

**REVIEW OF DRAFT RESPONSE TO THE DEPARTMENT OF ENERGY
HEADQUARTERS COMMENTS ON "THE SURFACE WATER
IM/IRAP/EA FOR OPERABLE UNIT NO 2, JUNE 12, 1990"**

General Comment 1

The measures proposed to mitigate surface water contamination are anticipated to operate for 30 years. Thirty years is the period defined by the Department of Energy (DOE) for completion of all remediation actions. No information is provided in the text to indicate that the proposed action will be complete within 30 years.

The document title indicates that an Environmental Assessment (EA) has been performed. The two sections of the document that deal directly with environmental issues do not reflect the elements identified in DOE's *Environmental Compliance Guide* (October 1988). DOE has defined the EA as performing three primary functions: (1) to determine whether a proposed action requires preparation of an Environmental Impact Statement (EIS), (2) to aid an agency's compliance with the National Environmental Policy Act (NEPA) when no EIS is necessary, and (3) to facilitate preparation of an EIS when one is necessary. It is usually in the EIS portion of the NEPA process that predictive models, pathway analyses, risk assessments, and other investigative procedures are employed. Many of the elements presented in Sects 7.0 and 8.0 of this document are more appropriate for an EIS than an EA. It is suggested that the EA constituent of the title be altered to Environmental Evaluation or some other designation other than one identified as a NEPA process step.

The title also indicates that the document is a decision instrument. The document does not conform to the format of a decisional document. A decision document should serve to concisely report the major questions that were identified and accurately record the decisions that were made concerning the proposed action(s).

Response:

The expected duration of the surface water IRA is not known. It may continue to operate and be part of the final action for OU 2. Thirty (30) years is simply the basis for the present worth cost analysis of the alternatives. This will be so stated in the revised draft.

A DOE notice issued August 2, 1988, entitled *Integration of Environmental Compliance Processes*, DOE-N-5400.4, established a DOE policy for meeting CERCLA and NEPA requirements for hazardous substance remedial action projects. Quoting directly,

Effective immediately it is DOE's policy to integrate the requirements of the NEPA and RI/FS process for remedial action under CERCLA.

ADMIN RECORD

A-0U02-000123

The notice further states that

A key element in the integration process is making a determination on the level of NEPA documentation that is required for a remedial action.

The Surface Water IM/IRA/EA has been reviewed by the DOE Office of NEPA oversight. The determination of this NEPA department's staff was

The scope and level of environmental analysis integrated into this document is appropriate. This document is generally adequate as an EA.

The use of EA in the title will remain

The format of the surface water IRAP conforms to CERCLA guidance for preparation of an Engineering Evaluation/Cost Analysis. We request you provide the format for a DOE decisional Document.

Review

Item 1. We agree with the action taken.

Item 2. We agree with the action taken.

Item 3. The reference that should be used is "Interim Final Rule on Program Decision Documents" EPA 540/G-89/007

General Comment 2

General surface contamination may be the predominant cause of radionuclides in surface water. The amount of radionuclide reduction in surface water resulting from treatment of groundwater has not been proposed. It is possible that potential groundwater contamination could represent an insignificant contribution to the radionuclide complement of surface water.

Response

It is likely that contaminated surface soils are a source of radionuclide contamination present in OU 2 surface waters. Ground water withdrawn, if it were technically feasible at the time, would eliminate the seep and thus the source of the water concern. It is recognized that a larger potential problem exists with regard to wide-spread radionuclide contaminated runoff. This is not an issue for the surface water interim action.

Review:

It would be helpful to the reader to realize that the problem is not being ignored. The inclusion of a comment such as the response would help.

General Comment 3

Conventional practice would dictate construction of groundwater wells at or near the source of contamination. Subsequent groundwater withdrawal would establish a negative gradient and reverse the flow of contaminants to the surface water body. Groundwater withdrawal could require increased treatment capacity, but at the culmination of this action, both vertical and horizontal contamination will be removed. Without an analysis of groundwater removal and treatment, it is difficult to compare the proposed alternatives.

The concept also does not address the possibility of groundwater flow around the containment structures. Assuming that groundwater remediation actions may be performed in the vicinity, location of discharge zones may change during the proposed 30-year operating period, thus making the collection system obsolete.

It is unclear whether groundwater modeling investigations were performed to predict the location and movement of the contamination plume. Major portions of the plume could bypass the collection seeps to emerge at other locations or to contaminate groundwater resources off-site.

Decommissioning/decontamination and disposal costs are not presented for the preferred alternative. Operating costs associated with packaging, transport, and disposal of contaminated materials at the Nevada Test Site (NTS) were not introduced. A comparison of relative risk associated with each alternative was also absent.

Response

The interaction between ground water and surface water contamination is not sufficiently understood to construct an effective ground water withdrawal system to eliminate seeps. The project schedule (presented in the IAG) does not allow time for investigations and modeling necessary for design of a ground water withdrawal system.

