

Document Review Comment Record of
EPA, CDH, and Public Comments on the

FINAL WORKPLAN FOR THE
CONTROL OF RADIONUCLIDE LEVELS
IN WATER DISCHARGES FROM
THE ROCKY FLATS PLANT

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

EG&G Rocky Flats
Environmental Management Program

January 1992

ADMIN RECORD

REMOVED FOR CLASSIFICATION/UCR
By [Signature]
Date 1/7/92

EXECUTIVE SUMMARY

The Rocky Flats Plant (RFP) has developed the *Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant* (EG&G, 1992) in response to Section XII of the Statement of Work to the Inter-Agency Agreement dated January 22, 1991. The Workplan describes current and proposed activities for managing surface water discharges from the terminal detention ponds, for controlling the levels of radionuclides in these waters, and for assessing water quality with respect to applicable standards. The Workplan reviews technical and operational issues that affect the current discharge program and describes specific tasks for improvement.

The Responsiveness Summary presents RFP's response to all comments received at the public meeting, as well as those mailed to RFP during and after the public comment period which ended November 22, 1991. There are several issues for which multiple comments were received. A brief summary of these issues and responses is presented below.

1. There were several questions concerning the RFP control of release of radionuclides. The responses address proposed improvements to pond management, C-2 recycle, refining the pond level models, improving dam integrity, and water sampling program improvements.
2. There were several questions concerning the assessment of water quality. The responses address the use of the 30-day moving average, application of the CWQCC standards, discharge procedures, and regulatory concurrence.
3. There were several questions concerning the radiological analytical methods. The responses address proposed real-time monitoring, analytical quality control, and goals for analytical improvements.
4. There were several questions concerning treatment evaluations and proposals. The responses address the use of the Sitewide Treatability Study Workplan and the U. S. EPA Best Available Technology, and the characterization of radionuclide species.
5. There were several questions concerning different historical occurrences at RFP. The responses address the landfill pond, Mower Ditch, previous sampling and discharge procedures, and background levels of radionuclides.
6. There were several questions concerning surface water management issues. The response referred the commentor(s) to the *Surface Water Management Plan* (SWMP).

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
EXECUTIVE SUMMARY	ES
GLOSSARY OF ACRONYMS	ii
COMMUNITY INVOLVEMENT.....	1
RESPONSES TO COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD.....	2
COLORADO DEPARTMENT OF HEALTH.....	3
ENVIRONMENTAL PROTECTION AGENCY.....	8
KEN KORKIA	14
ROCKY FLATS CLEANUP COMMISSION.....	17
CITY OF WESTMINSTER.....	25
CITY OF BROOMFIELD.....	28
CITY OF BOULDER.....	34

GLOSSARY OF ACRONYMS

<u>ACRONYM</u>	<u>MEANING</u>
Am	Americium
BAT	Best Available Technology
CDH	Colorado Department of Health
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CHS	Colorado Health Standards
CWQCC	Colorado Water Quality Control Commission
DOE	U. S. Department of Energy
EPA	U. S. Environmental Protection Agency
ER	Environmental Restoration
FERC	Federal Energy Regulatory Commission
FFCA	Federal Facilities Compliance Agreement
FY	Fiscal Year
GAC	Granular Activated Carbon
GRRASP	General Radiochemistry and Routine Analytical Services Protocol
IAG	Inter-Agency Agreement
IM/IRA	Interim Measures/Interim Remedial Action
LLD	Lower Limit of Detection
ltr	Letter
MCL	Maximum Contaminant Levels
MDA	Minimum Detectable Activity
Mgal	Million Gallons
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
OU	Operable Unit
P	Paragraph
pg	Page
Pu	Plutonium

GLOSSARY OF ACRONYMS CONTINUED

<u>ACRONYM</u>	<u>MEANING</u>
QA/QC	Quality Assurance/Quality Control
Ref	Reference
RCRA	Resource Conservation and Recovery Act of 1976
RFP	Rocky Flats Plant
SDWA	Safe Drinking Water Act
SEO	State Engineers' Office
SOP	Standard Operating Procedure
SOW	Scope of Work
SWMP	Surface Water Management Plan
TSP	Sitewide Treatability Study Plan
TSS	Total Suspended Solids
USCOE	U.S. Army Corps of Engineers

COMMUNITY INVOLVEMENT

The Rocky Flats Plant (RFP) has developed a Community Relations Plan to involve the public in the decision making process as it relates to the environmental restoration activities. The plan was tailored to the concerns and needs of the community expressed during a series of interviews with nearly 100 local citizens. The plan meets the community relations requirements of the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the DOE/EPA/CDH draft Inter-Agency Agreement (IAG) for Environmental Restoration (ER) Program activities. Activities under the plan also meet requirements of the National Environmental Policy Act (NEPA).

For the *Final Workplan for Control of Radionuclide Levels in Water Discharges from* public workshop on the document was held on Thursday, October 17, 1991, from 7:00 p.m. to 9:00 p.m. at the Westminster Recreation Center, Westminster, Colorado. A presentation on the document was given to the City of Westminster on Thursday, October 24, 1991, at 2:00 p.m. at the Westminster City Hall, Westminster, Colorado. A meeting to hear oral comments on the *Workplan* was held on Wednesday, November 6, 1991, from 7:00 p.m. to 9:00 p.m. at the Arvada City Hall, Arvada, Colorado. Written comments on the document were requested during a 60-day public comment period, which began September 24, 1991 and ended November 22, 1991.

Citizens were notified of the availability of the document, the fact sheet, the 60-day public comment period and the public meetings through newspaper, and direct mail announcements. A fact sheet describing the *Workplan* was available at all public meetings or by contacting the Community Relations Division.

Other ongoing public information efforts include the periodic Rocky Flats Environmental Restoration Update, an active speakers bureau for civic and educational organizations and tour programs for groups and individual citizens. The Community Relations Division also responds to numerous inquiries and requests for information about plant activities.

Four public reading rooms, which provide public access to environmental restoration documents, are maintained by the U. S. Department of Energy (DOE), the Environmental Protection Agency (EPA), the Colorado Department of Health (CDH), and the Rocky Flats Environmental Monitoring Council. The DOE Public Reading Room is located in the Front Range Community College Library in Westminster, Colorado.

RESPONSES TO COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD

The Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, was released for review and comment on September 24, 1991. Verbal comments that were received during the November 6, 1991 public meeting and written comments received by December 20, 1991 were reviewed and are addressed in this Responsiveness Summary. Comments were made by the following commentors:

Verbal Comments:

- 1 Ken Korkia, Technical Assistant, Rocky Flats Cleanup Commission

Written Comments:

- 1 Gary W. Baughman, Unit Leader, Colorado Department of Health
- 2 Martin Hestmark, Manager, Environmental Protection Agency
- 3 Ken Korkia, Technical Assistant, Rocky Flats Cleanup Commission
- 4 Susan Nachtrieb, Water Quality Control Coordinator, City of Westminster
- 5 Kathy Schnoor, Chemist/Environmental Specialist, City of Broomfield
- 6 Stephen Honey, City Manager, City of Boulder

The comments from the above individuals are included verbatim in this document in the same sequence presented by the commentor. The comments are subdivided at the point where the issue or subject changes, with the RFP response printed adjacent to the comment. Many written comments contain sequential paragraphs that are on similar themes or that provide background on a comment. Such paragraphs were treated as one comment.

To avoid the possibility of misinterpretation on the part of RFP, all apparent typographic errors in the comments have been left unchanged.

