

MEETING NOTES

Waste Management Area C Hanford Federal Facility Agreement and Consent Order Action Plan Appendix I Performance Assessment

MEETING DATE: January 13, 2016

LOCATION: 2440 Stevens Center Place, Richland, WA

ATTENDEES:

Alaa Aly (CHPRC)	Jeremy Johnson (DOE-ORP)	Beth Rochette (Ecology)
Jim Alzheimer (Ecology)	Matt Kozak (INTERA)	Paul Rutland (WRPS)
Ryan Beach (DOE-ORP)	Sunil Mehta (CHPRC)	Kristin Singleton (WRPS)
Marcel Bergeron (WRPS)	Dan Parker (WRPS)	Eileen Webb (Freestone)
Joe Caggiano (Ecology)	Gary Pyles (DOE-ORP)	Cheryl Whalen (Ecology)
Damon Delistraty (Ecology)	Julie Robertson (Freestone)	Jerry Yokel (Ecology)

BACKGROUND INFORMATION: The meeting was one of a series of status meetings held to promote Ecology, DOE, and WRPS discussion about the development of the *Hanford Federal Facility Agreement and Consent Order* (HFFACO) Action Plan Appendix I performance assessment (IPA) for Waste Management Area (WMA) C. Lists of any identified expectations, agreements, and actions (including the status of any actions) are documented in the meeting notes.

PURPOSE OF MEETING: The purpose of this meeting was to update the status of the development of the WMA C HFFACO IPA and to describe the four separate components of the IPA.

STATUS OF DOE O 435.1 Performance Assessment (PA) REVIEW: Mr. Beach stated that the U.S. Department of Energy (DOE) Low-Level Waste Disposal Facility Federal Review Group (LFRG) review will be led by Ms. Sherri Ross, from the Savannah River Site. The LFRG review of the DOE O 435.1 PA (the analysis that evaluates the impacts from radioactive constituents in waste residuals that will be left in closed WMA C tanks) is scheduled to begin January 27, 2016 and conclude by April 2016 following a series of videoconferences and a site visit by the LFRG. The site visit is tentatively scheduled for later March. Mr. Beach anticipates addressing LFRG comments through May and issuing the Rev. 0 DOE O 435.1 PA in September 2016. Mr. Beach stated that Ms. Ross has been provided contact information for Washington State Department of Ecology (Ecology) for future communications regarding the PA.

DESCRIPTION OF WMA C IPA COMPONENTS: Mr. Bergeron provided a hand-out identifying four components that comprise the overall WMA C IPA. Details about each component were described in a PowerPoint® presentation (Attachment). The handout is included as slide 2 of the PowerPoint®¹ presentation. Two of the four WMA C IPA components support evaluation of landfill closure of tanks and ancillary equipment containing residual inventory. The other two components support evaluation of RCRA corrective action for contaminated soil. The WMA C IPA components are organized as follows:

- Components supporting evaluation of landfill closure of tanks and ancillary equipment containing residual inventory:
 - DOE O 435.1 PA (RPP-ENV-58782)
 - RCRA Closure Analysis (RPP-ENV-58806)

¹ PowerPoint® is a registered trademark of Microsoft Corporation.

- Components supporting evaluation of RCRA corrective action for contaminated soil:
 - Baseline Risk Assessment (RPP-RPT-58329)
 - Analysis of Past Leaks (document number not yet assigned).

DOE O 435.1 Performance Assessment: This document will satisfy DOE O 435.1 requirements for analysis of the performance of the proposed landfill closure of WMA C. The PA will evaluate the future dose impacts associated with radioactive contaminants in residues that will remain in tanks and equipment after closure of WMA C. Mr. Bergeron noted that one of the PA appendices directly compares impacts to groundwater predicted by the site-specific model used for the PA against the results predicted in the *Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington* (TC & WM EIS; DOE/EIS-0391). This appendix shows that both models predict comparable results for the impact of iodine-129 on groundwater. As noted earlier in the meeting, DOE expects Rev. 0 of this document to be issued in September 2016.

RCRA Closure Analysis: The RCRA Closure Analysis evaluates future risks and hazard impacts associated with a modeled release of non-radioactive/hazardous constituents that will remain in tanks and equipment after closure of WMA C. This document compares residual contaminant concentrations to regulatory clean-up standards to identify a subset of contaminants to incorporate into the risk modeling. Although the document focuses on hazardous constituents, it will also provide a summary of risks associated with radioactive constituents.