The actual operating life of the surface water IRA is not known at this time. The 30-year period established in the documents is for the purpose of present worth cost analysis. The effect, if any of the ground rheumatoid conducted in the vicinity of the surface water IRA, would likely be a lowering of the ground water table and elimination or reduction of current seep flows. In this case, the collection system in question may no longer be required.

Modeling investigations to predict the extent and movement of OU 2 hydrogeology. A phase II RFI/RIFS Work Plan for OU 2 has been prepared to further characterize the hydrogeology which should allow computer modeling of ground water flow and contaminant migration. A brief description of the phase II plan is provided in Section 1.1.

Labor and disposal costs associated with decontamination and decommissioning are not significantly different for the alternatives. Cost identified in this document are for the purposes of comparative analysis and are not intended to provide total estimated costs for budgetary purposes. Costs for disposal of wastes at the Nevada test Site (NTS) are included in the revised draft. The risk, with respect to the disposal at the NTS, is low for all the alternatives as discussed in Section 7.8

Review:

- Item 1. It would be informative to reference the Inter-Agency-Agreements at this point.
- Item 2. We agree, however, it would be helpful to include the fact that the adjacent rheumatoid may have an effect and that they will be considered.
- Item 3. An expansion of the reference to the Phase II RFI/RIFS would be helpful as the text only refers to it as a sampling plan.
- Item 4. It is agreed that the costs may be comparable, and an expansion of the text to indicate this would be appropriate.

General Comment 4

It is unclear from this document why the existing surface water collection, monitoring, and discharge system is inadequate to meet the current and future needs for reducing surface water contamination. It appears that the primary focus should be mitigation of the contamination source and effective removal of contaminated groundwater.

Response

The existing surface water collection, monitoring and treatment/discharge system is adequate to prevent off-site release of contaminated surface water. However, collection of contaminated surface water "sources" may minimize (1) exacerbation of ground water contamination that could occur through infiltration of contaminated surface water, (2) treatment of high volumes of surface water runoff collected in the existing retention ponds. These factors taken together suggest the surface water IM/IRA would further reduce any potential that may exist for off-site release of contaminated water. It is also noted that EPA and the Colorado Department of Health (CHD) view implementation of this surface water IM/IRA as proposed, to be a high priority.

Review:

The fact that the action is mandated as a high-priority item by regulatory agencies should be referenced.

General Comment 5

The presence of contaminated laboratory blanks raises a concern for the Quality Assurance/Quality Control procedures employed in the analyses.

Response

Methylene chloride and acetone are commonly used in laboratory solvent extraction. Their high volatility results in their ubiquitous presence in the laboratory air. Therefor, there is potential for lab contamination of filed samples. EPA has set guidelines in the Statement of Work (SOW) for the Contract Laboratory Program (CLP) for permissible levels of the common laboratory solvents in laboratory blanks. The levels of methylene chloride and acetone found in laboratory blanks analyzed during the OU 2 surface water sample analysis work are well within the SOW guidelines.

Review:

This is an appropriate response and should be incorporated into the text.

General Comment 6

The proposed alternative to collect surface water at Ponds B-5 and C-2 was incomplete and drew unsupported conclusions. It appears that only one alternative was completely developed and evaluated for surface water collection. The other collection alternative was discredited without presentation of supporting information.

Response

Collection of contaminated OU 2 surface water is not a reasonable alternative for consideration in the IM/IRA. The reasons are given in the Response to general Comment 4 of this section. Only one reasonable surface water collection method exists: collection by diversion at the source. According to the revised National Contingency Plan (March 1990), all reasonable alternatives must be evaluated for the IM/IRA. If however, only one reasonable alternative exists, the IM/IRA process may proceed with that alternative as the preferred alternative. Furthermore, collection by diversion at the source is the collection method agreed to by EPA, CDH, and DOE in meetings held in February and March of 1990.

Review:

Referencing the February and March meeting in the text should be included.

Specific Comment 1

TABLE OF CONTENTS A list of Acronyms and Initials would benefit readers unfamiliar with the terminology presented in the document.

Response

A Glossary of Acronyms has been added to the Table of Contents. In addition to acronyms, the list contains chemical compound abbreviations and engineering units.

Review:

We agree with the action taken.

Specific Comment 2

EXECUTIVE SUMMARY, p EX-1, para 3 No mention is made of the appropriate DOE Orders (DOE Order 5440 1C) or guidance under which this action will be performed

Response

Reference to DOE Order 5140 1C has been added to the Executive Summary

Review:

We agree with the action taken.

Specific Comment 3

Section 1 1, p 1-1, para 1-2. The stated purpose of this document is "to minimize the migration of hazardous substances via surface water from areas that pose a potential long term threat to the public health and environment." The potential long term threat has not been established based upon surface water or groundwater models, risk assessments to the public, estimates of probable failure of the existing system, or other measures that would validate the assumption.

