4-42, Section 4.8 Risk Assessment Approach., third paragraph. The "Sum of Fractions" is not defined in the document and not defined in Section 2.2.2 of DOE/RL-2019-46. Cite the original reference for this use of "Sum of Fractions" and add a definition here in the body of Section 4.8 to explain how it is similar to and different from the HQ.	Open (7-8-2026)	GWP
46.	Appendix D (SAP) Page D-14 Section D3.0 Line: 33	The text states: "Laboratory quality requirements are consistent with HASQARD (DOE/RL-96-68). The laboratories are evaluated under the DOE Consolidated Audit Program – Accreditation Program to DoD/DOE Quality Systems Manual (DoD/DOE 2021) requirements. HASQARD requirements, beyond those within the DoD/DOE Quality Systems Manual (DoD/DOE 2021), are also evaluated under the DOE Consolidated Audit Program – Accreditation Program. Laboratories are accredited by Ecology for the analyses performed." Section D5.1 of this report states that samples are delivered to 222-S Laboratory. Therefore, it is presumed that characterization will be performed at this facility. Please note that 222-S	Please include the schedule of the DOECAP-AP accreditation process for 222-S Laboratory.	Laboratory compliance.	222-S performs a subset of chemical analyses, specifically mercury, anions, and cyanide. The remaining chemical and radiological analyses are performed by GEL. Navarro-ATL (222-S) is in the process of working towards compliance with the current HASQARD revision 5. The following text updates will be made: "Laboratory quality requirements are consistent with HASQARD (DOE/RL-96-68). The laboratories are evaluated under the DOE Consolidated Audit Program – Accreditation Program (DOECAP-AP) to U.S. Department of Defense (DoD)/DOE Quality Systems Manual (QSM) requirements except for the 222-S Laboratory who is currently in the process of obtaining HASQARD accreditation. Although	Accept	Close	NSJ

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		Laboratory is not a DOECAP-AP Accredited facility, and therefore is not compliant with the requirements that are being set forth in this sampling and analysis plan. Although, 222-S Laboratory is accredited by Ecology, this auditing body does not include DOECAP-AP, HASQARD or QSM. Please provide 222-S Laboratory's schedule to become DOECAP-AP Accredited.			the 222-S Laboratory is accredited by Ecology, this auditing body does not currently include DOECAP-AP, HASQARD or QSM. HASQARD requirements, beyond those within the DoD/DOE QSM, are also evaluated under the DOECAP-AP. Laboratories are accredited by Ecology for the analyses performed."			
47.	Appendix D (SAP) Page D-14 Section D3.0 Line: 35	The text specifically states that DoD/DOE Quality Systems Manual (DoD/DOE 2021) requirements will be used for accrediting laboratories. Explain why the most current version of the manual is not being required. This would be the Department of Defense and Department of Energy Quality Systems Manual for Environment al Laboratories, Version 6.0, (December 13, 2023).	Revise the text to state that the 2023 version of DoD/DOE Quality Systems Manual will be used for accreditation.	Inaccurate reference.	Accept – reference will be updated as suggested.	Accept	Close	NSJ
48.	Appendix D (SAP) Page D-16 Section D3.1.4 Line: 31	The text states: "If the subsurface soil sample for VOA cannot be collected in the field, the soil sample and field transfer blank will be collected by 222-S Laboratory." Please explain the role of 222-S Laboratory in the sample collection and/or sample analysis process. Are the samplers 222-S Laboratory personnel or are the samplers personnel of the WMA U project contractor (e.g., H2C)? Please clarify.	See comment.	Clarification of roles.	222-S received the subsurface soil samples in three intact liners with one jar containing the material collected from the shoe. 222-S performs bulk density on full liners then extrudes the material, describes and photographs it, then composites the liners and shoe material into one sample. This material is subsampled and sent to GEL for analysis. A subsampled amount is retained at 222-S for particle size, mercury, anions, and cyanide analysis. For VOAs, if the sample cannot be collected in the field, the 222-S lab personnel will use other tools and methods in a controlled environment to extract the most representative sample for VOA possible.	Accept	Close	NSJ
49.	Appendix D (SAP) Page D-32 Section D4.2.1 Table D4-3	Method 9056 Ion Chromatography is missing sulfate from the list of constituents.	Include sulfate as a constituent of Method 9056 Ion Chromatography.	Analytical method accuracy.	Sulfate was eliminated as a constituent of interest in RPP-RPT-64723, Rev. 0, *Data Quality Objectives for Vadose Zone Characterization at Waste Management Area U* (Table 4-3). Total sulfur will be used to represent sulfur species in vadose zone soil.	Accept	Close	NSJ