Mr. Bergeron indicated that the PA will evaluate groundwater and air pathways and include the inadvertent intruder scenario. The RCRA Closure Analysis will evaluate only the groundwater path, and a tap water scenario is included. Beth Rochette asked whether additional scenarios driven by the *Model Toxics Control Act—Cleanup* (MTCA; WAC 173-340) will be discussed in the RCRA Closure Analysis, and Dr. Aly confirmed that they will be.

Baseline Risk Assessment: Revision 0 of the Baseline Risk Assessment (*Baseline Risk Assessment for Waste Management Area C*, RPP-RPT-58329) was released in January 2015. The Rev. 0 Baseline Risk Assessment evaluates risks associated with past WMA C releases of hazardous constituents to the groundwater using the MTCA fixed three-phase partitioning model (WAC 173-340-747). This document is under revision to address Ecology comments and to incorporate additional information. Revision 1 will evaluate risks associated with past WMA C releases of radioactive and hazardous constituents to groundwater and soil, using site-specific models developed for the DOE O 435.1 PA effort. Mr. Bergeron anticipates release of Rev. 1 in September 2016. The Baseline Risk Assessment informs the WMA C facility investigation report and corrective measures study.

Analysis of Past Leaks: This analysis will evaluate impacts from past leaks and losses of radioactive and hazardous constituents from WMA C. The effort will use the DOE O 435.1 PA model as the base case as well as alternative geologic models (e.g., more heterogeneous vadose zone conditions). In addition, a number of model input variables will be adjusted in various model runs to provide a range of results for consideration. Initially focusing on groundwater concentrations and arrival times, the effort will identify whether particular modeling cases and modeled variables will provide results that approximate conditions actually seen in the natural environment. The results of the Analysis of Past Leaks will be used to project future development of plumes and will be incorporated into Rev. 1 of the Baseline Risk Assessment.

Additional Discussion: Mr. Bergeron reported that all four volumes of the IPA will be available for Ecology review at the end of September 2016. He added that DOE intends to develop an additional road map document to describe the four components of the IPA and how the components relate to each other. The intent is for the executive summary to include discussion of the human health and environmental impacts from both radioactive and hazardous constituents at WMA C.

Ecology asked which IPA components address risk to ecological receptors from radioactive contaminants. Dr. Aly stated that the DOE O 435.1 PA addresses radioactive contaminant impacts on humans only and that analysis of bio intrusion into the facility is not required; however, the Baseline Risk Assessment will address risk to ecological receptors from radioactive constituents in the top 15 feet below ground surface without a barrier.

EXPECTATIONS, AGREEMENTS, AND ACTIONS: Refer to the tables below.

NEXT MEETING: Ms. Robertson stated that the December 2, 2015 WMA C IPA meeting notes were with Ecology for review. The next meeting was tentatively set for February 18, 2016 to review DOE O 435.1 PA model sensitivity cases.

Ryan E. Beach
DOE Project Manager (print)

Ryan E Beach
DOE Project Manager (signature)

3/28/16
Date

M. Dubois
Ecology Project Manager (print)

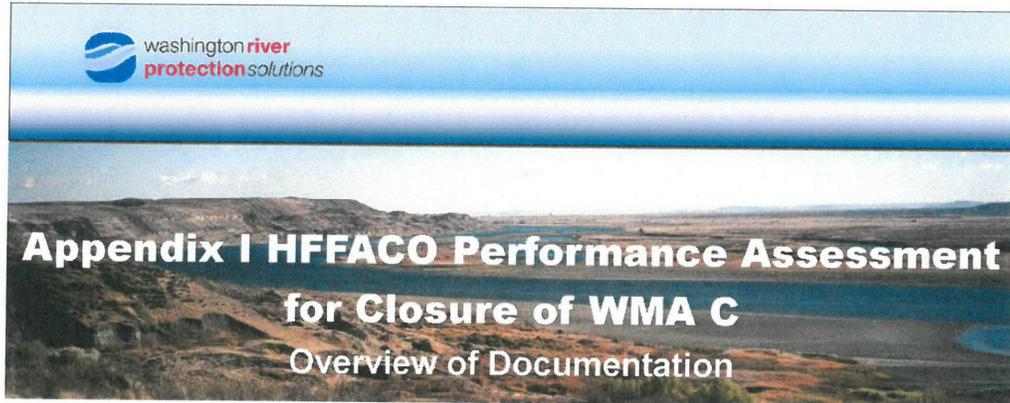
for Jeff LYON
Ecology Project Manager (signature)

3/29/16
Date

DATE	AGREEMENTS
12/02/2015	If WMA C performance assessment modeling results for analysis of past leaks do not align with historic observations, the basis of estimates of past release event timing, volumes, and inventories will need to be re-evaluated. DOE will involve Ecology in the development of any changes to the inventory information that might be used in subsequent modeling.