Response

The potential long-term threat to public health and the environment by contaminated OU 2 surface water, if any, is not known The project schedule presented in the draft IAG does not allow adequate time to conduct detailed surface and ground water modeling, risk assessments or failure analysis for the existing collection and treatment system The surface water IM/IRA is being pursued bases on unqualifiable potential adverse effects and in accordance with agreements reached with EPA and CDH Se our response to General Comment 4

Review:

To justify the course being taken, the reference to the agreements should be included in the text.

Specific Comment 4

Section 1 1, p 1-2, para 2 The admission that "insufficient information on the nature and extent of groundwater contamination exists at this time to pursue ground

water remediation" makes the technical basis for this Interim Measures/Interim Remedial Action Plan (IM/IRA) questionable. To initiate a proposed IM/IRA after results of the initial site investigation were inconclusive indicates a concern for a long term threat that has not been completely assessed. This statement should be modified to be more consistent with the document.

Response

See response to Specific Comment 3

Review

The documentation of appropriate Inter-Agency-Agreements would be helpful to the reader.

Specific Comment 5

Section 1.1, p 1-3, para 4. Excluding the potential impacts associated with final remedial actions at Operable Unit 2 severely limits the scope of this assessment. During the proposed 30 year operating life of the interim measure, changes in the status of groundwater at the site could change many of the assumptions used to justify this IM/IRA action. Economic justifications, removal efficiency, operating costs, and other parameters related to the IM/IRA action could be altered by remedial activities on Operable Unit 2.

Response

The operating life of the surface water IM/IRA is not known at this time. A 30-year period is used as a basis for cost comparison of the alternatives. It is difficult to predict the effect of ground water remedial activities on the proposed surface water IM/IRA for compliance with all remedial requirements of the NCP. Changes in the basis of design due to OU 2 ground water remedial actions would be incorporated in the final design for OU 2 surface water.

Review:

We agree with the statement. A footnote to this effect would be helpful.

Specific Comment 6

Section 2.0, Figs 2-4 through 2-9. These figures should identify the boundaries of Operable Unit 2.

Response

The purpose of Figure 2-4 is to illustrate the drainage patterns of the RFP site. Furthermore, the scale of Figure 2-4 does not allow accurate location of the OU 2 areas as is provided in Figure 2-2.

Figures 2-5 through 2-8 indicate the Individual Hazardous Substance Sites (IHSSs) associated with the 903 Pad, Mound and East Trench Area which is the pertinent information to convey on these maps.

The IHSSs have been added to Figure 2-9 shown on Figure 2-5 through 2-8.

Review:

For the reader unfamiliar with RFP, there is a tendency to keep referring to Figure 2-2 to locate the boundaries of the various areas. It is still felt that these boundaries will make the final product easier to read.

Specific Comment 7

Section 2.0. It is recommended that background levels of contaminants be reported in conjunction with field survey results.

Response

Background levels of contaminants are incorporated in Table A-5 through A-16 in the revised draft.

Review:

We agree with the action taken.

Specific Comment 8

Section 2.3.3 The discussion of soil contamination at various locations could be reduced by providing the necessary data in tabular form. The discussion would also benefit from development of the relationship between contamination levels and soil depth or depth from groundwater. The discussion would also be enhanced by estimates of contaminant transport through the soil.

Response

Soil, ground water, and surface water data have been tabulated in Appendix A. The soil contamination discussion has been concisely summarized, and to the extent possible with the existing data, contaminant interaction within the various media has been rewritten.

Review

We agree with the action taken.

Specific Comment 9

Section 2.3.3, p 2-32, para 5 The third sentence implies that other reported values for acetone contamination in soils might be in error The sentence should be rewritten to correct this assertion

Response

The comment is acknowledged The entire section has been rewritten

Review

We agree with the action taken.

Specific Comment 10

Section 2.3.4, p. 2-34. A description of sampling frequency for collection on sediment materials would contribute to the text in this subsection A more complete description of sample locations would resolve questions of sampling consistency, (e.g. bottom of stream bed, side of channel, etc)

Response

Sediments are not sampled on a routine basis The sampling technique is presented in the Rocky Flats Plant ER Program SOPs The sampling technique is consistently applied at all sampling locations

Review:

A reference to the SOPs should be included.

Specific Comment 11

Section 2.3.5, p 2-37, para 2. The first three sentences represent a description of the groundwater/surface water interaction that should be moved to Sect, 1.0, INTRODUCTION, and expanded

Response

The discussion has been expanded to include similarities in local ground water contamination We felt it best to keep this discussion in section 2.3.5 in light of our response to other comments presented here regarding hydrology and ground water contaminant migration.

Review

We agree.