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50.	Appendix D (SAP) Page D-33 Section D4.2.1 Table D4-3	The table includes: "1668 HRMS (PCBs)". For consistency with analytical information in Table D4-1, please provide a footnote stating that 1668 HRMS is used to analyze for dioxin-like PCB congeners.	Include a footnote stating that 1668 HRMS is used to analyze for dioxin-like PCB congeners.	Analytical method accuracy.	Accept – Will revise to "1668 HRMS (PCB Congeners).	Accept	Close	NSJ
51.	Appendix D (SAP) Page D-37 Section D4.3 Line:12	The text states: "The shoe material is placed in a 500-mL glass jar with a Teflon-lined lid and the three liners will each have a unique HEIS number." Given that this is the procedure that will be used to collect samples from Liner A, Liner B and Liner C, please explain the process that will be used to collect a QA/QC duplicate sample from a liner for VOA analysis.	See comment.	Sample QA/QC requirement.	Duplicate samples are only collected from surface samples, not from liners or a composited sample. The duplicate for VOC analysis is collected in the field at the time the surface sample is collected. The sample method used in the SAP (direct push with liners) is not conducive to subsurface duplicates due to limited sample volume, which would impact material availability for other analyses. No change to document.	Accept	Close	NSJ
52.	Appendix D (SAP) Page D-38 Section D4.3 Line: 6	The text states: "Due to limited space on the sample labels, it is not possible to list all constituents; however, the laboratory is provided all necessary information to complete analysis." Edit the text to state that all of the necessary information is listed on the chain-of-custody form, which will accompany the samples.	Edit the text as follows: "Due to limited space on the sample labels, it is not possible to list all constituents; however, the laboratory is provided all necessary information to complete analysis on the chain-of-custody form that shall accompany each sample."	Editorial.	Accept – Will edit as suggested.	Accept	Close	NSJ
53.	Appendix D (SAP) Page D-40 Section D5.1 Line:19	The text states: "Samples delivered to 222-S Laboratory are normally received from the field at door 13 of the Multicurie Section." This amount of specificity makes it seem as though 222-S Laboratory is the only laboratory that will be accepting samples for characterization. Please confirm if this is accurate. In comparison, H2C stated in a formal RCR response to an Ecology comment for the Phase 2	If GEL, or any other laboratory besides 222-S, is planned to be utilized for sample characterization, include a similar amount of specificity for their sample delivery process.	Laboratory clarification.	The characterization plan for WMA S-SX is the same for WMA U. 222-S ships samples to GEL under 222-S procedures in accordance with DOT regulations and GEL acceptance requirements. No change to document	Accept	Close	NSJ

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
		RFI/CMS/WP for WMA S-SX (RPP-PLAN-65977, Rev. 0): "222-S performs a subset of chemical analyses, specifically mercury, anions, and cyanide, The remaining chemical and radiological analyses are performed by GEL." Please confirm if this is also the characterization plan for WMA U. If GEL will be used to analzye WMA U samples, include a similar amount of specificity for that facility.						
54.	Appendix D (SAP) Page D-44 Section D5.1.2 Table D5-1	Method 9056 Ion Chromatography is missing sulfate from the list of constituents.	Include sulfate as a constituent of Method 9056 Ion Chromatography.	Analytical method accuracy.	See response to comment #49.	Accept	Close	NSJ
55.	Appendix D (SAP) Page D-45 and 46 Section D5.1.2 Table D5-1	For the Alternative Methods column, the table lists ICP/MS for Tin-126 and Americium-241. However, H2C stated in a formal RCR response to an Ecology comment for the Phase 2 RFI/CMS/WP for WMA S-SX (RPP-PLAN-65977, Rev. 0): "The analytical laboratory used nonstandard dilution ICP MS method for measuring americium-241 and tin-126. The standard analytical method for americium-241 and tin-126 are alpha-particle spectroscopy and gamma-ray spectroscopy, respectively. Therefore, all sample results for Am-241 and tin-126 are not of sufficient quality and therefore, are not considered to be usable for the purpose of supporting development of a WMA S-SX vadose zone soil RFI report and subsequent corrective measures study, as appropriate."	See comment	Inappropriate analytical method concern.	Accept – ICP/MS will be removed as the potential analytical method from those constituents.	Accept	Close	NSJ