If an issue or comment was not addressed with a specific response it does not mean that RFP agrees with the commentor. Many of the comments express the opinions of the authors, do not reflect the opinion of RFP, and do not require a response from RFP.

Record of Response to Comments

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Date: 1/24/92

Citation	Comment/Issue	Disposition
<p>Colorado Department of Health (CDH) November 21, 1991 ltr Item (1) pg. 1, P1</p>	<p>Section 2.4.1: Paragraph 2, page 2-10 states that Dry Creek is tributary to Walnut Creek. Figure 2.5 does not show a Dry Creek stream segment. Is Dry Creek beyond the coverage of Figure 2.5 or is it being confused with Big Dry Creek to which Walnut Creek is tributary. Please clarify or correct.</p>	<p>The statement that Dry Creek is tributary to Walnut Creek is in error. Walnut Creek is tributary to Big Dry Creek.</p>
<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (2) pg. 1, P2</p>	<p>Section 2.5.3: The statement, on page 2-16, that the new water quality standards for segment 5 are "goal qualifier" is inaccurate. There is a goal qualifier on the adopted classifications. However, the standards adopted are in effect as underlying standards. A temporary modification has been adopted that expires in February, 1993. Unless the temporary modification is extended or the underlying standards are revised as a result of a rulemaking hearing scheduled for September, 1992, the underlying standards will be fully in effect as of February, 1993.</p>	<p>The paragraph has been rewritten to clarify the "goal qualifier" for Segment 5.</p>
<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (3) pg. 1, P3</p>	<p>Section 3.1.2: Paragraph 2, page 3-3 still warrants clarification of the 90% holding capacity versus 50% of capacity. The Division is under the impression that the terminal ponds, including A-4, are operated so as not to exceed 20% of their capacity. Yet the statement in this paragraph suggests that the maximum operating capacity of A-4 is 50%. Please clarify!</p>	<p>Due to the existing pond capacities, their hydraulic interrelationships, and the required pond management/discharge procedures, RFP is unable to keep the terminal pond volumes under 10% capacity. It is currently our goal to operate all ponds (A-3, A-4, B-5, C-2) between 10% and 50% of their capacity although higher levels are sometimes encountered following periods of high precipitation/runoff. See Section 3.3.7, Pond Level Operational Goal.</p>

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<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (4) P4</p>	<p>Section 3.1.2: This section discusses the management practices and uses of the ponds. The Division's request for a chart showing pond capacities, pond uses and decision criteria for water transfers etc., to simplify the discussion, has not been addressed.</p>	<p>Figure 3.3-1 has been included to pictorially describe RFP pond management.</p>
<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (5) P4</p>	<p>Section 3.1.3: (Formerly 3.1.1) The Division still wishes to know how pool elevations, equivalent to a 10% capacity, are determined; are there level markers? Also, what effect do sediment volumes have on the ability of the terminal ponds to meet the 90% reserve holding capacity requirement of the NPDES permit? Will sediment be removed periodically, or on a scheduled basis, to maintain the 90% factor.</p>	<p>The pool elevations are read from level markers, these readings are used with pond capacity curves generated from topographic surveys (i.e. volume vs. pool elevation) to calculate the pond volumes with an estimated accuracy of 0.2 - 0.3 Million gallons (Mgal). Elevation readings are taken a minimum of three times per week, with more frequent readings taken during and following precipitation events. A new topographic survey is in progress to update the pond capacity curves. Comparisons to the 1980 pond capacity curves will determine sedimentation volumes. Periodic sediment removal <i>as necessary to minimize scouring during release</i> of water from the terminal ponds is described in the Section A(6)(d) of the National Pollutant Discharge Elimination System (NPDES) Permit #CO-0001333, though routine release of pond water no longer occurs through the outlet works. The removal of pond sediments is now covered under the IAG activities for Operable Units OUs) 5 and 6.</p>

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<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (6) pg. 2, P1</p>	<p>Section 3.2.1.1: Paragraph 4, page 3-5 states that background plutonium sources are "chiefly" radioactive fallout from atmospheric tests. The Division is unaware of background sources other than that derived from fallout and is concerned by the implications of the statement. Please justify any other background sources or revise the statement.</p>	<p>Some other plutonium (Pu) sources, documented in the literature, are emissions from other Pu facilities in the U.S. and worldwide, and "burnup" or disintegration of nuclear-powered satellites upon re-entry to earths' atmosphere. Plutonium may also be found naturally, as the following quote illustrates. "Plutonium, once thought to be an artificial element, has existed naturally on earth from primordial time to the present, according to scientists at the Los Alamos National Laboratory. Los Alamos researchers discovered a rare form of radioactive decay of uranium 238 that produces plutonium 238, a man-made element not thought to occur in nature, lab officials say. This version is one of three forms found naturally occurring in recent decades, said George Cowan, a senior fellow emeritus at the lab and former president of the Santa Fe Institute." (From "Lab Watch" section of <i>The Energy Daily</i>, November 22, 1991.)</p> <p>Plutonium-239 also exists naturally in pitchblende deposits to the extent of 10e-5% of the total α-activity. [See (1) G. T. Seaborg and M. L. Perlman, <i>J. Am. Chem. Soc.</i>, 70, 1571 (1948). (2) W. A. Myers and M. Linder, <i>J. Inorg. Nucl. Chem.</i>, 33, 3233 (1971)].</p>
<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (7) pg. 2, P2</p>	<p>Section 3.3.1: Please reference Figures 2.5 and 2.6.</p>	<p>Figures 2.5 and 2.6 are originals.</p>

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<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (8) pg. 2, P3</p>	<p>Section 3.4.3: Briefly describe how treatment wastes or residues are disposed.</p>	<p>Currently, the only treatment waste residues are used filter bags that contain suspended sediments and biological matter. Used filter bags are air dried and stored in covered containers pending final waste classification. Disposal will be dependent upon the waste classification given to the used filter bags. The used filter bags are analyzed for both RCRA-defined hazardous and radiological constituents. Material that is classified as "non-hazardous and non-radioactive" can be sent to the RFP sanitary landfill. Material that is classified as either hazardous, radioactive, or both, is packaged for shipment to a licensed offsite facility.</p>
<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (9) pg. 2, P4</p>	<p>Section 3.4.2.3: (Formerly 3.4.2) Item 3, page 3-29, discusses a significant reduction of plutonium and americium levels. Please provide quantitative versus subjective descriptions of the reduction.</p>	<p>Table 3.4-2 and Table 3.4-3 provide the quantitative descriptions of the reductions.</p>
<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (10) pg. 2, P5</p>	<p>Section 4.1.3: Will the model, scheduled for completion in the 2nd quarter 1992, account for sediment infilling of the ponds and subsequent impacts on pond capacities? The 90% reserve holding capacity of the terminal ponds, in respect to actual determinations of the 20% action level could be seriously affected by sediment infilling.</p>	<p>The simple model under development will account for sediment infilling of the ponds and subsequent impacts on pond capacities only in general terms.</p>
<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (11) pg. 2, P6</p>	<p>Section 4.1.3: In paragraph 3, page 4-5, it is stated that "samples will be collected in sufficient volume to allow at least one reanalysis..." Sample volumes must be addressed within a SOP to ensure a sufficient volume for re-analysis.</p>	<p>Sample volumes are addressed in the Standard Operating Procedure (SOP) <i>EMD Operating Procedures Volume IV: Surface Water Manual # 5-21000-UPS-SW</i>.</p>
<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (12) pg. 2, P7</p>	<p>Section 4.2.1: Regarding the study discussed on page 4-9, please state whether the quarters are fiscal or calendar quarters.</p>	<p>The study quarters are calendar quarters.</p>