ACTIONS			
Action Number	Actionee	Description	Status
2015-12-02-1	Marcel Bergeron	At the next meeting, review the general content of and major differences between the various components of the Appendix I PA.	Completed at the 1/13/2016 meeting.

Attachment (8 pages)
Presentation on Appendix I PA for Closure of WMA C



Marcel Bergeron

Sunil Mehta
Matt Kozak
Alaa Aly

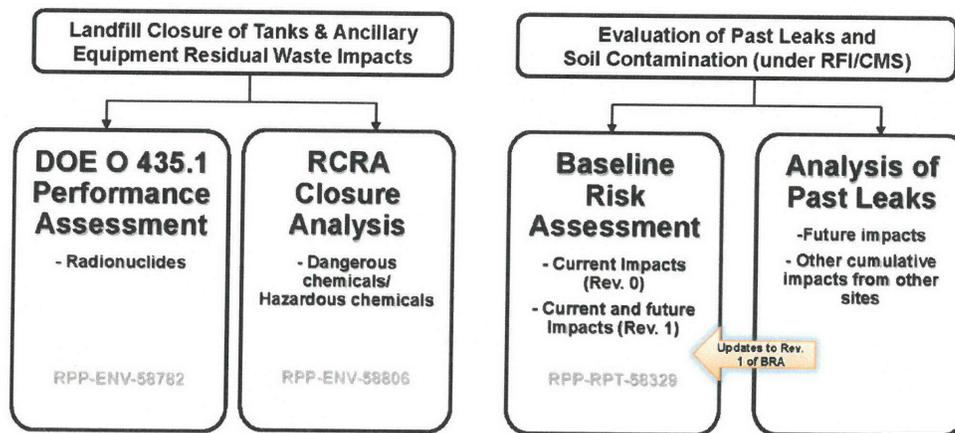


January 13, 2016

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HFFACO Appendix I Performance Assessment (IPA)

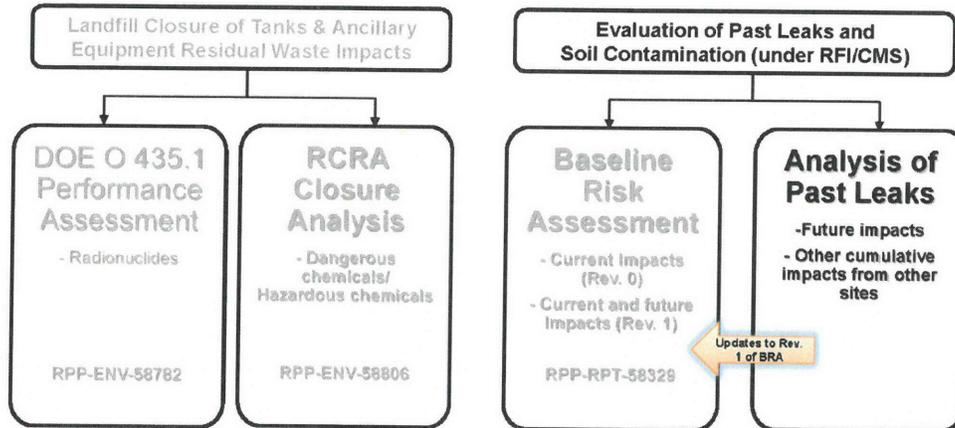


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Attachment (8 pages)
Presentation on Appendix I PA for Closure of WMA C



Analysis of Past Leaks Document



- Evaluates radiological and hazardous chemical impacts from past leaks and losses

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General Approach to Past Leaks Analysis

- **Constrain model inputs using data for groundwater plumes and soil inventories**
 - Leak Assessment and Soil inventory reports
 - Characterization data provided in RFI
 - Annual groundwater monitoring report
 - Analysis of groundwater inventories at WMA C within Remedial Investigation for BP-5 Operable Unit
- **Determine ranges of model assumptions and inputs that are consistent with these data**
 - Initial focus on groundwater concentrations and arrival times
 - Focus on data when flow is generally south and southeast

