



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

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Ref: SHWM-PF

Mr. Richard Schassburger
Department of Energy
Rocky Flats Office
P.O. Box 928
Golden, CO 80402-0928

OPTIONAL FORM NO. 10 (7-87)

FAX TRANSMITTAL

To <i>Scott Grace</i>		From <i>B. Fraser</i>	
Department <i>DOE</i>		Phone <i>294-1081</i>	
Fax <i>766-4871</i>		Page	
MIN. 7025 or 707-7025		GSA GEN. REG. NO. 27	

re: OU 2 Surface Water IM/IRA

Dear Mr. Schassburger:

EPA and CDH have reviewed your July, 1993 Draft report on the Phase II Field Treatability Studies completed as a surface water IM/IRA at OU-2. Our review was delayed by the finding that some of the data included in this submittal reflected samples collected at the wrong location. It is our understanding that subsequent samples have confirmed a lack of contamination at SW-132, and that this new information will be included in the final report. Our comments, which raise several other issues of concern, are attached.

If you have questions about these comments or would like to discuss how they should be resolved, please contact Bill Fraser (EPA) at 294-1081.

Sincerely,

Martin Hestmark

Martin Hestmark, EPA
Manager
Rocky Flats Project

cc: Scott Grace, DOE
Joe Schieffelin, CDH



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ADMIN RECORD

BZ-A-00084

**TECHNICAL REVIEW COMMENTS
DRAFT FIELD TREATABILITY STUDY, PHASE II
SOUTH WALNUT CREEK BASIN
SURFACE WATER INTERIM MEASURE/INTERIM REMEDIAL ACTION**

1.0 INTRODUCTION

EPA has completed its review of the Draft Phase II Field Treatability Study for the South Walnut Creek Basin, Surface Water Interim Measure/Interim Remedial Action (herein after simply called 'the report'). This report was prepared by the U.S. Department of Energy (DOE), Rocky Flats Plant (RFP), Environmental Management Program in July 1993. Review of the document was performed by the U.S. Environmental Protection Agency (EPA) with assistance from a Technical Enforcement Support contractor. Our comments are organized into general comments pertaining to the document as a whole and specific comments that address individual deficiencies within the document.

2.0 GENERAL COMMENTS

1. The report clearly shows that water treated by the radionuclide removal system (RRS) together with the granular activated carbon (GAC) system meets applicable or relevant and appropriate requirements (ARARs) for discharge into South Walnut Creek. However, the report also states that the RRS and the GAC system have been expensive to operate and have generated a significant amount of waste in their 1 year of operation while removing very little contamination from the environment. Based on this finding, recommendations should be included as to what limiting conditions would be required to make operation of the system appropriate and economical.

2. The main thrust of the report is an effort to demonstrate that the field treatability unit should not continue operation because of the low concentrations of contaminants (near or below ARARs) in two of the collection pumps (SW-61 and SW-132), the high cost of treatment, and the generation of significant amounts of treatment-derived waste. These arguments may be valid for the water collected from pumps SW-61 and SW-132. However, the water in sump SW-59 contains radionuclides that are occasionally above ARARs and volatile organic compounds (VOCs) that are consistently 15 to 20 times the ARAR. Therefore, it appears that treatment to remove radionuclides and VOCs should continue for this water.

3. The problems with the SW-132 data (having been taken at the wrong location) discovered after the draft submittal, and the efforts completed to obtain valid data will have to be explained.

influent water quality

Clarify

"limit" cost

discuss

in the final report. The extent to which these problems do or do not affect the conclusion that discontinuation of collection at SW-132 is warranted must be included as well.

4. The report does not, as suggested in several sections of the document, contain a conservative risk assessment. If risk is to be used as a basis for decision-making in this case, three fundamental deficiencies in the analysis must be corrected. First, some data have been inappropriately eliminated from consideration in the risk assessment. Second, not all routes of exposure associated with surface water have been considered. Third, the risks estimated for exposure to surface water contaminants at OUR should be put into perspective. An acceptable risk level, as defined by EPA refers to site-related risk to potential receptors in which all pathways and environmental media have been considered. It is only appropriate to compare the cumulative risk level for specific target receptors with EPA's acceptable risk level. When only one media is considered, the information necessary to make risk management decisions is incomplete. Thus, the conclusion that surface water contaminants are present at acceptable risk levels is untenable. To conclude contaminants do not pose unacceptable risks, all media-specific risk needs to be combined and evaluated in the context of actual exposure conditions.

3.0. SPECIFIC CONCERNS

1. Section 4.2.3.2, Page 9, Paragraph 1. The statement that it is only valid to compare mean contaminant concentrations with ARARs when the ARARs are above the detection limit is incorrect. If contaminant concentrations are always detected, their mean can and should be compared with the ARAR, whatever its value. This paragraph should be revised to state that compounds must be above their detection limit to be compared with ARARs.

reword

2. Section 4.3.2.1, Page 12, Paragraph 4. This paragraph discusses adding ferric sulfate to the water stream, and implies that the ferric sulfate addition line has only been in place since January 1993. However, the Phase II test began in April 1992. Please explain if ferric sulfate addition began at this time or was added later, and if so, why.

check with date

3. Table 4-16, Page 15. The first column, in the second set of column headings from the top, lists the activity of the radionuclides removed as nanoCuries (nCi). The corresponding new heading, however, gives the amount in pounds. It appears that the correct units are pounds.

clarify

4. Section 6.1.2, Page 2, Paragraph 1. This paragraph discusses removal of metals by the RES and the GAC system and states that it is likely that a significant amount of the metal:

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and uranium in the water are of natural origin. However, no evidence is provided to support this statement. It should therefore be removed or substantiated.