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<p>Colorado Department of Health (CDH) November 21, 1991 ltr Item (13) pg. 2, P8</p>	<p>Section 4.2.3: It remains unclear whether RFP plans to continue discharge by re-rerouting flow to the existing, or future, treatment facilities in the event untreated water exceeds the 30-day Moving Average. Please clarify or direct the Division to the section where this is discussed. It seems appropriate that the subject be addressed in this section.</p>	<p>The topic of continuing pond treatment on a recirculating basis is now addressed in the Workplan Section 4.1.6.3, Representative Sampling. See also Section 4.2.3, Application of CWQCC Stream Standards.</p>
<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (14) pg. 2, P9</p>	<p>Section 4.3.3: This section on sampling strategy appears to be vague. For example, four issues were identified in the draft work plan but are no longer discussed. The specifics, either by discussion or references to SOPs or protocols, are absent. The Division questions how sampling consistency can be assured with this section as the guide. For example, will the samples be filtered prior to analysis?</p>	<p>Specific details concerning sampling are thoroughly addressed in the SOPs, which are now referenced in Section 4.3.3.</p>
<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (15) pg. 2, P10</p>	<p>Section 4.4.3: References to the "Safe Water Drinking Act" should be changed to the Safe Drinking Water Act (SDWA).</p>	<p>This correction has been made.</p>
<p>Colorado Department of Health (CDH) November 22, 1991 ltr Item (16) pg. 2, P11</p>	<p>Section 4.4.4.2: References to the "Safe Water Drinking Act" should be changed to the Safe Drinking Water Act (SDWA).</p>	<p>This correction has been made.</p>

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Ref: 8HWM-FF November 22, 1991 ltr General: Item (1)	From discussions held between DOE, EG&G, EPA, and CDH during the revision period for the draft version of this document, DOE acknowledged that long laboratory turnaround time for radionuclide analyses at Rocky Flats contributes significantly to problems in demonstrating compliance with the CWQCC stream standards. EPA understood from these discussions that DOE would attempt to reprioritize water samples to minimize this problem. The final workplan does not indicate that such an attempt was made. Add some discussion of this subject, the new priority system, and the expected improvements in turnaround time.	The laboratory turnaround times for radionuclide analysis are 10-14 days for RFP, 14 days for CDH, and 61 days for offsite laboratories. The CDH has the right to evaluate the safety of all pond discharge decisions, which are usually based on the CDH laboratory results. RFP has prioritized predischage samples and requests the RUSH 10-day turnaround.
Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (1)	Section 2.5.2: Include the exact wording from the NPDES permit to avoid any misinterpretation of the language and intent.	The Workplan has been modified to include the following NPDES paragraph: "After each precipitation event that results in surface runoff into a control pond (Ponds A-4, B-5, and C-2), there shall be no release of water through the outlet works of the pond for at least 24 hours following the precipitation event or until the volume of water in the pond reaches approximately 10 percent of the storage capacity of the pond. (This does not apply to water that passes through a sand filter collection system attached to the intake of the outlet works.) During such periods water may be released through the outlet works either continuously or in batches in order to maintain at least a 90 percent emergency reserve holding capacity. (For purposes of this permit, the flow of water over the spillway of a control pond is not considered to be a release of water through the outlet of the pond.)"

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Date: 1/24/92

<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (2)</p>	<p>Section 2.5.3: As written, this section is unclear about whether the standards adopted in 1990 are also "goal qualifier" and will be reviewed after a 3 year monitoring period before finalization. Clarify this point to avoid confusion in the application of CWQCC standards to RFP discharge waters.</p>	<p>The paragraph has been modified to clarify the "goal qualifier" for Segment 5.</p>
<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (3)</p>	<p>Section 3.2.2.2: The minimum detectable activity and the lower limit of detection are not the same thing. They are incorrectly referred to as being interchangeable in this section. Please see "Upgrading Environmental Radiation Data", EPA 520/1-80-012, page 6-24.</p>	<p>The text has been modified for clarification. RFP defines Minimum detectable activity (MDA) mathematically on page 3-12 in accordance with EPA guidance as "practically achievable with a given instrument, method and type of sample." Lower limit of detection (LLD) refers to estimated characteristics of the counting instrument, and so is not interchangeable with MDA.</p>
<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (4)</p>	<p>Section 3.3.6: The Workplan must explicitly state the QA/QC procedures followed to verify or discount anomalies.</p>	<p>The Appendix includes an analytical quality control section. The quality assurance/quality control (QA/QC) procedures followed to verify or discount anomalies are part of the existing laboratory QA/QC procedures. All offsite labs must meet EG&G/Environmental Management's General Radiochemistry and Routine Analytical Services Protocol (GRRASP) standards for QA/QC procedures, sample analysis, deliverables, documentation, and counting anomalies.</p>
<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (5)</p>	<p>Section 3.4.4: This section <u>still</u> does not address the problem of using uranium as a substitute for plutonium in treatment tests. It should be stated how, or if, these results will be used to design plutonium and americium treatment facilities, given their different chemistries and possibly different colloid formation properties. EPA requested that this issue be clarified in our review of the draft document.</p>	<p>The referenced study was only intended to be a baseline, and as such required some assumptions which may or may not be correct. Uranium was chosen because there was more information available. The design of americium (Am) or plutonium (Pu) treatment facilities would require additional research. See Section 4.4.3, Evaluating Potentially Applicable Technologies.</p>

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<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (6)</p>	<p>Section 4.1.7(a): State the laboratory turnaround time for the water samples and discuss the implications these turnaround times will have on pond discharge decisions.</p>	<p>The contaminants of concern are Pu and Am, which unfortunately have the longest laboratory turnaround times, 10-14 days for RFP, 14 days for CDH, and 61 days for offsite laboratories. The CDH has the final determination on the safety of all pond discharge decisions, which is usually based on the CDH laboratory results. See Section 4.3.8, Proposed Real-Time Monitoring Methodology and Section 3.3.2, Pre-Discharge Evaluation.</p>
<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (7)</p>	<p>Section 4.1.7(b): This section states that 1 liter grab samples will be used along with 7 liter samples in composing the 30 day moving average. However, it is not explicitly stated how these samples will be weighted in the average. The text should state that the weighted average will result in the less precise data having a smaller effect on the average.</p>	<p>All sample results will be weighted the same when computing an average; however, more credence will be given to sample analyses with MDAs below 0.05 (MDAs for 7-liter samples are 0.01-0.02, while 0.08 is the MDA for a 1-liter sample. A 2-liter sample will reduce the MDA to 0.04-0.05).</p>
<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (8)</p>	<p>Section 4.1.7(b): Additionally the text does not state specifically that the discharge samples will be untreated water. It should state that discharge water is sampled before treatment for use in composing the 30 day average.</p>	<p>The steps in pond discharge are to isolate the pond hydrologically, then take predischage samples of the untreated pond water. The results are used by the CDH, in conjunction with the 30-day moving average, to determine whether or not the water must be treated before discharge. If the raw water is acceptable to CDH, it will be discharged without treatment. The CDH approved water discharges, without treatment, from Pond A-4 in October and December of 1991 and from Pond C-2 in the summer of 1991. Figure 3.3-1 has been added to provide a pictorial explanation of discharge procedures.</p> <p>The 30-day moving average consists of data values from: (1) routine, untreated pond water samples, (2) predischage, untreated, pond water samples, and (3) water samples taken at the actual point of discharge, whether treated or not.</p>