Specific Comment 12

Section 2.3.5.1, p 2-38, para 3 Soil erosion may be indicated by the presence of elevated radionuclide contamination in surface water samples. If erosion is a major transport mechanism for contamination of surface water, the importance of collecting and treating groundwater may need to be reassessed.

Response

See our response to General Comment 2

Review

It would be helpful to the reader to be made aware that the problem is not being ignored, and the inclusion of a comment such as the response would help.

Specific Comment 13

Section 2.3.7, p 2-42 This summary contains information not previously presented in Section 2.3 and might be appropriately retitled Interpretation of Environmental Contamination Data

Response

This section has been rewritten to better summarize the nature and extent of ground water contamination, and downplay natural phenomena that could explain elevated inorganic constituents in ground water

Review:

We agree with the action taken.

Specific Comment 14

Section 3.1, p 3-1, para 1 The overall objective of the IM/IRA is not the same as the one proposed in Sect. 1.0 The difference in objectives should be resolved

Response

The overall objective stated in section 3.1 has been revised to be consistent with the objective stated in section 1

Review

We agree with the action taken.

Specific Comment 15

Section 3.3.1, Tables The 37 pages of tables in this section overpower the text. It is suggested that most of the tables be moved to an appendix. The text would also benefit from development of conclusions based upon the tabular material.

Table 3-1.4 Gross alpha and beta are not radionuclides and should not be reported in mg/l units. These values should be reported in pCi/l as in Table 3-2.4

Response

The tables are in Appendix D in the revised draft. The discussion has been changed to be in keeping with the new NCP (March 1990).

The "typo" mg/l has been corrected to show pCi/l.

Review:

We agree with the action taken.

Specific Comment 16

Section 3.3.2, p 3-29, para 3 A more complete list of location-specific requirements should be presented in the text. Elements such as area within flood zones and areas affecting water bodies should be included. The text would also benefit from a discussion of the prerequisites for location-specific status to determine whether such laws should be considered ARARs. Sections 2.2.5 through 2.2.7 address these issues and should be incorporated into this discussion.

Response

The discussion of the location specific ARARs has been changed per this comment. It is more to the point, and focusses on floodplain and wetland restrictions.

Review:

We agree with the action taken.

Specific Comment 17

Section 4.1.1, p 4-4, para. 3 Groundwater withdrawal may be considered the most appropriate collection technique for Operable Unit 2 but may fail to meet the

requirements of the federal agency agreement. Insufficient understanding of local hydrology is usually not considered a major constraint in development of a well array.

Response

See our response to General Comment 3

Review

It would be helpful to reference any agreements that would limit the choice of action.

Specific Comment 18

Section 4.1.2, p 4-5, para 4. Problems associated with Pond B-5 filtration treatment are not general knowledge. A reference to the proposed difficulties would be appropriate.

The conclusion that reverse osmosis and electrodialysis are not cost-effective technologies for the removal of radionuclides should be supported by references to other similar design studies or reports of recent investigations.

Response

It is well known that conventional fabric filtration is not applicable for filtration of surface waters due to the relatively large concentration of suspended solids present in these waters. The filter media fouls quickly requiring impractical high operation and maintenance. For this reason it is not necessary to reference the current performance of the filtration system on Pond-5, and therefore, the reference to this system has been removed from the text in the revised draft.

The conclusion that reverse osmosis and electrodialysis are not cost-effective technologies for the removal of radionuclides will be supported by providing installed capital costs for these process units.

Review:

We agree with the action taken.

Specific Comment 19

Section 4.2.1, p 4-6, para 1. It appears that long-term reliability as a criteria for effectiveness evaluation may be in contradiction with the concept of an Interim Measures/Interim Remedial Action. A time interval could appear in parentheses behind long-term.

All of the criteria employed for the effectiveness evaluation should be identified either in the text, on an accompanying table, or in the appendixes.

Response

A more appropriate phrase is "continued reliability over the life of the IM/IRA", The statement in Section 4.2.1 has been modified

Review

We agree with the action taken.

Specific Comment 20

Section 4.2.3, p 4-7, para 1 Annual operating and decontamination/decommissioning costs are not included in the criteria for evaluation, but operating costs are identified in Sect 4.3.1.4 and estimated in Table 4-4 Not included in the annual operating costs are estimates for disposal of radioactive, hazardous chemical, and mixed wastes Costs associated with waste disposal are usually considered major evaluation criteria in the selection of remedial alternatives It is recommended that these costs be identified and incorporated into future evaluations of the remedial alternatives

Response

Annual operating costs (including disposal costs) have been added to the cost evaluation criteria listed in Section 4.2.3 Waste disposal costs for construction-generated wastes are also included in the capital cost. See our response to General Comment 3 regarding decontamination/decommissioning costs

Review:

The fact that waste disposal costs for construction have been incorporated into the capital costs should be included as a footnote.

