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MEETING NOTES

Waste Management Area C RCRA Facility Investigation Report

MEETING DATE: February 23, 2016

LOCATION: 3110 Port of Benton Blvd., Richland, WA

ATTENDEES:

- | | | |
|----------------------------|-----------------------------|--------------------------|
| Alaa Aly (CHPRC) | Mahmudur Rahman (INTERA) | Kristin Singleton (WRPS) |
| Ryan Beach (DOE-ORP) | Anna Radloff (WRPS) | Maria Skorska (Ecology) |
| Marcel Bergeron (WRPS) | Julie Robertson (Freestone) | Cindy Tabor (WRPS) |
| Damon Delistraty (Ecology) | Beth Rochette (Ecology) | |

BACKGROUND INFORMATION: The meeting was called to promote continued Ecology, EPA, DOE, and WRPS discussion about comments associated with and revision of RPP-RPT-58339, Rev. A Draft *Phase 2 RCRA Facility Investigation Report for Waste Management Area C* (WMA C RFI Report). The report was submitted to Ecology and EPA in December 2014 to meet *Hanford Federal Facility Agreement and Consent Order* (HFFACO) Milestone M-045-61. Ecology's February 23, 2015 response to the RFI report submittal (Letter 15-NWP-37) noted that holding "a recurring meeting to discuss statements, regulatory interpretations, and the process steps for obtaining an agreeable RFI/CMS process for WMA C Closure" would be beneficial. Ecology comments on the WMA C RFI Report and supporting documents were transmitted on July 7, 2015, "Department of Ecology's (Ecology) Completed Review of Phase 2 RCRA Facility Investigation Report for Waste Management Area C, RPP-RPT-58339, Revision A Draft" (15-NWP-120).

Lists of expectations, agreements, and actions (including the status of any actions) are documented in the meeting notes.

PURPOSE OF MEETING: This meeting was called to discuss select comments on the WMA C RFI Report and RPP-RPT-58329, Rev. 0, *Baseline Risk Assessment for Waste Management Area C* (BRA).

STATUS OF PRIOR MEETING NOTES: Ms. Robertson reported that notes from the January 7, 2016, meeting had been entered into the HFFACO Administrative Record. Notes from the January 21, 2016, meeting were signed at this February 23, 2016, meeting.

DISCUSSION OF SELECT ECOLOGY COMMENTS ON WMA C RFI REPORT AND BRA: The meeting participants reviewed two sets of Ecology comments and proposed responses on the WMA C documents. One set of comments/responses had previously been discussed in meetings November 18, 2015 and January 7, 2016. These comments were also the topic of an email exchange between Ecology and WRPS:

- Email from Cynthia L. Tabor, WRPS, "Updated BRA and RFI/BRA comments," dated February 2, 2016, containing updated responses to comments discussed during meetings held November 18, 2015 and January 7, 2016,
- Email from Cynthia L. Tabor, WRPS, "Updated BRA and RFI/BRA comments," dated February 22, 2016, which provides updated responses to the same comments contained in the February 2, 2016 email, based on intermediate feedback emailed by Ecology on February 18, 2016. Note that the email from Damon Delistraty (ECY), "Re: Updated BRA and RFI/BRA comments," dated February 18, 2016, is included within the February 22, 2016 email.

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The other set of comments and responses discussed at this meeting had not been discussed in prior meetings but had also been the topic of an email exchange before this meeting:

- Email from Cynthia L. Tabor, WRPS, "Next Set of WMA RFI Comments," dated February 3, 2016, containing an initial set of proposed responses to select Ecology comments on the RFI report and BRA.
- Email from Cynthia L. Tabor, WRPS, "Next Set of WMA RFI Comments," dated February 22, 2016, which provides updated responses to the same comments contained in the February 3, 2016 email, based on intermediate feedback from Ecology that is captured in this February 22, 2016 email from Ms. Tabor.

Each of the four emails listed above has been entered into the HFFACO Administrative Record.