5. Appendix A, Page A-1. The list of chemicals of concern (COCs) remains questionable due to the inappropriate assumption regarding data qualifiers. Data coded with a "J" laboratory qualifier have been considered nondetects. According to EPA guidance (1989), a "J" qualifier represents an analysis where the presence of the chemical has been confirmed but the concentration is estimated. Accordingly, a "J" qualifier should be interpreted as an indication that the chemical has been detected. Furthermore, the estimated value should be used to calculate a mean and upper 95 percent confidence of the mean concentration.

clarify
flow chart

6. Appendix A, Page A-3, Figure A-1, Statistical Analysis Flow Chart. This chart outlines the steps involved in the selection of COCs. It is not clear from this table what is being referenced as a "standard" in the evaluation of exceedances.

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7. Appendix A, Page A-4, Step 2. The text states that the criteria used to assess the normality and lognormality of the sample data will involve a simple determination of whether they "appear" to be reasonable. It is unclear whether the definition of "reasonable" criteria is based on the results of a line-fitting analysis or linear regression on the assumed distribution. If not, it might be easier and more expeditious to use nonparametric statistical analysis which does not require an assumption about the data distribution.

2
risk

8. Appendix A, Page B-1, Section B.2.2. This paragraph suggests that only radiologically induced lethal cancers need to be calculated. However, EPA considers all tumors, whether benign or malignant and lethal, to be important in the calculation of increased incidence of cancer risk. Limiting the analysis to mortal cancers will underestimate total cancer risk.

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9. Appendix A, Page B-4, Paragraph 1. This section presents the reasons that the calculated risk should be viewed as a conservative estimate. Although four reasons are presented to support this premise, the reasons do not address the conservatism of estimated risk but rather the likelihood of exposure. The probability of exposure is a separate issue and should be considered distinctly different from the manner in which risk has been calculated.

recalculation

10. Appendix A, Page B-5, Section B.2.3.2. This section presents the exposure values used to calculate chemical intake. The reasonable maximum exposure (RME) contaminant concentration should be represented by the upper 95 percent confidence limit (UCL) of the mean concentration, not the mean concentration.

11. Appendix A, Page B-10, Condition 5. It is indicated that risks associated with exposure to surface water contaminants were within EPA's Superfund remediation guidelines. However, EPA guidelines do not apply to risk associated with one particular media. It should only be used to compare with risk across an entire exposure unit, in which surface water is just one environmental component.

12. Appendix A, Page B-17, Paragraph 2. This paragraph states that acetone and methylene chloride were eliminated as laboratory contaminants. Although acetone and methylene chloride are common laboratory contaminants, they are also common hazardous waste constituents detected at Superfund sites. To distinguish between laboratory and site contamination, the 10-times rule should be applied. That is, the chemical should be considered to be laboratory contaminant only when the sample concentration is less than ten times the maximum level detected in any blank.

13. Appendix A, Page B-18, Table A-2. This table lists the intakes associated with radionuclide contamination. Only ingestion of radionuclides have been considered; inhalation and external exposure have not been accounted for. All potential exposure pathways associated with radionuclide exposure should be evaluated.

It should also be noted that slope factor for plutonium is $6.2E-9$ not $2.3E-10$. The slope factors for uranium 233, 234, 235, and 238 are $4.3E-10$, not $1.6E-11$.

4.0 SUMMARY

The data presented does not support discontinuing all water treatment. However, a possible alternative to the DOE request to discontinue all water treatment is to return to a treatment system similar to that used in Phase I of this study and treat only the SW-59 water. The Phase I treatment system consisted of bag filters, to remove suspended solids, and the GAC system to remove the VOC and radionuclide contamination. The bag filters were shown to be less than effective at cleaning the water influent to the GAC system, allowing the GAC unit to clog with silt and requiring its premature removal from service. However, the system was shown to effectively remove VOC and radionuclide contamination in the water to levels below ARARs (EG&G 1992). Improvement in the prefilter system, combined with the treatment of a greatly reduced flow, could significantly reduce the amount of GAC consumed by the system, making it more economical to operate. In addition, the treatment system's diesel power source should be converted to RFP's electrical power supply to reduce exhaust emissions.

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SLOPE FACTORS

electrical power - 1000 kw
1200 kw

5.0 REFERENCES

- EG&G 1992. "Final Summary and Analysis of Results, Field Treatability Study, Granular Activated Carbon Treatment System, Phase I, South Walnut Creek Basin, Surface Water Interim Measure/Interim Remedial Action Operable Unit 2." May.
- EPA 1989. U.S. Environmental Protection Agency, "Risk Assessment Guidance for Superfund, Volume I Human Health Evaluation Manual (Part A), Interim Final," EPA/EPA/540/1-89/002, December 1989.