Specific Comment 21

Section 4.3.1.1, p 4-9, Table 4-2. The significance of presenting the raw flow data for SW-61 is unclear The table could be deleted without incurring resistance to the proposed flow value

Response

The historical flow rates recorded for SW-61 lends credibility to the proposed design flow value for CS-61 The historical data also illustrates the seasonal variation in the flow rate at SW-61

Review

The data presented represent a limited period of time, and their validity, for that reason, has been questioned by one author. It is recommended that the data either be expanded or deleted.

Specific Comment 22

Section 4.3.1.1, p 4-13, para 1 The eventual fate of sediments and trash removed upstream from the weir is not addressed. It is also unclear if these sediments and trash represent a radiological and/or hazardous chemical waste management concern. The practices and procedures necessary to evaluate and manage these materials should be alluded to in the text. Appropriate disposal of these materials should also be identified. The operation and maintenance costs associated with periodic sediment removal from Upper South Walnut Creek are not identified in Table 4-4. It is suggested that this cost be included in the table.

Response

Collection and disposal of sediments and debris from all surface water collection stations has been added to Section 4.3.1.1. In addition costs associated with the recovery and disposal of the wastes are included in Section 4.3.1.2. To be conservative in the cost analysis, the wastes recovered from the collection system will be handled as mixed wastes intended for disposal at the Nevada Test Site. The estimated labor and disposal costs will be presented in Table 4-5, "assumed Costs for Surface Water Diversion and Collection System."

Review:

We agree with the action taken.

Specific Comment 23

Section 4.3.1.2, p 4-15, para 3 The text does not address all of the criteria for effectiveness evaluation identified in Sect. 4.2.1. Protection of the community and workers during the remedial action is an area that should be addressed.

Response

The comment is acknowledged and the discussion in Section 4.3.1.2 has been expanded to cover community and worker protection.

Review:

We agree with the action taken.

Specific Comment 24

Section 4.3.1.3, p 4-15, para 4 All of the criteria for implementability evaluation were not addressed in this text. Off-site disposal capacity, coordination with other agencies, and the ability to obtain any necessary approvals or permits were not included in the text. It is recommended that these and other criteria be addressed in the text.

Response

We agree. The discussion has been expanded accordingly.

Review:

We agree with the action taken.

Specific Comment 25

Section 4.3.1.4, Table 4-4, pp 4-17 and 4-18. Costs associated with the annual disposal of contaminated materials and decommissioning the surface water diversion and collection systems should be added to Table 4-4.

Response

See our response to General Comment 3 and Specific Comment 22.

Review:

We agree with the action taken.

Specific Comment 26

Section 4.3.2.1, p 4-16, para 1. The alternative to collect surface water at Ponds B-5 and C-2 was discredited before an analytical comparison could be performed. Without a complete description of the technology, effectiveness, implementability, and cost, the evaluation of this alternative has not been performed as defined by the screening process presented in Sect. 4.2.

Response:

See our response to General Comments 4 and 8.

Review:

The agreements need to be referenced when they are a factor in the choice of action.

Specific Comment 27

Section 4.3.2.2, p 4-19, para 1 The cross media transfer concern was not expressed in Sect 4.3.1.2 with the possibility of groundwater contamination of surface water. This concern should be addressed for both situations.

No estimate has been provided that indicates the total quantity of VOC that might be released to the atmosphere. Also no estimate of the quantity of VOC lost to the atmosphere from controlled venting of storage sumps has been presented.

Concern for atmospheric contamination is valid but unbounded in terms of potential magnitude and in comparison with the other proposed alternative. It is recommended that before this issue is presented in the text as a justification for disqualifying an alternative, it be more completely described and supported by quantitative estimates.

Response

The cross media transfer is mentioned in Section 4.3.1.2. VOC emissions have not been quantified, and attendant public health risks have not been evaluated because of the large uncertainty in such analysis. However, it is noted that the VOC emissions are insignificant relative to current releases from RFP operations. The volatilization cross-media contaminant transfer concept has been presented as a factor in dismissing surface water collection at the existing retention ponds largely because of the negative public perception to uncontrolled contaminant releases at the RFP. This section of the document has been deleted in the revised draft. Please see our response to General Comment 6 for further discussion.

Review:

We agree with the action taken.

Specific Comment 28

Section 4.3.2.3, p 4-19, para 1 The issue of high-flow treatment is unsupported because this situation has not been previously described in the text. The potential effect of increased water volume on the ARARs has not been addressed with regard to this specific alternative.

The discussion identifies surface water collection at Ponds B-5 and C-2 as a "backup" alternative. This phrasing indicates a predisposition to the source collection alternative and should be removed from the text.

Response

This section has been deleted in the revised draft. See our response to General Comment 6 for further discussion.

Review:

We agree with the action taken.