A summary of the discussion of the comments, emailed clarifications to the comments, and proposed responses is provided below. Additionally, a summary of the discussion regarding comments for which proposed responses were tentatively accepted or partially accepted is attached to these meeting notes in tabular format. Note that the fourth column in this table refers, as needed, to the relevant emails described above.

- The attendees tentatively agreed to the proposed resolutions for the following comments pending their incorporation into the revised WMA C RFI Report and BRA:
 - WMA C RFI Report: Damon 15, 18, 21, 31
 - BRA: Damon 6, 9, 15, 40, 53, 57.
- The attendees tentatively agreed to the proposed resolution for BRA Damon 12, pending modification and Ecology review of the revised Figure 3-1.
- The attendees tentatively agreed to the following regarding BRA Damon 38: The proposed response is divided into five sections. Ecology tentatively agreed to the proposed resolutions for BRA Damon 38 (4) and BRA Damon 38 (5) pending incorporation into the revised documentation. The parties tentatively agreed to the following changes to the proposed resolutions for the remaining sections of BRA Damon 38:
 - BRA Damon 38 (1): Add the words of the proposed response to the text of the BRA.
 - BRA Damon 38 (2): Rephrase the proposed rewrite to state "However, it is less than the arsenic concentration given in the Department of Ecology's Memo related to arsenic soil CUL at Hanford." (06-11-2013)
 - BRA Damon 38 (3): modify Table 3-14 to add a column for the basis for the EPC, to parallel Table 3-2.
- The attendees tentatively agreed to the following changes to proposed resolutions, pending incorporation into the revised WMA C RFI Report and BRA:
 - WMA C RFI Report Damon 6, BRA Damon 5, and BRA Damon 45: Additional clarification is needed regarding elimination of constituents deeper than 15 ft due to lack of toxicity data. Add footnote to supporting document *Evaluation of Phase 2 Characterization Data at Waste Management Area C* (RPP-RPT-57218) Table 8-1 and explanatory text (e.g., in Section 3.5 of the BRA) regarding the implications of the lack of toxicity data on risk uncertainties.
- The attendees agreed to hold the following comments open:
 - WMA C RFI Report: Damon 8: The attendees tentatively agreed to the portion of the proposed resolution regarding dermal contact, pending incorporation into the documentation. However,

the parties agreed to hold this comment open until Ecology concerns about ingestion of contaminated groundwater are more fully addressed.

- WMA C RFI Report: Damon 33, Damon 34, Damon 35, Damon 38, Damon 39, Damon 40, Damon 41, Damon 42: Similar to WMA C RFI Report Damon 46 and 47 (as documented in WMA C RFI Report meeting notes from January 21, 2016), the attendees agreed to hold these comments open until DOE addresses the concerns reflected in the comments, regardless of whether those concerns are addressed in WMA C documentation or 200-BP-5 Operable Unit documentation.
- BRA: Damon 17: The attendees tentatively agreed to the portion of the proposed resolution regarding dermal contact, pending incorporation into the documentation. However, the parties agreed to hold this comment open until Ecology concerns about ingestion of contaminated groundwater are more fully addressed.
- The meeting attendees agreed to defer discussion of the following comments to future meetings primarily due to time constraints:
 - WMA C RFI Report: Damon 11, Damon 19, Damon 20, and Damon 45.
 - BRA: Damon 14, Damon 16, and Damon 18.

EXPECTATIONS, AGREEMENTS, AND ACTIONS: The attendees discussed an expectation expressed by Mr. Barnes in the January 21, 2016 meeting. The expectation is documented in the tables below. Separate tables below document agreements and actions. The attendees modified Action 2015-10-28-2 for clarification.

NEXT MEETING: Due to time constraints, there was no discussion of when to hold the next meeting.

Ryan E. Beach
DOE Project Manager (print)

Ryan E Beach
DOE Project Manager (signature)

5-02-16
Date

Michael W Barnes
Ecology Project Manager (print)

Michael W Barnes
Ecology Project Manager (signature)

5-02-16
Date

DATE	EXPECTATIONS
01/23/2016	1. Mr. Barnes expressed his expectation that if the revised WMA C RFI Report refers to 200-BP-5 documentation to address groundwater conditions, the 200-BP-5 remedial investigation report should first be finalized.