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Attachment (8 pages)
Presentation on Appendix I PA for Closure of WMA C



Calculation Cases

- **WMA C residual waste PA model and alternative geological models**
- **Multiple calculation cases consistent with the groundwater data**
 - Recharge (natural and anthropogenic)
 - Leak inventories and volumes
 - Vadose zone properties and geological models
 - Saturated zone properties
- **Use the calculation cases to project the future development of the plumes**

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Analysis of Past Leaks Outline

- **Introduction:**
 - Intent and scope of past leaks analysis
- **Background:**
 - A recap of what we know about the past leaks from:
 - Leak assessment and soil inventory reports
 - Information from Phase 2 RFI/CMS
 - Groundwater monitoring
 - Assessment of groundwater information at WMA C in BP-5 RI
- **Features for Analysis:**
 - A summary of what features we are going to look at, why, and what information we hope to get from it.

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Presentation on Appendix I PA for Closure of WMA C



Analysis of Past Leaks Outline

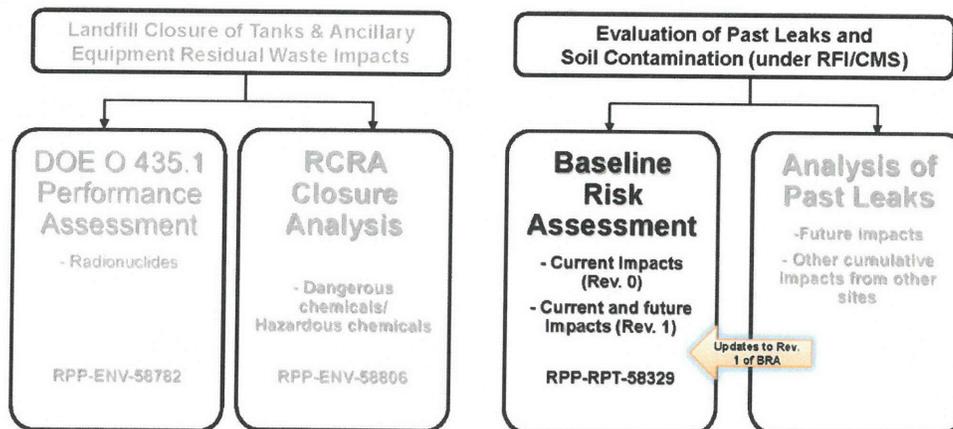
- **Summary of Analysis Cases**
 - Recharge (natural and anthropogenic)
 - Leak inventories and volumes
 - Vadose zone properties and geological models
 - Saturated zone properties
- **Forward projection of past leaks :**
 - Run a range of model cases forward to evaluate peak concentrations
 - Compare leak impact results with impacts from tank residuals
- **Potential impacts at WMA C from other upgradient sources:**
 - Information provided from BP-5 RI
- **Conclusions and recommendations:**
 - Putting the results in context with respect to what it means for near-term and long-term impacts at WMA C

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Baseline Risk Assessment Document



- Evaluates radiological and hazardous chemical impacts from past leaks and losses

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Attachment (8 pages)
Presentation on Appendix I PA for Closure of WMA C



Updates to BRA

- **RFI review updates**
 - Responses to comments provided as a part of the RFI review
- **Groundwater protection pathway:**
 - Range of potential impacts from simulated past leaks on groundwater
 - Future predictions for GW contamination

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Updates to RFI

- **RFI Nature and Extent**
 - Summary of past leaks results:
 - Range of existing contamination in the vadose zone
 - Range of mass/activity flux rates into groundwater
- **Summarize updates to BRA based on previous comments**
- **Summarize BRA results – Groundwater protection pathway:**
 - Range of potential impacts from past leaks on groundwater
 - Future predictions for VZ and GW contamination