Specific Comment 29

Section 4.3.2.4, p 4-19, para. 3 No cost information is presented The pump station and transfer line have not been previously identified in the discussion of this alternative, however, without cost information "it was noted that a pump/transfer system will cost significantly less to build and operate than the source diversion collection alternative " This conclusion is unsupported by the text information and should be amended If cost information exists for this alternative, it should be included in the discussion

Response

This section has been deleted in the revised draft See our response to General Comment 6 for further discussion

Review:

We agree with the action taken.

Specific Comment 30

Section 4.4.1.1, p 4-20, para 1 Reference is made to Sect. 4.2.2.1, but it is not present in the document. The correct reference should be substituted, or Sect. 4.2.2.1 should be added to the document.

Response

The correct references should have been to Section 4.4.2.1 The text has been changed to correct this error

Review

We agree with the action taken.

Specific Comment 31

Section 4.4.1.1, p 4-22, para 2 The postscript in parentheses should be removed

Response

We agree The text has been Changed in the revised draft

Review

We agree with the action taken.

Specific Comment 32

Section 4.4.1.1, Table 4-5, pp 4-24 and 4-25 Item C, Sludge Waste Disposal, estimates an annual cost of \$450/cu yd. It is unclear if this estimate includes packaging costs and transportation to NTS.

Response

The estimate does include transportation costs to NTS. The foot note will be modified to clearly define the basis for the unit cost.

Review:

We agree with the action taken.

Specific Comment 33

Section 4.4.3, p 4-37, para. 3 One of the major limiting factors in the performance of activated carbon adsorption systems is the system's inability to perform over a range of contaminant concentrations. Contaminant concentrations exceeding design loading capacity could result in release of untreated waste waters. This consideration should be addressed in the text.

Response:

In our opinion, all treatment technologies for organic contaminant removal have limited ability to perform over a wide range of contaminant loading. We feel activated carbon is least affected by this condition relative to other technologies considered in IRAP/EA.

Review:

The choice of activated charcoal is well stated in the response and should be included in the text, along with appropriate data relating to the expected flow rates.

Specific Comment 34

Section 4.4.3.3, p 4-50, para 3 Concern for increased costs associated with disposal of mixed waste at NTS should be uniformly applied to all situations where mixed waste may be generated.

Response

We agree This concern is discussed in both the activated carbon and air stripping technology evaluations

Review

Due to the disposal problems associated with a Mixed Waste and the possibility of its generation during the operation, it would be appropriate to address this issue in more detail. If the intent is to isolate the radiological components of the waste stream prior to the removal system, as alluded to in par. 4 page 4-39, then that should be expanded upon in the text.

Specific Comment 35

Section 5.0 Table 5-1 represents a summary of information developed in preceding sections and is not an analysis. No numerical or other uniform basis is provided for comparison of the various alternatives. Based on the information presented in this table, it is not clear that a similar recommendation would be the result.

Response

In our opinion the section is adequate in elucidating the major advantages and disadvantages of the alternatives in order to quantitatively determine the preferred alternative. A feasibility study for the final remedy at OU 2 would greatly benefit by a quantitative approach.

Review:

Table 5-1 would be better classified as an empirical comparison rather than comparative analysis, because this tends to imply a quantitative basis for the comparison, which the text does not support.

Specific Comment 36

Section 5.2, p 5-4, para. 2 Selection of a diversion alternative cannot be supported on the basis of the IM/IRA alternative screening process due to an incomplete description and analysis of the retention pond alternative. Unless supported by numerical analyses, these criteria should be interpreted as subjective evaluation criteria.

Response

See our response to General Comment 6

Review

The inclusion of references to the agreements would be beneficial.

Specific Comment 37

Section 5.2, p 5-5, para 1 Exclusion of the UV peroxide alternative on the basis of an existing operation at the 881 Hillside and development of a treatment performance data base were not identified earlier as selection criteria. If these are valid considerations, they should be incorporated into Sect. 4.2.

Response

This statement was made based on early discussions with EPA where they advanced this notion. They have since retracted this position and accordingly this criterion for excluding the UV peroxide alternative has been revised in the draft.

Review:

The agreements should be referenced.

Specific Comment 38

Section 5.2, p 5-4 and 5-5 The text contains no discussion or comparison of cost considerations among the proposed alternatives. Also no information is presented concerning the cost per gallon for treatment among the various alternative configurations. Although the document stated that the proposed action is not constrained by the \$2 million statutory limit (Sect. 4.2.3), cost considerations are usually considered major elements in evaluation of proposed actions. Justification for excluding cost information from the evaluation process should be addressed.

Response

The text of the revised draft has been modified to incorporate a discussion of relative cost of the alternatives.

Review:

We agree with the action taken.

Specific Comment 39

Section 6.1.1, p 6-2. It is unclear whether the sumps and associated piping being installed as part of this action will require secondary containment under the same considerations as the 10,000-gal equalization tank (Sect. 6.1.2).