DATE	AGREEMENTS
04/15/2015	<p>1. Regarding references in RPP-RPT-58339, Rev. A Draft <i>Phase 2 RCRA facility investigation Report for Waste Management Area C</i> to RPP-PLAN-37243 <i>Phase 2 RCRA Facility Investigation/Corrective Measures Study Master Work Plan for Single-Shell Tank Waste Management Areas</i>:</p> <ul style="list-style-type: none"> • References in the draft RFI report are adequate as is and do not require modification. • The HFFACO milestone (M-045-58) associated with the Master Work Plan is complete. • It would be beneficial to continue discussion on the topics covered in the Master Work Plan.

ACTIONS (2 pages)			
Action Number	Actionee	Description	Status
2015-08-26-1	Cindy Tabor	Evaluate whether internet links to reference documents can be added to the RFI report.	In progress.
2015-10-28-1	Mike Barnes	Ms. Tabor, Ms. Radloff, Mr. Barnes, Mr. Caggiano, and Mr. Bergeron will work together to clarify what groundwater technical information Ecology needs to see in the RFI report. The parties will also identify whether that information is in 200-BP-5 documents, and if so, where.	In progress. The parties have been meeting to discuss the action.
2015-10-28-2	Ryan Beach	Develop a path forward for the groundwater integration approach.	In progress.
2015-10-28-3	Cindy Tabor	Regarding WMA C tank and soil inventory/leak information, WRPS/DOE will prepare a table with values to be used as the basis for corrective action decision making and will provide the basis information (e.g., reference documents) as footnotes/supporting information. Information in the table will be reviewed in a future meeting, the table incorporated into the meeting notes, and the notes entered into the HFFACO Administrative Record.	In progress. The soil inventory report (RPP-RPT-42294) is being revised. Mr. Lyon is reviewing proposed responses to his comments.
2016-01-07-1	Cindy Tabor	Email to Ecology the compiled responses revised as a result of discussions held in these recurring meetings. Suggested Ecology recipients: Delistraty, Rochette, Lyon, Barnes, Yokel.	In progress. Email sent to Ecology 2/2/16. Closed 2/23/16.
2016-01-21-1	Cindy Tabor/Julie Robertson	Identify and report back regarding where WMA C RFI Report provides information on the currently agreed-to RFI/CMS process.	Open. Ms. Robertson will email response to Mr. Caggiano.
2016-01-21-2	Cindy Tabor	Contact Jeff Lyon by email (copying DOE and Mike Barnes) to resolve ECY comments.	Open.

ACTIONS (2 pages)			
Action Number	Actionee	Description	Status
2016-01-21-3	Mike Barnes	Provide Jeremy Johnson and Cindy Tabor with recently developed information on integration of vadose zone and groundwater programs.	Completed 2/1/16. Closed 2/23/16.
2016-01-21-4	Ryan Beach	Provide Ecology comments WMA C RFI Report Beth 2, Damon 46, and Damon 47 (related to the WMA C Groundwater Screening Report RPP-RPT-58297, Rev. 0) to DOE-RL representatives for the 200-BP-5 Operable Unit.	Open.
2016-01-21-5	Ryan Beach	Track DOE-RL responses to Ecology comments related to groundwater (200-BP-5) and report back at future WMA C RFI Report meetings.	In progress.

Attachment (7 pages)
Select Ecology Comments on the WMA C BRA and RFI Report and Proposed Responses