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		That being said, explain why ICP/MS is still listed as an alternative method for these two radionuclides.						
56.	Appendix D (SAP) Page D-55 Section D6.2.2 Line:4	The text states: "Level C data validation will be performed on up to 20% of the soil sample results by a party independent of both the data collector and the data user." Therefore, the maximum data that will be validated is 20%. Include what the minimum amount will be.	Include the minimum amount of data that will receive Level C data validation.	Analytical data evaluation.	Accept – the following text will be added: "A minimum of 5% of the data will be validated."	Accept	Close	NSJ
57.	Appendix D (SAP) Page AttD-7 Section B1.0 Line: 13	The text states: "Up to 15% of these results will be verified and validated." Therefore, the maximum data that will be verified and validated is 15%. Include what the minimum amount will be.	Include the minimum amount of data that will be verified and validated.	Analytical data evaluation.	Accept – the following text will be added: "A minimum of 5% of the data will be validated."	Accept	Close	NSJ
58.	Entire Document	All referenced documents should be publicly available, if at all possible, and referenced Hanford documents and studies need to be in the Hanford AR	Ensure the following documents are in the AR: TFC-BSM-AD-C-01 TFC-ENG-DESIGN-C-25 RPP-PLAN-63698 RPP-RPT-500972 WHC-SD-WM-TI-648 HNF-SD-WM-ER-325 RPP-RPT-54915 PNNL-13858 PNNL-19702 BHI-01203 PNNL-13331 PNNL-13745 PNNL-13688 WHC-SD-EN-TI-216 GJO-97-1-TAR WHC-SD-WM-ER-352 PNNL-12039 ARH-CD-610B DOE-RL-96-32-01 HNF-SD-WM-ER-352 PNL-7336 GJ-HAN-33 PNL-4688	Record Keeping	There are varying responses for each document listed, as identified below. The following two documents are associated with the document release and information clearance process and are not referenced in the document itself. The links do not need to be provided (i.e., no change to work plan): TFC-BSM-AD-C-01 TFC-ENG-DESIGN-C-25 For RPP-PLAN-63698, the AR link is to the transmittal letter, and the subject document is attached to the letter. No change to work plan. AR links to Rev. 0 and 1 of RPP-RPT-50097 were verified as present and correct. Rev. 2 of this report does not exist. (i.e., no change to work plan). The links for the following documents are to publicly available websites (e.g., Hanford, PNNL, OSTI, NRC) and do not need to be added to the AR (i.e., no change to work plan):	I agree document associated with document release are not supporting of the plan and I retract my request for: TFC-BSM-AD-C-01 and TFC-ENG-DESIGN-C-25 I also agree RPP-RPT-50097 is the document referenced and is in the AR, and retract my request for RPP-RPT-500972 The rest of the documents should be placed on the AR as durable copies should	Open	JHD

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			ARH-CD-222 PNNL-15160 PNNL-14242 HAN-62372-DEL WHC-SD-M-ER-352 HLMI-PRO-LA-51278		HNF-SD-WM-ER-325 RPP-RPT-54915 PNNL-13858 PNNL-19702 BHI-01203 PNNL-13331 PNNL-13745 PNNL-13688 GJO-97-1-TAR WHC-SD-WM-ER-352 PNNL-12039 ARH-CD-610B DOE-RL-96-32-01 HNF-SD-WM-ER-352 PNL-7336 PNL-4688 PNNL-15160 PNNL-14242 The AR links to the following documents were verified as present and correct (i.e., no change to work plan): WHC-SD-WM-TI-648 WHC-SD-EN-TI-216 As noted on work plan pages B-19 and D-62, an excerpt from GJ-HAN-33 is provided in Attachment B of the work plan on page AttB-18 and does not need to be added to the AR. As noted on work plan pages B-18 and D-58, an excerpt from ARH-CD-222 is provided in Attachment B of the work plan on page AttB-22 and does not need to be added to the AR. As noted on work plan page B-19, an excerpt from HAN-62372-DEL is provided in Attachment B of the work plan on page AttB-6 and does not need to be added to the AR. HLMI-PRO-LA-51278 reference will be removed from the document. The text will be updated to state “in accordance with internal 222-S Laboratory procedures”	outside hosts no longer maintain them for you, or provided to Ecology on a schedule if they are “internal documents”.		