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<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (9)</p>	<p>Section 4.1.7(b): Treated water should also be sampled and a database of these values maintained.</p>	<p>Water samples are taken at the actual point of discharge, whether treated or not. These values cannot accurately be compared to pre-discharge samples to determine treatment efficiency of the contaminants of concern, (Pu and Am) due to the laboratory turnaround time of 10 - 61 days. Also, meteorological events such as precipitation or winds may preclude true hydrologic isolation during the time between pre-discharge sampling and actual discharge.</p>
<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (10)</p>	<p>Section 4.1.7(b): DOE must develop provisions for sampling on days following the storm events.</p>	<p>A new stormwater sampling program is currently being developed to sample the ponds following two storm events and to sample selected locations that only hold water following storm events. Additionally, the buffer zone will have thirteen fixed and five mobile stations to sample water during a storm event. There will be six fixed stations to support the new NPDES stormwater permit requirements. ISCO™ flow monitoring equipment will continuously monitor the stream flow level in conjunction with a programmable sampler that will be set to automatically take water samples when there is a specified flow increase. Water samples for some parameters will have to be taken manually, so crews will physically "follow selected storms".</p>

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<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (11)</p>	<p>Section 4.1.7(c): This section states that the 30 day moving average will be used to evaluate the current discharge operation. However, it is not specific in relating how changes in the average may be used by regulatory agencies in deciding whether to continue or halt discharge. This point should be clarified.</p>	<p>CDH continues to review and provide concurrence to RFP for pond discharge, and to request further information and/or corrective actions on the part of RFP, as required. The safety of resumption of any discharge by RFP would receive concurrence from CDH and occur at such time as when the running 30-day average radiochemical parameters return to levels at or below those of the Colorado Water Quality Control Commission (CWQCC) standards. However, if the time of discharge is less than the laboratory turnaround time, the actual discharge samples could be used only for post-compliance. See Sections 3.3.6, Interruption or Suspension of Discharge and 4.2.3, Application of the CWQCC Stream Standards.</p>
<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (12)</p>	<p>Section 4.2.1: This section previews some possible derivative studies, specifically the "appropriate application of the CWQCC standards to discharge waters such that downstream users are protected without impairment of the ability of RFP to operate in a safe and effective manner". It is unclear what is meant by "appropriate application". Clarify the text.</p>	<p>The text has been modified for clarification.</p>
<p>Ref: 8HWM-FF November 22, 1991 ltr Specific: Item (13)</p>	<p>Section 4.4.4.1: The evaluation criteria is vague and consequently creates confusion about how the selection of technologies must be done. In order to promote consistency and efficiency among the various environmental programs at Rocky Flats, EPA <u>strongly</u> suggests that the evaluation of treatment technologies pursued under this workplan be done in accordance with guidelines established under the sitewide treatability studies program. Such an evaluation program must be designed in accordance with the nine evaluation criteria described in detail in the EPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (EPA/540/G-89/004).</p>	<p>The Sitewide Treatability Study Plan (TSP) conducted an extensive literature review of all applicable treatment processes and technologies using the EPA Guidance document nine evaluation criteria. Preparation of this Workplan also included EPA Best Available Technology (BAT) under Section 1412 of the Safe Drinking Water Act (SWDA). The treatment options proposed in this Workplan were relevant to RFP site specific concerns such as high treatment efficiency for effecting removals, general widespread applicability, acceptable cost, reasonable service life, compatibility with other water treatment processes and ability to bring all the water in a system into compliance.</p>

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Document Reviewer: U. S. Environmental Protection Agency

Date: 1/24/92

Ref: 8HWM-FF
November 22, 1991 ltr
Specific: Item (14)

Section 4.4.4.1: Special care must be taken to perform a thorough literature review of all the applicable technologies and to avoid duplication of efforts among the various Rocky Flats programs.

Although a number of the activities described in Section 3 of the Workplan pre-date the IAG, there is ongoing communication with the project manager of the TSP in order to minimize duplication of effort and integrate the two programs. See response to the previous comment concerning literature reviews.

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: Public Comments / Ken Korkia

Date: 1/24/92

Citation	Comment/Issue	Disposition
KEN KORKIA REVIEW PUBLIC COMMENTS Item (1)	Much of this document speaks about the compliance problems associated with the Colorado Water Quality Control Commission's standards for radionuclides. The standards should be accepted for what they are and all efforts be made to meet them. Too much emphasis in this document is on what I view as an attempt to discredit the standards.	The intent was not to criticize the discharge limits, but merely to illustrate that the CWQCC site specific standards for radionuclide levels are unusually strict, and to express the concern that the comparatively high level of measurement uncertainty or analytical error may be misinterpreted as out-of-compliance with the standards.
KEN KORKIA REVIEW PUBLIC COMMENTS Item (2)	Many of the arguments in the plan should be saved for a more appropriate forum, such as the public rule-making hearing for radionuclides in water that are scheduled for later in 1992.	An explanation of the CWQCC site specific standards is believed to be necessary so the reader understands the driving force behind the actual plans and work proposals designed to improve the control of radionuclide levels in water discharges from RFP.
KEN KORKIA REVIEW PUBLIC COMMENTS Item (3)	Despite adequate mention of the problem associated with the lag-time between testing and the discharge of water from the terminal ponds, no clear solution has been described.	RFP has proposed possible solutions to the long turnaround times for radionuclide analyses in Section 4.1.7. Proposed New Sampling Protocol, Section 4.2.3 Application of CWQCC Stream Standards, Section 4.3.4 Improving Analytical Methods/Performance, and Section 4.3.8 Proposed Real-Time Monitoring Methodology. Since this is a new area of research, it is not possible to present a single solution. Several options are proposed in order to determine the best option(s) to decrease lag-time between testing and discharge of water from the terminal ponds.
KEN KORKIA REVIEW PUBLIC COMMENTS Item (4)	The 30-day averaging approach to sampling may give greater confidence that releases are not in violation of the standards, but problems such as unanticipated precipitation event could overshadow one's confidence in the procedure.	The 30-day average was adopted to accomodate the limitations of availability of analytical capacity, uncertainties, and turnaround time which preclude real-time analysis.

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: Public Comments / Ken Korkia

Date: 1/24/92

<p>KEN KORKIA REVIEW PUBLIC COMMENTS Item (5)</p>	<p>In the absence of real-time monitoring that could provide accurate readings of contamination levels, the plan should address the construction of some sort of isolated containment structure that would hold any treated water during the time that analytical tests are being conducted so that the eventual release of water could be accomplished in confidence with real monitoring efforts.</p>	<p>The terminal ponds were constructed to provide the isolation suggested. Additional containment capacity would be difficult to justify considering that the water consistently meets quality requirements.</p>
<p>KEN KORKIA REVIEW PUBLIC COMMENTS Item (6)</p>	<p>More emphasis needs to be placed on the dam reinforcement program. Given the fact that emergency releases of untreated or even untreated water due to concern for dam integrity clearly calls for a comprehensive program to better manage the dams, why can't the dams be reinforced or reconstructed to allow storage capacities that might be necessary during high precipitation or other unanticipated events?</p>	<p>The RFP dams are routinely inspected by the U.S. Army Corps of Engineers (USCOE), the Federal Energy Regulatory Commission (FERC), and the State Engineers' Office (SEO). The USCOE completed the field work for the geotechnical evaluation of the terminal ponds in 1991, and the report is expected by September 1992. The results of this analysis will be used to determine the appropriate actions regarding reinforcing and/or increasing the capacity of the dams. RFP plans to implement any pertinent recommendations for repairs and/or upgrades in an expeditious manner. Presently, the terminal dams are closely monitored to ensure safe operation. See Section 3.1.3, Pond Management Strategy.</p>
<p>KEN KORKIA REVIEW PUBLIC COMMENTS Item (7)</p>	<p>If not already accomplished, studies should be undertaken to investigate the possible sediment scouring, resuspension, and transport during water releases.</p>	<p>Discharged water is sampled and analyzed as described in Section 3.2.2.3, Sampling Methods. These samples are not filtered prior to analysis and so would reflect sediments carried from the pond during discharge.</p>