Commentor	Item	Page #/ section # Line #	Comment & Basis/Justification	Doc	Chapter(s)	Notes	Response
Damon	6	P 3-4, S 3.1.2, L 3-5	<p>Eliminating nondetects is appropriate only if detection limits are sufficiently low (e.g., at established PQLs).</p> <p>Email from Damon Delistry on 2/18/16, Subject Re: Updated BRA and RFI/BRA comments <i>Damon BRA 6</i></p> <p>State in the text that the 37 COPCs (reported as not detected at MDLs that exceed required detection limits) are a source of uncertainty in the risk assessment.</p>	BRA		<p>02_23_16_C Response presented and Ecology concurrence obtained during WMA C RFI meeting. Originally presented 11-18-15 during WMA C RFI meeting with Ecology.</p>	<p>Concur with the statement. Therefore, the following text will be added for clarification:</p> <p>"Both human health risk-based screening levels and ecological screening values were considered during the selection of the detection limits achievable for each of the analytes evaluated. The results for WMA C Phase 2 RFI samples were reported to the laboratories' method detection limit (MDL). The MDL is the lowest concentration at which an analyte can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. If an analyte is not detected at a concentration greater than or equal to the MDL, it cannot be stated that the analyte is not present in the sample; but rather, with 99% certainty, the analyte is not present at a concentration greater than or equal to the MDL. Sampling results for 37 primary and secondary contaminants were reported as not detected at MDLs exceeding required detection limits listed in RPP-PLAN-38777."</p>
Damon	9	P 3-7, S 3.2.2.1, L 31-33	<p>Text notes that only contaminants in the vadose zone (UPRs or planned releases) and surface soils (past operations) are addressed in this BRA. However, Figure 3-1 also includes "potential retrieval leaks." Please reconcile. Clarify why contaminants in residual waste in tanks and ancillary equipment are excluded in the BRA.</p>	BRA	Might impact RFI 9	<p>02_23_16_C Response presented and Ecology concurrence obtained during WMA C RFI meeting. Originally presented 11-18-15 during WMA C RFI meeting with Ecology.</p>	<p>Concur. Five sources were identified for WMA C - Past Leaks, Potential Retrieval Leaks, Release from Residual Tank Waste, Release from Ancillary Equipment, and Wastes from nearby properties. Figure 3-1 will be updated by adding two additional sources identified above.</p>

Attachment (7 pages)
Select Ecology Comments on the WMA C BRA and RFI Report and Proposed Responses

Commentor	Item	Page #/ section # Line #	Comment & Basis/Justification	Doc	Chapter(s)	Notes	Response
Damon	12	P 3-9, Figure 3-1	<p>For transparency, Figure 3-1 should be labeled as human health conceptual exposure model and should present all exposure pathways (even if all are not evaluated). Therefore, in addition to soil ingestion and soil inhalation, MTCA (WAC 173-340) includes soil dermal contact and soil contaminants leaching to groundwater with subsequent ingestion of groundwater by residential receptors. Also, CERCLA includes soil contaminants leaching to groundwater with subsequent ingestion of groundwater by residential and tribal receptors or other subsequent uses (e.g., showering, irrigation of crops). Contaminated groundwater may also impact fish in the Columbia River which may be consumed by residential or tribal receptors.</p> <p>Email from Damon Delistry on 2/18/16, Subject Re: Updated BRA and RFI/BRA comments <i>Damon BRA 12</i></p> <p>The updated Figure 3-1 should be titled, "Human health conceptual exposure model." Footnote 2 applies to nonrad COPCs (not rads). Also, add contaminants transported from groundwater to surface water and sediment with subsequent ingestion of contaminated surface water, sediment, and fish by the WAC resident (unrestricted land use), CERCLA resident, and tribal receptors.</p>	BRA		<p>02_23_16_C Response presented and Ecology concurrence obtained during WMA C RFI meeting. Originally presented 11-18-15 during WMA C RFI meeting with Ecology.</p>	<p>Figure 3-1 will be revised. The title of the Figure 3-1 will be labeled as "Human Health Conceptual Exposure Model"</p> <p>Three types of exposure pathways - (1) Complete and Evaluated; (2) Complete, but not Evaluated; and (3) Incomplete, hence not Evaluated will be included in the updated Figure 3-1. The pathways listed in the comments will be included as completed by not evaluated. Text will be updated to state the reasoning for not evaluating those completed exposure pathways.</p>
Damon	15	P 3-13, S 3.2.1.4.2, L 7-8	<p>Dermal contact may also be evaluated for MTCA Method C industrial worker scenario (WAC 174-34-745[5][c][iii]).</p>	BRA		<p>02_23_16_C Response presented and Ecology concurrence obtained during WMA C RFI meeting. Originally presented 11-18-15 during WMA C RFI meeting with Ecology.</p>	<p>Under WAC 174-340-745[5][c][iii], dermal contact pathway is applicable for other hazardous substances based on modified MTCA Method C industrial worker scenario. This particular section of the WAC is only applicable when "the proposed changes to Equations 745-1 and 745-2 would result in a significantly higher soil cleanup level than would be calculated without the proposed changes". For WMA C, the risk assessment was only performed for the standard MTCA Method C industrial worker scenario; and no modification is proposed. Under MTCA Method C industrial worker scenario, dermal contact pathway is applicable for petroleum mixture hydrocarbon, which is not a contaminant of concern for WMA C. Therefore, dermal contact pathway was not evaluated. However, Figure 3-1 will be updated to show this pathway as completed but not evaluated.</p>

