



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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June 24, 2020

20-NWP-103

Brian T. Vance, Manager
Richland Operations Office
United States Department of Energy
PO Box 550, MSIN: H5-30
Richland, Washington 99352

Re: Department of Ecology's (Ecology) Review of the Integrated Disposal Facility (IDF) Modeling Risk Budget Tool

Reference: Letter 19-ECD-0083, dated January 7, 2020, "Submittal of The Integrated Disposal Facility Modeling Risk Budget Tool Permit Condition III.11.I.5 Operating Unit Group 11"

Dear Brian T. Vance:

On January 7, 2020, Ecology received from United States Department of Energy – Richland Operations Office (USDOE-RL) the IDF Modeling Risk Budget Tool (Reference). In addition, USDOE and CH2M Hill Plateau Remediation Company (CHPRC) staff provided Ecology with a demonstration of the risk budget tool on January 21, 2020.

In accordance with the IDF Permit Condition III.11.I.5.a, Ecology conducted a review of the modeling assumptions and input parameters. Ecology also submitted the risk budget tool to an independent third party for review and testing. The combined comments from Ecology and the independent third party are provided to USDOE in an attachment to this letter. Ecology requests these comments to be addressed in future modeling.

If there are any questions, please contact Suzanne Dahl at, suzanne.dahl@ecy.wa.gov or 509-372-7892

Sincerely,

Digitally signed by Dahl, Suzanne
(ECY)
Date: 2020.06.24 16:08:36 -07'00'

Suzanne Dahl
Tank Waste Treatment Section Manager
Nuclear Waste Program

sd/ag
Enclosure

cc electronic:

Dave Bartus, USEPA
David Einan, USEPA
Tim Hamlin, USEPA
Duane Carter, USDOE-RL
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Dan Thompson, Ecology
Nancy Ware Ecology
Jerry Yokel, Ecology
NWP RIM Coordinators, Ecology
Hanford Administrative Record
Environmental Portal
Hanford Facility Operating Record
CHPRC Correspondence Control
MSA Correspondence Control
USDOE-RL Correspondence Control
USEPA Region 10 Hanford Field Office
Correspondence Control

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Document Title(s)/Number(s):

Risk Budget Tool

Document Manager	Telephone Number	Project Manager	Telephone Number	Facility Site ID	Cleanup Site ID
Suzanne Dahl	372-7892	Dan McDonald	372-7988	IDF	

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
1	General	The Risk Budget Tool is a well-constructed tool that has undergone rigorous quality assurance/quality control to ensure accurate entry into the spreadsheet of results from GoldSim.						
2	General	The three key assumptions are valid, if aqueous waste form concentrations do not approach solubility limits, and the waste footprint does not extend toward the south where the Ringold E unit could be present at the water table instead of the Hanford formation. This southern portion of the IDF was not evaluated with the IDF PA model.						
3	General	If one revises an inventory that has an initial inventory of zero grams on either <i>User Report</i> tab, the spreadsheet will not update correctly. The user will receive #DIV/0! errors.	Update the risk budget tool to prevent arithmetic division by zero errors.				Open	
4	General	A suggestion is to add another column in the User Report tabs to explicitly calculate the "budget" or "margin" consumed, given that the risk budget tool spreadsheet is password protected.					Open	
5	Column J, Waste Stream Limit	This column in the <i>User Report</i> tab is not explained in the Output section starting on Row 31 or in the text of RPP-CALC-63176, Rev. 0.	Describe this calculation.				Open	
6	General	Using simplified inventory data as the input, the Risk Budget Tool (RBT) was built to replicate the deterministic and probabilistic modeling results in the Performance Assessment (PA) for the Integrated Disposal Facility (IDF). The PA results are built upon numerous data inputs and assumptions using multiple deterministic and a probabilistic models. Therefore, if there are changes to basis upon which the PA was built, updating the RBT will necessitate updating the IDF PA.						

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7	General	<p>While the PA input data and assumptions are based upon the best available data, understandings of the release and transport mechanisms, and the natural environment, the inventory compliance tracking role of the RBT is dependent upon the accuracy of the PA input data and assumptions. The input data and assumptions include known and possibly unknown uncertainties. Known uncertainties would include: a) the accuracy and completeness of the Best Basis Inventory of the Hanford Tank Waste, b) LWPS and WTP waste treatment capture and retention effectiveness, c) secondary waste generation and treatment capture and retention effectiveness, and d) emplaced waste package conformance. An example of an unknown uncertainty would be the rapid move of groundwater due to an unknown geological condition, such as Chlorine-36 atmospheric nuclear testing found during tunnel boring at the Yucca Mountain Site, which could only have come from rapidly moving groundwater from the surface to at least 600-feet below ground.</p> <p>In-process waste verification sampling is the most direct step to reduce this uncertainty and the associated risk.</p>						

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8	General	<p>The Waste Stream Limits in the RBT and groundwater regulatory threshold limits PA do not consider cumulative impacts to groundwater from other sources of contamination, e.g., other RCRA and CERCLA waste sites. Review of regulatory documents suggest that existing ground contamination, e.g., 200-PO-1, may already be near or exceed the regulatory thresholds when contaminants from IDF are expected to reach groundwater. The vadose zone and groundwater contamination from other sources is already exists. Therefore, the best approach to reducing the cumulative effects would likely be to reduce IDF source term since it is not yet committed to the environment.</p> <p>Consideration of the cumulative impacts should be performed soon so that full impact of waste disposal can be evaluated and any necessary waste stream controls, e.g., disposal of a specific waste stream like HEPA filters at another disposal site, are made before a significant inventory of waste is placed in the IDF.</p>						
9	General	<p>The RBT and PA along with waste stream verification sampling data should be analyzed and considered in developing DOE's research and development plans. The results should be used to guide the scope and funding of efforts to improve waste disposal and environmental protection at IDF. For example, enhanced grout formulations significantly improve waste contaminant retention of radiological and chemical contaminants in the waste to reduce the adverse impact to human health and the environment.</p>						

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10	General	Secondary waste are predicted to be dominant sources that result in long term impacts to groundwater. The greatest release rate uncertainty is also associated with the secondary waste. Waste treatment and the associated release rate performance of the secondary waste forms therefore should be further studied, developed, and verified. The results should be used to guide the scope and funding of efforts to improve waste treatment of secondary waste to assure that IDF secondary waste to actually achieve or improve the release rates represented in the IDF PA and RBT thereby improving long term environmental protection of groundwater.						
11								
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