Response

All sumps and piping will have secondary containment to comply with RCRA regulations pertaining to tanks. The text will be modified to make this clear.

Review:

We agree with the action taken.

Specific Comment 40

Section 6.1.2.1, p. 6-8, para. 1. Alarm systems for unmanned wastewater treatment facilities are usually connected to either an automatic shutdown circuit or a telemetry system. The text provides no indication of the system response to an off-specification event. A description of the planned response would be beneficial.

Response

This level of detail is best presented in the final design. We wish to be as general as possible in the IRAP/EA to achieve greater flexibility in actual design of the collection and treatment systems.

Review:

A reference to the RFP Spill Response Plan would ensure the reader that the subject will be considered.

Specific Comment 41

Section 7.1, p. 7-1, para. 3. The conclusion that VOC concentrations in soils at Operable Unit 2 are insignificant is questionable. The sentence should be altered to reflect a degree of uncertainty because all soils in the areas proposed for excavation/construction have not been sampled.

Response:

Your Comment is acknowledged. The sentence has been modified and now reads, "Based on sample analysis to date, VOC concentrations in soils at OU 2 are insignificant."

Review:

We agree with the action taken.

Specific Comment 42

Section 7 1, p 7-2, para 5 Air quality effects from generation of radioactively contaminated dusts should be given the same consideration as the discussion on VOC effects

Response

Air quality impacts are mentioned in several sections of the draft IRAP/EA. In Section 7-5, the text discusses the inhalation of fugitive dust and included comment on potential radioactive airborne contaminants. Further, the effects on all alternatives (1 through 3) are presented in Section 8 and Tables 8-1A through C. No further change to the text is planned.

Review:

We agree.

Specific Comment 43

Section 7 1, p 7-3, para. 1 Evaluation of the aggregate amount of off-gases from the proposed treatment system was not mentioned earlier in Sect 4. If values have been determined for amounts of off-gases generated from the treatment system, these values should be reported both here and in Sect 4.

Response

Off-gas releases have not been quantified in the IRAP/EA. However, the paragraph has been modified to read as follows: "Collected contaminated surface water will be processed through the proceed cross flow filtration system and activated carbon facility. The processed treatment systems will not produce measurable VOC emissions, therefore no changes in the levels of these gases in the ambient air off-site is expected. The need for periodic membrane cleaning will require the use of a small amount of sodium hypochlorite (NaClO). This could occur once every 2-4 weeks and will not impact off site air quality."

Review:

We agree with the action taken.

Specific Comment 44

Section 7 2, p 7-3 The concept of water as a resource has not been evaluated either here or in Sect 7 7. Reallocation of surface water from the Woman Creek drainage area to South Walnut Creek could be expected to modify the aquatic environments of both. Also, the quality of water released from the treatment system may alter the chemistry of the receiving system. Assuming a release equal to the

design processing rate (60 gal/min) of the treatment system, approximately 31 million gal of treated water could be released into the South Walnut Creek drainage. These issues should be identified as potential effects of the proposed action.

The majority of this discussion focuses on erosion and spill control. Water quality is a more complex issue and one that should be evaluated relative to appropriate state and federal quality standards.

Response

The concept of water resources has been addressed and is now presented in Section 7.3, Terrestrial Impacts. The proposed interim remedial action will have minimal or no impact on the water resources management of nearby Woman Creek, South Walnut Creek and the South Interceptor Ditch. Currently, the South Interceptor Ditch delivered to Pond C-2 for treatment, and piped into the Broomfield Diversion Canal. Surface water collection stations SW-61 and SW-103 feed into South Walnut Creek. None of the surface water collection stations feed or impact Woman Creek.

With respect to the South Interceptor Ditch, Volume generated from the five southern surface stations (SW-53, SW-55, SW-63, SW-64, and SW-77) that pass into the South Interceptor Ditch are quite low (See Section 4.3.1). The South Interceptor Ditch collects the majority of its water from sources upgradient from this area. Although no measurement was made to determine the actual percentage of water to be delivered from them South Interceptor Ditch, based on the observed flow from these other sources this diversion should have no impact on water resource management impact on South Walnut Creek.

The quality of water released from the treatment system will meet the sites NPDES permit requirements. Any alteration to the chemistry of the receiving water will be minor and realistically should have no effect.

Review:

The importance of the water quality issue is one that would be best served with a more detailed discussion of the subject. The response that is offered should be expanded upon and included in the text.

Specific Comment 45

Section 7.3, p 7-5, para. 2. The last sentence is a conclusion that requires reference to environmental surveys or investigations performed at Operable Unit 2.

Response

The conclusions presented in Section 7.3, p 7-5, para 2, are based on the information presented in Section 2.0, site characterization of this report. Section 2.2 discusses

affected and sensitive environments No further documentation or reference is necessary

Review

We agree.