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Select Ecology Comments on the WMA C BRA and RFI Report and Proposed Responses

<i>Commentor</i>	<i>Item</i>	<i>Page #/ section # Line #</i>	<i>Comment & Basis/Justification</i>	<i>Doc</i>	<i>Chapter(s)</i>	<i>Notes</i>	<i>Response</i>
Damon	17	P 3-15, S 3.2.1.4.7, L 34-35	In addition to soil ingestion and soil inhalation, MTCA Method B unrestricted land use scenario includes soil dermal contact (WAC 173-340-740[3][c][iii]) and soil contaminants leaching to groundwater (WAC 173-340-747[4]) with subsequent ingestion of groundwater.	BRA		02_23_16_C_O Response presented and Ecology concurrence obtained on dermal contact and groundwater ingestion remains open during WMA C RFI meeting	<p>Concur. For comment related to dermal contact, the following text will be added to Section 3.2.1.4.7:</p> <p>Under WAC 174-340-740[c][iii], dermal contact pathway is applicable for other hazardous substances under receptor scenario based on Modified Method B soil cleanup levels. This particular section of the WAC is only applicable when “the proposed changes to Equations 740-1 and 740-2 would result in a significantly higher soil cleanup level than would be calculated without the proposed changes”. For WMA C, the risk assessment was performed for the standard MTCA Method B unrestricted land use receptor scenario; and no modification is proposed. Under standard MTCA Method B unrestricted land use receptor scenario, dermal contact pathway is applicable for petroleum mixture hydrocarbon, which is not a contaminant of concern for WMA C. Therefore, dermal contact pathway was not evaluated. Note: Groundwater ingestion issue remains open.</p> <p>During this BRA, an assessment referred to as the “protection of groundwater pathway” was performed as part of the WMA C BRA (section 3.5.11) to evaluate the potential impacts to groundwater from leaching of contaminants in contaminated soil through the vadose zone to the aquifer. However, risk due to subsequent ingestion of groundwater was not evaluated in this BRA. Groundwater within WMA C are a part of 200-BP-5 groundwater OU. Therefore, the ingestion of drinking groundwater pathway is evaluated as a part of 200-BP-5 RI (DOE/RL-2009-127, Draft A) report. Therefore, ingestion of groundwater pathway was not evaluated in this BRA report. Groundwater ingestion issue remains open based on 02/23/16 meeting.</p>

Attachment (7 pages)
Select Ecology Comments on the WMA C BRA and RFI Report and Proposed Responses

