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Mr. Steven Slaten
U.S. Department of Energy
Rocky Flats Office
P.O. Box 928
Golden, CO 80402-0928

ADMIN RECORD

Re: Technical Memorandum 4, Operable Unit 3, Contaminants of Concern

Dear Mr. Slaten:

EPA reviewed the above referenced document and we have received your correspondence dated December 9, 1994, regarding the status of this review. Our review is complete and our detailed review comments are enclosed.

As lead regulatory agency for Operable Unit 3 (OU 3), and in consultation with the Colorado Department of Health and the Environment (CDPHE), EPA disapproves Technical Memorandum 4 (TM 4). DOE's selection of contaminants of concern (COC) for OU 3 did not follow existing EPA guidance nor the methodology established for Rocky Flats. As a result, EPA was compelled to conduct an independent selection of COCs for OU 3 using the OU 3 dataset from RFEDS. This required more time than normal for a review and resulted in a list of COCs which differs substantially from DOE's selection. We believe DOE inappropriately eliminated chemicals from further consideration in the baseline risk assessment.

The acceptable COCs for OU 3 are as follows:

SURFACE SOIL	Pu-239/240, Am-241
SEDIMENT	As, Be, Pu-239/240, Am-241
GROUNDWATER	As, Be, U-233/234

Also, chemicals without toxicity factors which are present above background and at greater than 5% frequency of detection must be identified for each medium. The potential impact on human health risk must be addressed qualitatively in the human health risk

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assessment as is done in other operable units at Rocky Flats. EPA has identified the following chemicals in this category:

SEDIMENT	aluminum, cesium, cobalt, lead, lithium, silicon, thallium
GROUNDWATER	aluminum, cobalt, iron, lead, lithium, silicon
SURFACE WATER	aluminum, cobalt, lead, lithium, silicon

Since EPA has completed an independent analysis, there is no need to spend additional resources modifying TM 4. Instead, we suggest that DOE agree in writing to include additional chemicals identified by EPA and CDPHE as COCs for the OU 3 Human Health baseline risk assessment. Such an assurance will close the review/approval process for TM 4.

DOE is reminded that failure to submit a RCRA Facility Investigation/Remedial Investigation Report for OU 3 which includes the above identified COCs in the baseline risk assessment will be considered failure to submit a primary document under the terms of the Interagency Agreement.

Sincerely,

Martin Hestmark

Martin Hestmark, Manager
Rocky Flats Project

Enclosure

cc: Robert Birk, DOE
Joe Schieffelin, CDPHE
Diane Niedzwiecki, CDPHE

TECHNICAL MEMORANDUM 4, OPERABLE UNIT 3
REVIEW COMMENTS

GENERAL COMMENTS

EPA noted the following deviations from the standard process for selecting contaminants of concern:

1. Section 2, Page 27: All data collected under the operable unit 3 (OU 3) field sampling program should be considered when selecting contaminants of concern (COCs). Potential exposure pathways should not be used to limit the data sets under consideration. Subsurface sediments in Standley Lake and Mower Reservoir were excluded incorrectly in DOE's analysis.

2. Section 3, Page 1: The COC selection process as described on this page and illustrated in Figure 3-1 deviates from the process accepted by EPA, CDPHE, and DOE in three ways:

   a. On March 10, 1994, all parties agreed that the Gilbert methodology was not appropriate for reservoir sediments due to the physical differences between on site stream sediments and the off site reservoir sediments. There was no such agreement for the other environmental media within OU 3. We agreed that a weight of evidence approach could be used to address the question of whether or not metals and radionuclides are above background levels in the reservoir sediments. This approach was to be conducted as the first step in the COC selection in accordance with the accepted methodology. Instead, DOE conducted this analysis at the end of the process. The effect of manipulating the process is that chemicals which appear to contribute the largest proportion of the risk within the OU are later explained away as representing background conditions. The true anthropogenic risk drivers may not have been identified.

   b. A comparison of maximum chemical concentrations to corresponding preliminary remediation goals (PRGs) is meant to retain those chemicals which are present above the PRG, not to further exclude chemicals which have been identified as contributing the significant portion of the operable unit risk as a result of the concentration toxicity screen. DOE used the PRG comparison incorrectly in OU 3.

   c. The accepted statistical methodology for comparing remedial investigation data to background data, the "Gilbert Methodology", was not used for stream surface water, stream sediment, and groundwater. The reasons cited were "insufficient sample size and lack of a comparable data set". We believe the background geochemical characterization data set is comparable and that it is possible that a statistical comparison can be conducted for these media although the power of the test may not be optimal.