Record of Response to Comments

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Date: 1/24/92

<p>KEN KORKIA REVIEW PUBLIC COMMENTS Item (8)</p>	<p>This plan does not provide me with much confidence in the treatment technologies that have been chosen for the Interim Measures/Interim Remedial Action activities for OUs 1 and 2.</p>	<p>The Interim Measures/Interim Remedial Action (IM/IRA) activities for OU1, 881 Hillside Area (soil), and OU2 , 903 Pad Area (groundwater), were selected by following the U.S. EPA <i>Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA</i> using site specific criteria. The EPA selection criteria does not guarantee success, but merely increases the chance of success. Synonyms for "interim" are "temporary" or "in the meantime". As such, the IM/IRAs for OU1 and OU2 are pilot scale tests. This Workplan discusses options for the treatment of surface water discharges. The optimum treatment methods are based upon the medium and contaminants to be treated, so are anticipated to be different.</p>
<p>KEN KORKIA REVIEW PUBLIC COMMENTS Item (9)</p>	<p>In light of the lack of confidence in current treatment technologies for radionuclides, I would encourage that the technology update described on Page 4-31 of this document become not just a one-time publication, but that it be written annually.</p>	<p>The TSP will publish an annual review of both potentially applicable technologies and work in progress, which will include the applicable elements of this Workplan.</p>
<p>KEN KORKIA REVIEW PUBLIC COMMENTS Item (10)</p>	<p>I would also encourage you to put greater emphasis on developing real time monitoring. I do have a problem though with real time measures that involve turbidity, due to the possibility of overlooking small particles that may be in solution.</p>	<p>Section 4.3.8 describes proposed real-time monitoring methodology. Characterization, including particle size is addressed in Section 4.4.2, Characterizing Radionuclides</p>
<p>KEN KORKIA REVIEW PUBLIC COMMENTS Item (11)</p>	<p>Investigation should be accomplished to estimate what the possible groundwater contamination problems may be as a result of the ponds being built on top of the sandstone lenses.</p>	<p>The Workplan for OU6, Walnut Creek includes the installation of additional groundwater wells to investigate this concern.</p>

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: Rocky Flats Cleanup Commission

Date: 1/24/92

Citation	Comment/Issue	Disposition
<p>RF Cleanup Commission November 22, 1991 ltr. Item (1) pg. 1, P1</p>	<p>INTRODUCTION: If one were to derive from scratch a workplan to control the radionuclide levels in water discharges from the Rocky Flats Plant three criteria become apparent. First, there should be a program to prevent radionuclide contamination from entering waters that eventually leave the plant. Second, there should be some means of treating water that may be contaminated and third, there should be a means whereby all water that leaves the plant site should be tested and guaranteed to be free of radionuclide contamination before it is released. The Rocky Flats Cleanup Commission's review of the <i>Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant</i> is based on how well the plan meets these criteria.</p>	<p>All three criteria developed by the Rocky Flats Cleanup Commission are addressed at RFP. Please see the answer below for more details concerning source control. The second and third criteria are addressed in this Workplan. The IAG Scope of Work (SOW) required this Workplan to assess the quality of water discharges, identify potential treatment technologies, and propose analytical methodology for approval. This Workplan does address and propose water treatment options and also describes the sampling and testing procedures followed for water released from the RFP.</p>
<p>RF Cleanup Commission November 22, 1991 ltr. Item (2) pg. 1, P2</p>	<p>PROGRAM TO PREVENT CONTAMINATION: Perhaps the most glaring defect in the radionuclide control plan is its failure to adequately address control of source terms which lead to radionuclide contamination. According to this plan, control will be achieved by two general approaches (page 4-2) 1) control of the release of waters containing them from the RFP site and 2) reducing their concentrations using treatment methods.</p>	<p>Radionuclide source control is not within the scope of this Workplan. However, water from radioactive materials processing is handled separately from the waters described in this Workplan. See Section 3.1.1.) In addition, other source control activities are underway or are planned as a part of the Chromic Acid Incident Plan and Implementation schedule under the NPDES Federal Facilities Compliance Agreement (FFCA). These include a thorough evaluation of building drains to identify possible contaminant pathways to surface water and numerous other actions intended to reduce the probability of contaminant release. Other improvements to source control are Incidental Waters Procedure and Stormwater Best Management Practices (to be implemented).</p>

Record of Response to Comments

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Document Reviewer: Rocky Flats Cleanup Commission

Date: 1/24/92

RF Cleanup Commission
November 22, 1991 ltr.
Item (3) pg. 1, P2

PROGRAM TO PREVENT CONTAMINATION On page 4-26 mention is made of studies for radiochemical source identification and control. This idea of "prevention" is treated with only three paragraphs, and describes a program that will require three to five years to complete. Given the problems with treatment and discharge control that we will discuss below, the Cleanup Commission strongly urges that greater emphasis be placed on conducting and shortening the time-frame necessary to complete these studies on source contamination prevention. These studies should include investigations of possible sediment scouring, resuspension, and transport during water release.

A key design feature of the RFP system is the separation of process wastes, which are treated independently and are not released. In contrast, this Workplan is focused on surface water systems with historical contamination. Prior to starting source studies for these surface waters, it is first necessary to identify and characterize the radionuclides. It will then be possible to conduct investigations into potential modes of movement. The first step of this research has been subcontracted to the Los Alamos National Laboratory.

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: Rocky Flats Cleanup Commission

Date: 1/24/92

RF Cleanup Commission
November 22, 1991 ltr.
Item (4) pg. 2, P3

CONTROL OF WATER DISCHARGES The Cleanup Commission's greatest concern in the release control program resides in the problems associated with emergency releases due to high precipitation or other unforeseen events. On page 3-4, the plan speaks of the *Contingency Plan for Unplanned Releases and Emergency Discharges from Rocky Flats Detention Ponds A-4, B-5, C-2*. Because the potential for radionuclide contaminant discharges is greatest during these "unplanned or emergency" events, greater detail about the contingencies should be included in this control plan in order to provide for public review and comment. Because these events present the most immediate threat to public health, these emergency situations and any plans to control or mitigate their effects should be an integral part of this discharge control plan. The public is not comfortable with the fact that untreated or even untested water may have to be released during these emergency situations. How often have these events occurred in the past? How likely are they to repeat in the future?

RFP is also concerned about unplanned or emergency events and continues to aggressively address this concern. There are several published documents, available to the public, which describe the procedures, programs and structure by which RFP prevents or minimizes the potential for significant releases of hazardous substances in unplanned or emergency events. The emergency response or spill prevention control countermeasures addressed in other documents were not repeated here because they are not within the scope of this Workplan. All discharges are sampled during release. Sample results are compared to the CWQCC standards, which are not health-based standards, but are ambient levels with no implied health threat. However, due to the extended turn around times required for some radionuclides, water could be released prior to receiving the analytical results in emergency situations. The Contingency Plan has not been used to date and there have been no offsite releases of untested water from RFP since at least 1970, when RFP and CDH started reporting results of environmental monitoring on a monthly basis. There have been agreements between DOE and CDH, since 1979, which allow CDH to sample and assess the quality of all water prior to discharge.