Commentor	Item	Page #/ section # Line #	Comment & Basis/Justification	Doc	Chapter(s)	Notes	Response
Damon	38	P 3-70, S 3.5.11, L 35-45	<p>This data evaluation should compare EPC with CUL (first bullet) or background concentration (second bullet). In the first bullet, text specifies “maximum detected concentration and EPC,” while in the second bullet, text specifies “maximum detected concentration.” EPC is the key metric which includes both max detect and 95UCL (Table 3-2).</p> <p>Email from Damon Delistry on 2/18/16, Subject Re: Updated BRA and RFI/BRA comments <i>Damon BRA 38</i></p> <p>The point of the comment is that EPC should be compared against both CUL and background. A COPC should be retained if EPC exceeds both CUL and background. Please clarify why sample size (n) for a given analyte/EA combination differs in Table 3-2 vs Table 3-14 ([shallow] vs [shallow+deep] samples?). Also, re arsenic for EA C, text (p. 3-72, line 13) states, “EPC is less than both concentrations.” However, Table 3-14 notes that EPC (11682 ug/kg)>3 phase model CUL (34 ug/kg) for arsenic at EA C. What is the basis of this EPC (11682 ug/kg)? Also, it is not clear how the 3 phase model result (34 ug/kg) is calculated for arsenic. MTCA/CLARC lists 2.92 mg/kg (2920 ug/kg) as the soil concentration to protect groundwater for arsenic. Text (p. 3-70, line 31) refers to ECF-HANFORD-10-0442, as the basis and calculations for soil concentrations protective of groundwater. However, the pdf file for this report somehow has the correct title page (ECF-HANFORD-10-0442), but the report body is actually ECF-HANFORD-10-0439 (soil concentration to protect surface water)....</p>	BRA		<p>02_23_16_C Response presented and Ecology concurrence obtained on during WMA C RFI meetings. Originally presented 11-18-15 during WMA C RFI meeting with Ecology.</p>	<p>NOTE: Concurrence obtained on parts 4 and 5 on 02-23-16.</p> <p>4. For inorganics, soil concentrations for groundwater protection are calculated using Equation 747-1 from the 2007 WAC 173-340-747. Based on CLARC database, MTCA Method B Groundwater cleanup criteria and Kd values for arsenic are 0.058 µg/L and 29 mL/g, respectively. Those values are used during the determination of arsenic soil concentration for groundwater protection. Instead of MTCA Method B groundwater CLU, CLARC database determined arsenic soil concentration for groundwater protection based on its corresponding background groundwater concentration of 5 µg/L.</p> <p>5. The ECF reference will be corrected.</p>
Damon	40	P 3-72, S 3.5.11, L 32-37	<p>The inference is that a “representative site-specific model” (presumably STOMP) will trump results of the MTCA three phase model in the case of CUL exceedences with the MTCA three phase model. Please clarify.</p>	BRA		<p>02_23_16_C Response presented and Ecology concurrence obtained during WMA C RFI meeting</p>	<p>The fate and transport model for the vadose zone and local groundwater aquifer around WMA C using STOMP will be used to complete this evaluation. This model was developed in support of the WMA C PA and provides a site-specific evaluation. Under the graded approach (DOE/RL-2011-50), site specific models are always preferred to generic evaluations. Results of this evaluation will be discussed in this report.</p>

Attachment (7 pages)
Select Ecology Comments on the WMA C BRA and RFI Report and Proposed Responses