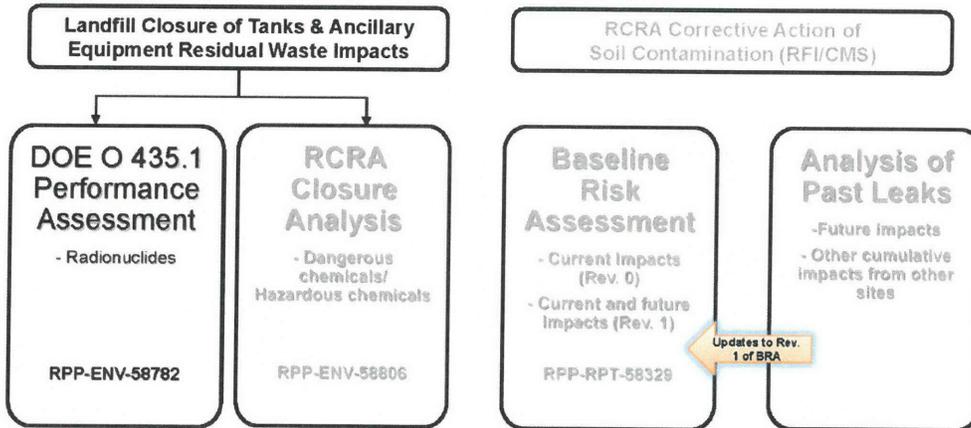
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DOE O 435.1 PA Document



- Evaluates radiological dose impacts from release of radionuclides

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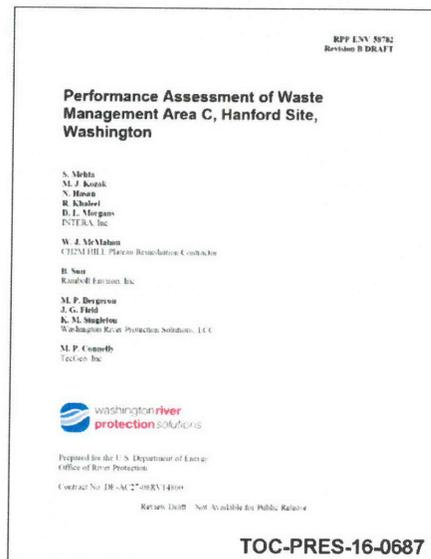
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Presentation on Appendix I PA for Closure of WMA C



DOE Order 435.1 Appendices

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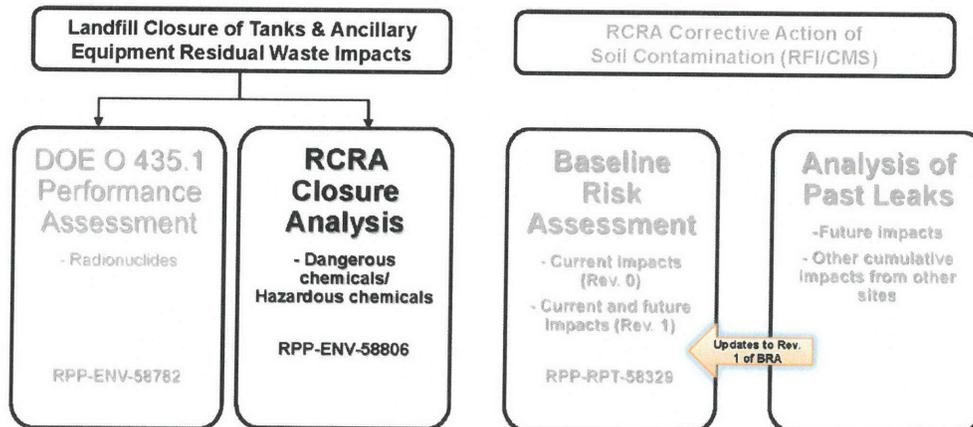
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RCRA Closure Analysis Document



- Evaluates Risk and Hazard Impacts from Release of Hazardous Chemicals

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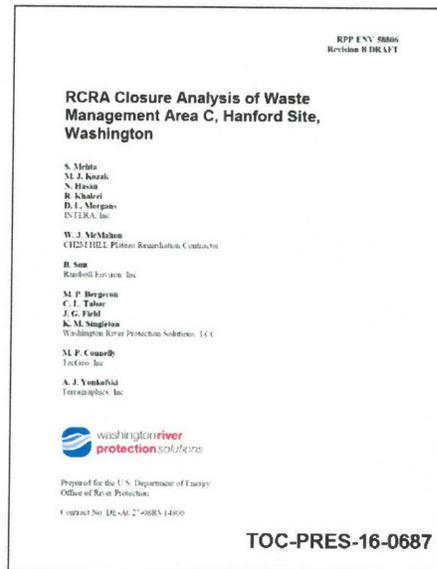
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RCRA Closure Analysis Appendices

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RCA Document: Only difference is Appendix E. "Tables of Residual Contaminant Concentration Comparison to Washington State Cleanup Standard" **TOC-PRES-16-0687**