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: Rocky Flats Cleanup Commission

Date: 1/24/92

<p>RF Cleanup Commission November 22, 1991 ltr. Item (5) pg. 2, P2</p>	<p>CONTROL OF WATER DISCHARGES In terms of day to day operations, the Cleanup Commission urges that a comprehensive program of dam management be implemented to better control releases of waters from the plant site. A high priority should be placed on reinforcing the dams to allow increased storage capacity during flood control situations so that the likelihood of having to release untreated waters during high precipitation events can be reduced.</p>	<p>The RFP dams are routinely inspected by the USCOE the FERC, and the SEO. The USCOE completed the field work for the geotechnical evaluation of the terminal ponds in 1991, and the report is expected by September 1992. The results of this analysis will be used to determine the appropriate actions regarding reinforcing and/or increasing the capacity of the dams. RFP plans to implement recommendations for repairs and/or upgrades in an expeditious manner. Presently, the terminal dams are closely monitored to ensure safe operation. See Section 3.1.3 Pond Management Strategy.</p>
<p>RF Cleanup Commission November 22, 1991 ltr Item (6) pg. 3, P1</p>	<p>RADIONUCLIDE TESTING PROGRAM Much of this document describes the problems associated with the current Colorado Water Quality Control Commission's standards for water quality at the Rocky Flats Plant. Considerable description is made of methodological problems in both analytical and treatment technologies. The overall impression given in this control plan is that the plant is placed at a disadvantage, that the levels may be set too low. The public's perception is just the opposite. Man-made nuclear materials are perceived as a public health threat at any level. We encourage you to accept the standards levels as they are and continue to strive to meet them in both analytical and treatment capabilities. From our point of view you have no other alternative.</p>	<p>The intent was to illustrate that the CWQCC site specific standards for radionuclide levels are unusually strict, and to express concern that the comparatively high level of measurement uncertainty or analytical error may be misinterpreted as out-of-compliance with the standards. An explanation of the CWQCC site specific standards is included so the reader understands the driving force behind the actual plans and work proposals designed to improve the control of radionuclide levels in water discharges from RFP. The CWQCC standards are not health-based, but are based on ambient levels with no implied public health threat. See Maximum Contaminant Levels (MCLs) for the SDWA in the July 18, 1991 Federal Register.</p> <p>Also, the comment about man-made material is not accurate (if the commentary is referring to plutonium) as is discussed on page 5 of this document.</p>
<p>RF Cleanup Commission November 22, 1991 ltr. Item (7) pg. 3, P2</p>	<p>RADIONUCLIDE TESTING PROGRAM As to current testing procedures, the plan to increase sample size and counting time in order to achieve lower detection limits should be accomplished immediately (page 4-16).</p>	<p>The plan to increase sample size has started. While additional testing will be required to obtain a final conclusion, the preliminary results are very positive in reducing the MDA.</p>

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: Rocky Flats Cleanup Commission

Date: 1/24/92

<p>RF Cleanup Commission November 22, 1991 ltr. Item (8) pg. 3, P2</p>	<p>RADIONUCLIDE TESTING PROGRAM The greatest challenge in testing however, lies in somehow reducing the amount of time necessary to attain analytical results. The Cleanup Commission is not comfortable with the fact that the water that is tested today will not be the same as when it eventually will be released. A thirty-day averaging procedure seems to be a step in the right direction by providing continuous monitoring. Still, the lag-time effect remains a problem.</p>	<p>RFP has identified possible solutions to the long turnaround times for radionuclide analyses in Section 4.1.7 Proposed New Sampling Protocol, Section 4.2.3 Application of CWQCC Stream Standards, Section 4.3.4 Improving Analytical Methods/Performance, Section 4.3.8 Proposed Real-Time Monitoring Methodology, and Section 3.3 Pond Discharge Management. Since this is a new area of research, it is not possible to present a single solution. Several options are proposed in order to determine the best option(s) to obtain a decrease in lag-time between testing and discharge of water from the terminal ponds.</p>
<p>RF Cleanup Commission November 22, 1991 ltr. Item (9) pg. 4, P1</p>	<p>RADIONUCLIDE TESTING PROGRAM As an ultimate means of mitigating the lag-time dilemma, the Cleanup Commission urges a stronger commitment of resources and energy into developing reliable and effective real-time radionuclide testing procedures. The development of such procedures, if achievable, must be a top research priority.</p>	<p>Rocky Flats is endeavoring to improve the detection capability and turn around time for analytical results. Rocky Flats, has asked Los Alamos National Laboratory to develop improved and faster analytical capability for radionuclides. This program is continuing through FY92 with over \$2 million in funding and is the first step to developing real-time radionuclide analytical capability. See Section 4.3 Workplan Element #3: Analytical Methods.</p>

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: Rocky Flats Cleanup Commission

Date: 1/24/92

<p>RF Cleanup Commission November 22, 1991 ltr. Item (10) pg. 4, P2</p>	<p>RADIONUCLIDE TESTING PROGRAM One approach that is not mentioned in the plan to help defeat the lag-time problem is greater emphasis in isolating the water before it is released. Have there been or will there be any plans to build some sort of containment structure, either a tank system or holding basin, that could help achieve greater isolation of water, to help ensure that the water tested is truly the water released? We strongly urge the investigation of such a solution.</p>	<p>The current pond management goal is to hydrologically isolate Pond A-4 prior to testing and discharge. As described in Section 3.3 Pond Discharge Management, isolation is not possible during periods of high precipitation/runoff. The feasibility of increasing pond capacities, particularly Pond A-4, is under consideration.</p> <p>The storage requirements for approximately 50 million gallons of water, in order to isolate and hold water prior to release, would require a minimum of 50 tanks. In addition to the practical considerations of location, cost, design, controls, piping, permitting, etc. for this magnitude of tank installation and associated diking, each tank would have to be individually sampled and tested before release of water. This approach lacks practicality since RFP water discharges routinely meet water quality requirements.</p>
<p>RF Cleanup Commission November 22, 1991 ltr. Item (11) pg. 4, P3</p>	<p>RADIONUCLIDE TREATMENT PROCEDURES Perhaps the greatest revelation in this control plan is its description of the still experimental nature of current radionuclide treatment technologies. The Cleanup Commission is not heartened to find out that the water treatment units for the 881 Hillside and the 903 Pad interim remedial measures are still questionable as to their effectiveness in reducing radionuclide levels. We encourage you to continue development of effective treatment methodologies especially those that rely on physical rather than chemical control processes.</p>	<p>This Workplan discusses options for the treatment of surface water discharges selected by following the EPA BAT using site specific criteria. A major difficulty is that the contaminants of concern are in near zero concentrations, which presents significant challenges in evaluating treatment efficiency. The IM/IRA activities for OU1, 881 Hillside Area (soil), and OU2, 903 Pad Area (groundwater), were selected by following the U. S. EPA <i>Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA</i> using site specific criteria. The optimum treatment methods are based upon the medium and contaminants to be treated.</p>

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: Rocky Flats Cleanup Commission