Commentor	Item	Page #/ section # Line #	Comment & Basis/Justification	Doc	Chapter(s)	Notes	Response
Damon	53	P 4-11, S 4.4.1.1, L 38-42	<p>Text states, "Therefore, both dermal and inhalation exposure were assumed to be negligible." Re inhalation, this may not be true in burrowing animals for inhalation of VOCs (e.g., Gallegos et al, 2007 [ETC 26:1299-1303]; Carlsen, 1996 [Risk Anal 16:211-219]) and inhalation of metals (e.g., Bench et al, 2001 [ES&T 35:270-277]).</p> <p>Email from Damon Delistry on 2/18/16, Subject Re: Updated BRA and RFI/BRA comments <i>Damon BRA 53</i> Cite Gallegos et al (2007) and Carlsen (1996) in the new text to support inhalation exposure to VOCs by burrowing animals.</p>	BRA		<p>02_23_16_C Response presented and Ecology concurrence obtained during WMA C RFI meeting. Originally presented 11-18-15 during WMA C RFI meeting with Ecology.</p>	<p>Concur. Text will be updated as follows:</p> <p>"Inhalation is generally considered a relatively minor pathway for exposure relative to direct ingestion by wildlife of chemicals of concern. For example, the USEPA's Exposure factors and bioaccumulation models for derivation of wildlife Eco -SSLs, OSWER Directive 9285.7-55. Revised November 2005, did not use inhalation of soil particles in deriving the national ecological soil-screening levels, because exposure is accounted for by the soil-ingestion route. As stated in the comment, an evaluation of risk to receptors via the inhalation pathway may be warranted, in cases where VOCs are expected site chemicals and pathways of exposure are complete. One possible pathway for inhalation is the potential for volatilization of chemicals and exposure to burrowing animals in subsurface soils. However, methods and data necessary to calculate inhalation exposures are poorly developed (EPA/600/R- 93/187). Bench et al (2001), also noted olfactory bulb uptake in fossorial mammals affords a significant exposure route to manganese and cadmium in soils. However, methods for olfactory exposure and risk characterization are not well established. However, VOCs were not found to be elevated in general for shallow soils on the hanford Site Central Plateau, including WMA C. Similarly, manganese and cadmium are not significant Hanford Site contaminants that needed to be evaluated using such sitespecific methods. Therefore, inhalation pathway was not considered during the development of SSLs."</p>
Damon	57	P 4-21, S 4.5, L 13-20	<p>Although EA P contamination will be remediated as a result of unacceptable human rad risk, Table 4-5 identifies H-3 and Sr-90 at EA P as eco rad COPECs to be retained in this SLERA. Remedial actions are a downstream risk management issue.</p>	BRA		<p>02_23_16_C Response presented and Ecology concurrence obtained during WMA C RFI meeting</p>	<p>Concur. The last sentence will be modified as follows:</p> <p>"Both H-3 and Sr-90 will be retained as radiological COPECs in this SLERA. Those COPECs will be addressed as a part of future remedial action."</p>

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Select Ecology Comments on the WMA C BRA and RFI Report and Proposed Responses

Commentor	Item	Page #/ section # Line #	Comment & Basis/Justification	Doc	Chapter(s)	Notes	Response
Damon	8	P 7-8, Figure 7-3	<p>In addition to soil ingestion and soil inhalation, MTCA (WAC 173-340) includes soil dermal contact and soil contaminants leaching to groundwater with subsequent ingestion by residential receptors. Also, CERCLA includes soil contaminants leaching to groundwater with subsequent ingestion by residential and tribal receptors or other subsequent uses (e.g., showering, irrigation of crops). Perhaps an intruder driller (accessing groundwater) should be included too. Contaminated groundwater may also impact fish in the Columbia River which may be consumed by residential or tribal receptors.</p> <p>Email from Damon Delistraty on 02/18/16, Subject Re: Next Set of WMA RFI Comments <i>Damon RFI 8</i> RFI Figure 7-3 (Human CSM) should be the same as updated BRA Figure 3-1 (Human CSM).</p>	RFI	7	<p>02_23_16_C_O Response presented and Ecology concurrence obtained on dermal contact and groundwater ingestion remains open during WMA C RFI meeting</p>	<p>Figure 7-3 will be update to include exposure pathways were considered, but not evaluated. The pathways identified in the comments will be included under that category. Under WAC 174-340-740[c][iii], dermal contact pathway is applicable for other hazardous substances under receptor scenario based on Modified Method B soil cleanup levels. This particular section of the WAC is only applicable when "the proposed changes to Equations 740-1 and 740-2 would result in a significantly higher soil cleanup level than would be calculated without the proposed changes". For WMA C, the risk assessment was only performed for the standard MTCA Method B unrestricted land use receptor scenario; and no modification is proposed. Under standard MTCA Method B unrestricted land use receptor scenario, dermal contact pathway is applicable for petroleum mixture hydrocarbon, which is not a contaminant of concern for WMA C. Therefore, dermal contact pathway was not evaluated.</p> <p>During this BRA, an assessment referred to as the "protection of groundwater pathway" was performed as part of the WMA C BRA (section 3.5.11) to evaluate the potential impacts to groundwater from leaching of nonradiological contaminants in contaminated soil through the vadose zone to the aquifer. However, risk due to subsequent ingestion of groundwater was not evaluated in this BRA. Groundwater within WMA C are within the 200-BP-5 groundwater OU. Therefore, the ingestion of drinking groundwater pathway is evaluated in the 200-BP-5 RI (DOE/RL-2009-127, Draft A) report. Note: Groundwater ingestion issue remains open.</p>
Damon	15	P 7-15, S 7.2.4.1, L 15-17	<p>Considering that a background risk assessment was performed for soil nonrads, explain why a corresponding background risk assessment was not performed for rads (using Hanford soil background data for rads).</p>	RFI	7	<p>02_23_16_C Response presented and Ecology concurrence obtained during WMA C RFI meeting</p>	<p>Lines 11 to 17 will be deleted. Text changes will be made throughout the report to reflect such changes.</p>