SPECIFIC COMMENTS:

1. Section 2.2.2, Page 4. Differences in quality assurance (QA) procedures between the 1983-1984 data and more recently collected data are discussed in the second paragraph of this section. DOE conducted a statistical comparison to determine if the two datasets could be combined. DOE concluded that they were similar and could be combined. However, it is not clear whether the more recent samples were collected from the same sample locations as the 1983-1984 samples. If sampling locations were not the same, then the statistical tests are actually evaluating differences between locations or sampling methodology, as well as other potential differences. Additionally, because different QA procedures were used for 1983-1984 data, sample quantitation limits may not be comparable between the two data sets. For example, if the two data sets have different sample quantitation limits, they cannot be directly compared. These complications should be addressed in this section, and other sections which describe combining data.

2. Figure 3-4, Page 8 or 9 of Section 3. This figure presents the background comparison methodology. According to the Gilbert methodology, an additional step should be included in the flow chart before the slippage test. The slippage test should be used if the highest datum is a detect. If not, then the next step should be to determine if there are less than 20 percent nondetected samples in the site and background, and whether the site and background data are normally distributed. The figure should be corrected to include this step.

3. Section 3.5, Page 14. This section describes the CTS screen used to select COCs and Appendix D presents the CTS tables. Although the description in Section 3.5 accurately explains how to conduct a CTS, the CTS tables do not present the information necessary to easily verify the results of the assessment. The tables in Appendix D should be revised to include the maximum detected concentration and toxicity value used for each chemical, as well as the chemical risk factor, total risk factor, and the ratio of each individual chemical risk factor to the total risk factor.

4. Section 3, Page 16. The weight of evidence evaluations fall short of EPA's expectations because no criteria were established or apparently applied to discriminate appropriate literature values from inappropriate ones. At a minimum, we expected some consideration of the geologic materials comprising the sediment background locations compared to OU 3 conditions, an evaluation of flow conditions, an evaluation of the uncertainty in each estimate of "background" from the literature (i.e., sample size, sampling methods, QA/QC considerations) and an evaluation of location of the "background" samples relative to anthropogenic sources of contamination. Instead of providing useful information, it introduces much uncertainty to the COC selection process. A comparison to other contaminated Superfund sites was also done with the OU 3 data. This has no relevance to the question of whether sediments, surface water, and groundwater in OU 3 contain chemicals above background concentrations.

3. Section 3, Page 13: The COC selection process is to be applied by operable unit. DOE's application of the detection frequency criteria is by IHSS. This is incorrect. The entire OU data set should have been considered as a whole.

d: Section 3, Page 14: Similar to the above comment c, the concentration toxicity screen was applied by IHSS whereas it should have been applied using the entire data set.

The above deviations were considered serious enough to warrant an independent analysis of the OU 3 data and selection of COCs by the conventional methodology. The results of this can be summarized as follows:

SURFACE SOIL	Pu-239/240, Am-241
SEDIMENT	As, Be, Pu-239/240, Am-241
GROUNDWATER	As, Be, U-233/234

Also, those chemicals without toxicity factors that are present above background and at greater than 5% frequency of detection should be identified for each medium. The potential impact on the human health risk must be addressed qualitatively in the human health risk assessment. The following chemicals are in this category:

SEDIMENT	aluminum, cesium, cobalt, lead, lithium, silicon, thallium
GROUNDWATER	aluminum, cobalt, iron, lead, lithium, silicon
SURFACE WATER	aluminum, cobalt, lead, lithium, silicon

5. Section 3.10, Page 29. This section describes how Phase I Historical Public Exposure Studies were used to confirm chemicals as COCs. The purpose of the historical studies was not to support risk assessment or COC selection for OU3. As stated in this section, more than 8,000 chemicals were identified as having been used at the Rocky Flats site, but "the list was reduced to those chemicals that were most likely to have posed an offsite human health hazard under routine historical plant operations." The focus of historical investigation was not to select COCs. For example, Table 3-3 lists the materials of concern by the RFETS health studies. Most of these chemicals were eliminated as COCs through the selection process used in TM4.

6. Section 4, Page 4. Table 4-2 is inconsistent with the information in Appendix B. Appendix B indicates that plutonium activity in soils is not normally distributed. Therefore, the t-test is not a valid statistical test.

7. Appendix G. This appendix provides probability plots used in the weight-of-evidence evaluation. Radium-226 is not discussed in the text although a probability plot has been provided for it. Radium-226 should be discussed in this appendix.