Date: 1/24/92

<p>RF Cleanup Commission November 22, 1991 ltr. Item (12) pg. 4, P4</p>	<p>RADIONUCLIDE TREATMENT PROCEDURES In relation to the current treatment methodology for the discharge ponds, the Cleanup Commission urges that the water receive continuous treatment as it is being discharged in order to compensate for the lack of real-time test results.</p>	<p>RFP's policy is to treat water, as required, to meet standards. CDH is consulted and provides concurrence on the safety of discharges. CDH conducts predischarge sampling prior to approval for discharge. In addition, CDH has access to all of the RFP raw water sample data. All sampling data, together with the 30-day moving average for radionuclides, is used by CDH to determine whether or not the water must be treated before discharge. The CDH has approved water discharges, without treatment, from Pond A-4 in October and December of 1991 and from Pond C-2 in the summer of 1991.</p> <p>The CWQCC stream standards were based on ambient water quality levels and are not health-based standards. See the July 18, 1992 Federal Register for SWDA MCLs.</p>
<p>RF Cleanup Commission November 22, 1991 ltr. Item (13) pg. 4, P4</p>	<p>RADIONUCLIDE TREATMENT PROCEDURES We are concerned though, with the admission on page 3-31 that the filter bags may not reduce radionuclide levels and that they may only serve to protect the GAC unit from fouling.</p>	<p>RFP is currently evaluating options to improve filtration performance and pioneering new ways to demonstrate conformance with the CWQCC standards. These are top priorities being addressed by RFP engineering and national laboratory staff. The granulated activated carbon (GAC) treatment system referred to in this section is not designed to treat radioactive contamination. The original purpose of the system was to treat organic compounds (atrazine and symazine) that were thought to be present in the water.</p>
<p>RF Cleanup Commission November 22, 1991 ltr. Item (14) pg. 5, P1</p>	<p>OTHER CONCERNS One element that needs better clarification in this control plan is the protocol for suspending discharges should the standards be violated? How often has this occurred? What is the exact nature of this process?</p>	<p>See Section 3.3.6 Interruption or Suspension of Discharge.</p>

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: Rocky Flats Cleanup Commission

Date: 1/24/92

<p>RF Cleanup Commission November 22, 1991 ltr. Item (15) pg. 5, P2</p>	<p>OTHER CONCERNS Reference is made on page 4-4 about the preliminary engineering designs being developed to reuse Pond C-2 water in the raw water loop at RFP. What is the potential for expanding this project to the water from the other terminal ponds, A-4 and B-5? The Cleanup Commission encourages as much reuse as possible.</p>	<p>The C-2 recycle project is continuing as planned, however, expanding the use of recycled water in the raw water system to include A-4 and B-5 water has limited potential. Although technically possible, the raw water needs on plantsite are insufficient to handle water from Ponds A-4 and B-5 in addition to the C-2 water.</p>
<p>RF Cleanup Commission November 22, 1991 ltr. Item (16) pg. 5, P3</p>	<p>OTHER CONCERNS Finally, the Cleanup Commission urges that progress reports be made on an annual; basis so that the public may remain informed as to the development of adequate and effective control, treatment, and testing procedures related to water discharges from the Rocky Flats Plant. It might be possible to use the <i>Surface Water Management Plan</i> as a forum for these updates.</p>	<p>The TSP will publish an annual review of both potentially applicable technologies and work in progress, which will include the applicable elements of this Workplan and ensure program integration.</p>

Record of Response to Comments

Document Reviewed: Draft Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: City of Westminster

Date: 1/24/92

Citation	Comment/Issue	Disposition
City of Westminster November 22, 1991 ltr Item (1) P1	Westminster understands the terminal ponds at the Plant are intended to function as spill control basins and are designed to retain only 10% of their capacity for an extended period of time. However, due to the close proximity of downstream drinking water supplies and public concerns, the terminal ponds have functioned as retention ponds and water levels routinely exceed the intended capacity. Of great concern to Westminster is the stress imposed on the dams due to large quantities of water being held for long periods of time. The grave consequences on downstream drinking water reservoirs from a dam failure are too great to allow current water management tactics to continue.	RFP water management strategy has been and continues to be guided by protection of downstream water users from possible health risks associated with plant operations, and were imposed through the Agreement in Principle between DOE and the Governor of the State of Colorado specifically for that purpose. RFP is very concerned about dam safety as described in Section 3.1.3 Pond Management Strategy.
City of Westminster November 22, 1991 ltr Item (2) P2	Westminster supports an isolation and batch release approach to managing the terminal ponds. Pond water should be isolated from additional influent and sampled. After characterization is complete, the ponds would then be discharged down to their intended capacity. All pond discharges would continue to be discharged to the Broomfield Diversion Ditch (BDD) and routed around Great Western Reservoir until a permanent solution is in place.	RFP is committed to continuing detention and testing of surface water accumulating in holding ponds and to maintaining safety and high quality in offsite discharges, as described in Section 3.3 Pond Discharge Management. While safety of offsite water discharges continues to be RFP's surface water management goal, the details of discharge procedures are still evolving with the intent of preserving flexibility of operations to meet all conceivable scenarios.
City of Westminster November 22, 1991 ltr Item (3) P3	The document implies that certain dam safety practices are not scheduled for implementation or further study because of fiscal constraints. Please disclose all dam safety recommendations which are not being funded.	The intent was not to imply that "dam safety practices" are not being implemented due to fiscal constraints. RFP would not allow, and the SEO would not allow, the RFP dams to be operated in an unsafe manner. See Section 3.1.3, Pond Management Strategy, for a discussion of dam safety considerations.

Record of Response to Comments

Document Reviewed: Draft Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: City of Westminster

Date: 1/24/92

<p>City of Westminster November 22, 1991 ltr Item (4) P4</p>	<p>As the document points out, extensive monitoring is performed on the pond water prior to discharge into a receiving stream. This monitoring has produced an extensive water quality database. Interpretation of the data has only just begun, but it is clear that a comprehensive monitoring program must continue.</p>	<p>The quality of RFP pond water will continue to be monitored for both characterization and discharge purposes as described in Section 3.2.2.3 Sampling Methods.</p>
<p>City of Westminster November 22, 1991 ltr Item (5) P6</p>	<p>The discharges should meet all water quality stream standards as adopted by the Water Quality Control Commission. We recognize, due to technology limitations, occasional exceedences of these standards will be reported. Although the proposed 30-day moving average will "smooth" data points, we believe it is an acceptable method of interpreting compliance with the standards. However, we request the measured value be reported alongside the 30-day average value in all public reports.</p>	<p>"Occasional exceedences" occur as a result of statistical uncertainty by technical limitations of available analytical services. RFP will continue to report all radionuclide values for discharged water in the monthly Public Exchange of Information Meetings with CDH and the Cities. RFP will use the 30-day moving average with CDH approval, to initiate and confirm discharges. The 30-day moving averages will occasionally include in-pond samples.</p>
<p>City of Westminster November 22, 1991 ltr Item (6) P7</p>	<p>Westminster is pleased that efforts have been made to reduce the minimum detectable activity on radionuclide analyses by increasing the volume of the sample being analyzed. However, an analytical turnaround time of 61 days for radionuclide analytical results, as stated in the document, is much too long. Efforts to decrease this turnaround time is essential.</p>	<p>The laboratory turnaround times are 10-14 days for RFP, 14 days for CDH, and 61 days for offsite laboratories. The CDH has the final determination on all pond discharge decisions, which is usually based on the CDH laboratory results. RFP has prioritized pre-discharge samples and requests the RUSHED 10-day turnaround time for key pre-discharge samples.</p>
<p>City of Westminster November 22, 1991 ltr Item (7) P7</p>	<p>In addition, the Colorado Department of Health and the Department of Energy must come to an agreement on an appropriate methodology for radionuclide analyses to eliminate inconsistencies in analytical results. A common method, used by both agencies, would eliminate the current practice of duplicate analyses by both agencies and would provide more meaningful data for public review and interpretation.</p>	<p>Establishing validated analytical methods is an important part of this Workplan, as described in Section 4.3. Duplicate sampling and analysis is widely practiced as a means of providing credible oversight by regulating authorities. The future plans for increased sample size and statistical evaluations should increase confidence in the analytical data and the conclusions presented in Section 3.2.3.5. However, variability in reported results should be expected, because radiometric determinations push current capabilities with relatively high measurement uncertainties.</p>