Attachment (7 pages)
Select Ecology Comments on the WMA C BRA and RFI Report and Proposed Responses

Commentor	Item	Page #/ section # Line #	Comment & Basis/Justification	Doc	Chapter(s)	Notes	Response
Damon	18	P 7-20, S 7.2.5.6, L 14-15	<p>WAC 173-340-745 applies to industrial soils but not to a "youth trespasser exposure scenario" (MTCA Method C exposure parameters are not compatible with intermittent exposure and a youth receptor).</p> <p>Email from Damon Delistry on 2/18/16, Subject Re: Updated BRA and RFI/BRA comments <i>Damon RFI 18</i></p> <p>Remove the reference to WAC 173-340-745 for the CERCLA youth trespasser scenario.</p>	RFI	7	<p>02_23_16_C Response presented and Ecology concurrence obtained during WMA C RFI meeting. Originally presented 01-07-16 during WMA C RFI meeting with Ecology.</p>	<p>Concur, removing reference to WAC 173-340-745 and updating text as follows: The youth trespasser exposure scenario is one of six CERCLA scenarios identified to represent the range of receptors that could be exposed to COPCs in soil from WMA C. It was not evaluated as a part of WAC receptor scenario. Text changes will be made throughout the document to represent each receptor as either CERCLA or WAC receptor. It should be noted that for WAC receptors, the total ELCR will be compared to the 2007 MTCA ("Human Health Risk Assessment Procedures" [WAC 173 340 708(5)]) cumulative risk threshold of 1×10^{-5}. For CERCLA receptors, the ELCRs below 10^{-6} are considered acceptable risks whereas ELCRs above 10^{-4} are considered unacceptable risks. Risks between 10^{-4} to 10^{-6} are generally referred to as the "acceptable risk range."</p>
Damon	21	P 7-26, S 7.2.6, L 4-7	<p>Clarify more specifically where evaluation of the groundwater protection pathway will be evaluated for rads.</p>	RFI	7	<p>02_23_16_C Response presented and Ecology concurrence obtained during WMA C RFI meeting. Originally presented 01-07-16 during WMA C RFI meeting with Ecology.</p>	<p>Text will be modified as follow: Radiological contaminants in the vadose zone will be evaluated using vadose zone models developed in support of the WMA C Performance Assessment. Therefore, no evaluation was performed for radiological COPCs in the vadose zone in the baseline risk assessment. The groundwater protection evaluation for the radiological contaminants will be added to this RFI report (RPP-RPT-58339).</p>
Damon	31	P 7-43, S 7.5.5, L 9-10	<p>MTCA defines the biologically active soil zone as 0-6 ft (not 6-15 ft), per WAC 173-340-7490 (4)(a).</p>	RFI	7	<p>02_23_16_C Response presented and Ecology concurrence obtained during WMA C RFI meeting. Originally presented 01-07-16 during WMA C RFI meeting with Ecology.</p>	<p>Concur. Per WAC 173-340-7490 (4)(a), the biologically active soil zone (a conditional point of compliance) is assumed to extend to a depth of six feet. Text will be corrected as follows:</p> <p>WAC 173-340-7490(4)(a) identifies the biologically active zone extends to a depth of six feet.</p> <p>It should be noted that based on the requirements included in WAC 340-7490[4][b], soil sampling results upto a depth of 15 ft below ground surface were considered during the ecological risk assessment.</p>