Comments on Boeing's Final SMOU CMS[1] and DTSC's Draft SMOU Statement of Basis (SOB)[2]

Comments below generally relate to radionuclide cleanup unless chemical cleanup is specifically discussed.

Media Cleanup Standards (SMOU CMS Section 3.3, and SMOU SOB Section 4.1.3)

Please explain why MCSs are defined as max(RBSL, BTV, MRL). Since RBSLs are incremental above background, MCS should = BTV + RBSL. Radionuclide DQOs should ensure that sample MDAs are always < LUTV, not < BTV.

Definition of BTV (USL95 or UTL95-95)

The EPA Radiological Background Study[3] calculates background threshold values (BTV) based on several 95% statistics, but recommends that BTV should be based on the upper simultaneous limit (USL95), and not on the upper tolerance limit (UTL95-95). This recommendation is made since the 2010 AOC requires that each and every sample does not exceed the LUTV. Although Boeing is not a signatory to the 2010 AOC, the DTSC/Boeing 2022 Settlement Agreement also requires radionuclides to be "cleaned up to background", akin to the 2010 AOC. Therefore the radionuclide BTVs should be based on the USL95, not the UTL95-95. UTL95-95 should only be used in association with the for the chemical risk assessment.

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[1] Boeing, "Final RCRA Limited Corrective Measures Study Report Surficial Media Operable Unit, Boeing RFI Subareas, SSFL." April 10, 2025. https://dtsc.ca.gov/wp-content/uploads/sites/31/2025/09/2025.09.01_SMOU_CMS_DTSC-Final-04102025_redacted.pdf

[2] DTSC, "Draft Statement of Basis for the Surficial Media Operable Unit (SMOU) Proposed Remedy Selection in the Boeing Areas of Responsibility at SSFL." September 2025. https://dtsc.ca.gov/wp-content/uploads/sites/31/2025/09/09.15.2025_-STATEMENT-OF-BASIS.pdf

[3] EPA/HGL, "Final Radiological Background Study Report." October 2011. https://www.dtsc-ssfl.com/files/lib_doe_area_iv/bgstudy/Final_SSFL_Radiological_Background_Study_Report.pdf

DTSC's draft provisional radionuclide LUTVs are based on the EPA's radionuclide BTVs which are in turn based on the USL95. For example, the DTSC LUTV Table[4] correctly gives the Cs-137 LUTV as 0.225 pCi/g and the Cs-137 BTV as 0.193 pCi/g based on the USL95.

In contrast, Table B-2 in the Boeing SMOU CMS, and Table 3, Attachment 1, and Table 1, Attachment 6, of Appendix K of the SRAM Revision Addendum[5] incorrectly gives the Cs-137 BTV as 0.157 pCi/g based on the UTL95-95. Likewise, all other radionuclide BTVs in these tables are incorrectly based on UTL95-95.

Section 8.1 of the EPA Radiological Background Study provides the basis for using BTVs based on USL95. DTSC also provides the rationale for using UTL95-95 based BTVs in risk-based remediation for Boeing chemical cleanup, and USL95 based BTVs in "cleanup to background" remediation as in the 2010 AOCs and 2022 Boeing Settlement Agreement for radionuclides.[6]

Recreator RBSLs (SMOU CMS Table B-2)

Table B-2 in the Boeing SMOU CMS, and Table 11, Attachment 2, Appendix K of SRAM Revision 2 Addendum gives Recreator RBSLs from the EPA PRG Calculator.[7] The current EPA PRG calculator does not provide default recreator input and instead requires site specific input. In contrast, the Risk Assessment Information System (RAIS) run by the same ORNL team that supports the EPA PRG Calculator does provide the ability to calculate a

[4] DTSC, "Draft Provisional Radiological Look-Up Table Values." January 30, 2013. https://www.dtsc-ssfl.com/files/lib_look-uptables/radiological/66513_65861_Draft_Provisional_Radiological_Look-Up_Table_Values_1-30-13.pdf

[5] Boeing/Stantec, "Final Standardized Risk Assessment Methodology Revision 2 Addendum, SSFL." December 19, 2022. https://philrutherford.com/SSFL/Boeing/SRAM/2022.12.20_SRAM_Rev_2_Addendum_December_2022.pdf

[6] DTSC, "Statistical Methods for Application in the Chemical Soil Background Study for the Modified Site Evaluation Approach of the AOCs (DOE and NASA) and for Risk Assessment-Based Approach (Boeing) at the SSFL." May 9, 2013. https://www.dtsc-ssfl.com/files/lib_lookuptables/chemical/66069_Statistical_Methods_for_Application_in_the_Chemical_Soil_background_Study.pdf.

[7] EPA/ORNL, "Preliminary Remediation Goals for Radionuclides (PRG)." https://epa-prgs.ornl.gov/cgi-bin/radionuclides/rprg_search

default recreator PRG.[8] The following table compares the RAIS recreator PRGs to the SMOU CMS and SRAM recreator PRGs (RBSLs) for the two dominant Area IV ROCs.

Radionuclide	EPA Recreator PRGs (pCi/g)	RAIS Recreator PRGs (pCi/g)
Cs-137	0.293	2.31
Sr-90	20.0	36.5

These two platforms should give identical or similar results. Is Stantec able to identify its user input that would have differed by the RAIS default input sufficiently to result in the large ~8x and ~2x factors?

Soil Media Cleanup Standards for Radionuclides (SMOU CMS Table B-2)

Please provide the rationale for the selection of the 15 ROCs in Table B-2.

a. Radionuclides in Table B-2 are inconsistent with the EPA priority 1 radionuclides detected in Area IV soil above FALs.
b. Radionuclides in Table B-2 are also inconsistent with the DTSC draft provisional radiological look-up table values.
c. Table B-2 includes several U-238 progeny, namely Pb-210, Bi-210 and Po-210. None of these progeny are EPA Priority 1 radionuclides, or in the DTSC draft LUTV list.
d. Table B-2 omits radionuclide Th-232 and its progeny Th-228, that are typically reported by alpha spectroscopy along with Th-230, which is in Table B-2. These three thorium radionuclides are in the DTSC LUTV list.
e. Table B-2 includes Th-229 that is not in the EPA Priority 1 list, or in the DTSC draft LUTV list.

[8] ORNL, "RAIS Radionuclide PRG Calculator." https://rais.ornl.gov/cgi-bin/prg/PRG_search?select=rad