Specific Comment 46

Section 73, p 7-6, para 1 The discussion of treated water might best be presented in a subsection entitled Aquatic Impacts

Response

The reviewers comment is acknowledged, but it is believed the change is unnecessary and would not add substantially to the document

Review:

We agree.

Specific Comment 47

Section 76, p 7-15, para 2 The most severe credible accident with potential for exposure of either site employees or the public is likely to involve transportation of radiological, hazardous chemical, or mixed wastes Loss of containment during transit has the opportunity to adversely affect more people than a catastrophic event within the boundaries of Operable Unit 2. It is recommended that an accident analysis involving transportation be considered as a replacement for the most severe credible accident scenario

Response

Section 78, Transportation Impacts, has been modified to include a paragraph on off-site transportation

Review:

We agree with the action taken.

Specific Comment 48

Section 7.7, p. 7-15 The quantity of water diverted from the two drainage systems should be recognized as a commitment of resources. The annual withdrawal of water from the Woman Creek drainage should be considered commitment of a resource.

Response

As stated in the response to Specific Comment 44, a section on water resources has been added to the document and is found in Section 7.3. The amount of water withdrawn is expected to average less than 3 GPM and this amount is considered an insignificant quantity to be considered a commitment of resource.

Review:

The action taken is appropriate. The restating of the flow rate in GPM is a better means of communicating and should be used in the text.

Specific Comment 49

Section 8.1, p. 8-1, para. 4 The No Action alternative could be summarized in a single statement - The Agreement in Principle requires interim measures be undertaken, therefore, this alternative is unacceptable. This statement negates the necessity of Sects. 8.1.2 and 8.1.3.

Response

Although the No Action Alternative is unacceptable per "The Agreement in Principle" the National Environmental Policy Act (NEPA) requires that we address the no action alternative. The sections will remain to fulfill NEPA requirements.

Review:

We agree with the response. However, we still feel a need to reference "The Agreement in Principle" in the text.

Specific Comment 50

Section 8.2.1, p. 8-2, para. 3 Use of modified ditches to transport contaminated surface water to a centralized wastewater treatment system is new information not presented in earlier descriptions of this alternative (Sect. 4). Addition of this material would be appropriate in earlier sections describing the alternative.

Concern for surface water percolation through ditches was not addressed earlier in Sect. 4.3.1.1 when describing the source diversion alternative. The difference between the alternatives appears to be one of degree and not substance. If percolation is a

concern, then it is recommended that the diversion channel described in Sect 4 3 1 1 be modified to address installation of a liner or other impermeable layer

Response

Ditches will not transfer surface water to a centralized wastewater treatment system
The text will be changed to clarify this in the revised draft

Review

We agree with the action taken.

Specific Comment 51

Section 8 2.2, p 8-3, para. 1 and 2 This discussion is based on supposition and would benefit from references to similar situations

Response

The statement in Section 8 2.2, Personnel Exposure, are factual. Alternative 2 proposes to continue surface flow at the RFP site in the existing ditches and treat only the waters arriving at Ponds B-5 and C-2 Since these ditches are unlined and not impermeable, it is safe to state that some percolation could occur

Review:

We recommend either including the source of the facts or including the data in the text.

Specific Comment 52.

Section 8 2.3, p 8-3, para 3 This discussion would benefit from a risk assessment or other analysis that supports the expectation of long-term losses

Response

The discussion in Section 8 2.3, Transportation is based on information contained in Section 2 and reference material cited in Section 9 Figure 2-11 illustrates surface water and sediment monitoring stations in and around OU 2 and downgradient Sediment data for these monitoring stations are contained in the 'Phase II RFI/RIFS Work Plan for OU 2, published in April of 1990 This plan identifies contaminants in the sediments Continued use of those ditches would only serve to increase the amount of contamination or increase the dispersion of existing contamination, thereby increasing the long-term transportation impacts The text in Section 8 2.3 will be modified to include citation of the EG&G plan

Review

We agree with the action taken.

Specific Comment 53

Section 8.3.1 This discussion contains no information concerning the environmental effects of the evaluated treatment technologies. The comparisons presented in Tables 8-1-B and -C do not appear to support the text.

Response

The format of the IM/IRA discusses the Environmental Effects of the proposed interim remedial action in Section 7 and the Environmental Effects of the Alternatives in Section 8. In so far as a comparison of treatment technologies, the last sentence of Section 8.3.1 states "There is no appreciable difference in environmental impacts of the alternative organic contaminant treatment technologies."

Evaluation of the treatment technologies for radionuclide removal shows that only the cross flow filtration system provides proven technology for the removal of the targeted radionuclides.

As to the comparisons of Table 8-1-B and 8-1-C, collection of surface water in existing retention ponds has been dismissed. Justification for not evaluating this alternative is provided in Section 4 of the Revised draft.

Review:

We agree with the action taken.