Record of Response to Comments

Document Reviewed: Draft Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991
Document Reviewer: City of Westminster **Date:** 1/24/92

<p>City of Westminster November 22, 1991 ltr Item (8) P8</p>	<p>The City of Westminster appreciates the references to the draft Surface Water Management Plan throughout this document. The Cities' water supply protection project, also known as Option B which includes the Standley Lake Protection Project, is a key component of the Surface Water Management Plan, and is essential to long term watershed protection for Standley Lake. However, it is time to develop a more specific plan for zero discharge of water. The subject has been studied for decades, yet little progress has been made toward achieving this commendable goal.</p>	<p>This scope of this Workplan does not include details of the zero discharge studies.</p>
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Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: City of Broomfield

Date: 1/24/92

Citation	Comment/Issue	Disposition
City of Broomfield December 12, 1991 ltr Item (1) pg. 1, P2	<p>General comments: It was frustrating that many of Broomfield's comments and questions on this document were made earlier this year on the Rocky Flats Surface Water Management Plan (SWMP). It appears that the authors of this document did not read the SWMP or comments on that document. It seems that the two documents are closely related and the information presented in both documents should be consistent.</p>	The IAG Workplan and the SWMP documents do serve very different purposes, though both are trying to describe a continually changing scenario of water quality regulations, standards, treatment methodologies and management strategies. Much effort was expended to try to make the information in the final IAG Workplan and SWMP as consistent as possible.

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: City of Broomfield

Date: 1/24/92

City of Broomfield
December 12, 1991 ltr
Item (2) pg. 1, P3

General comments: The Workplan is generally very good and well organized. However, there is one recurring problem throughout the document. In several places an overland transfer of Pond C-2 water to Pond B-5 is stated as a current practice. This is not the case and will not be the case until after Great Western Reservoir is abandoned as a drinking water supply (When Option B is fully implemented, which may not be until 1995-96). This has been discussed at Water Group meetings with DOE/EG&G, and Broomfield commented on this transfer on the SWMP. It is Broomfield's understanding that the pipeline is in place but not connected to the ponds on either end. The actual current practice is to discharge Pond C-2 water, with treatment if it doesn't meet Colorado CWQCC standards for Walnut Creek, to Broomfield's diversion ditch. This is the only arrangement that Broomfield has agreed to until such time that Great Western Reservoir is abandoned as a drinking water supply. There are specific references to this particular pond to pond transfer on page 3-21, last paragraph; page 3-24, last paragraph; and page 4-4, first paragraph. These and all other references to the Pond C-2 to B-5 transfer should be corrected to indicate that it is proposed to be implemented after Option B is in place, not current practice (or fourth quarter 1991 as indicated on page 4-4).

RFP has clarified in the final Workplan that such routing of Pond C-2 water is in place but not used without EPA approval. Decisions regarding water management are primarily based on protection of health and the environment.

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: City of Broomfield

Date: 1/24/92

<p>City of Broomfield December 12, 1991 ltr Item (3) pg. 2, P1</p>	<p>General comments: It is important that the Option B project be finished in its entirety as soon as possible. The estimated total cost is approximately \$73 million. Twenty million dollars has been obligated so far in FY91 and FY92. At present, another \$40 million is expected in FY93, and the final \$13 million in FY94. The City of Broomfield urges the Department to consider accelerating the funding so that full protection can be in place more quickly. This would help avoid concerns of several down stream water users that the option B project could be only partially completed for many years to come.</p>	<p>A discussion of issues pertaining to Option B & J are not within the scope of this Workplan.</p>
<p>City of Broomfield December 12, 1991 ltr Item (4) pg. 2, P3</p>	<p>2.0 RFP Background Information Figure 2.5 Surface Water Features, Note 1 on this figure indicates an emergency landfill transfer to N. Walnut Creek. Broomfield would like more information on this capability, when it is used, and how many times it has been used. Page 2-11 indicates that the landfill pond is operated in a zero discharge mode. We have always been told the landfill pond has never been discharged. Please clarify these points.</p>	<p>The landfill pond is operated in a zero discharge mode, by spray evaporation of accumulated water. The landfill pond transfer line will be relocated so it will discharge to Pond A-2 instead of North Walnut Creek. The original transfer line from the landfill pond to North Walnut Creek was designed to provide transfer capability in case of an emergency. For example, if an emergency situation would cause the pond water to overflow the dam, the water could quickly be transferred to another location through this transfer line and prevent the water from flowing untreated and untested downstream. There have been two historical transfers of water from the landfill pond. In May, 1981, water was transferred from the landfill pond to Pond A-3, tested, then released to Pond A-4 and eventually discharged. In 1987, the water level in the landfill pond was too high to withstand a 100-year flood and ensure dam safety, as required, even though spray evaporation was in practice. Therefore, water from the landfill pond was sampled, then transferred to Pond A-1, a non-discharge pond following notification of both EPA and CDH. The water in the pond was lowered five feet and the spillway cleared.</p>

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<p>City of Broomfield December 12, 1991 ltr Item (5) pg. 2, P4</p>	<p>2.0 RFP Background Information Figure 2.5 also shows the Mower Diversion Ditch. When was this diversion constructed? How often is it used and by whom (who has the water rights)? What is the water quality of the flow through that diversion?</p>	<p>The Mower Diversion Ditch is part of the historical irrigation system for this area, having been constructed in 1872. The right was adjudicated in 1973, and thus is a very junior right in the basin. The right to Mower Ditch and Reservoir is presently held by Mr. Karl Brauch. Woman Creek, in low flow conditions, is fully diverted into Mower Reservoir through this ditch. Therefore, Pond C-1 water quality would be a good indicator of the water quality in this ditch.</p>
<p>City of Broomfield December 12, 1991 ltr Item (6) pg. 2, P5</p>	<p>2.0 RFP Background Information Figure 2.5, Note 5 refers to the Pond C-2 to B-5 transfer. It should be clarified that the transfer is only proposed, not current practice.</p>	<p>RFP has clarified in the final Workplan that such routing of Pond C-2 water is possible but not proposed unless required. Decisions regarding water management are primarily based on protection of health and the environment.</p>
<p>City of Broomfield December 12, 1991 ltr Item (7) pg. 2, P6</p>	<p>2.0 RFP Background Information Page 2-10. paragraph 2, it should be noted that Broomfield's Diversion Ditch (BDD) is only temporary. It might also be interesting to note that the capacity of BDD is only 40 cfs, 10 cfs less than the 2-year, 2-hour storm flood peak of 50 cfs mentioned in the same paragraph. Consequently, the BDD offers little or no protection to Great Western Reservoir in a large storm event.</p>	<p>The identified paragraph has been modified to designate the BDD as temporary. All water discharged from RFP through the BDD is tested before release, and receives CDH approval for safety prior to release. The contribution of RFP pond discharge water through the BDD in a large storm event is 2 cfs maximum, the remaining water flow is from other sources. As stated in Section 3.1.3, an important function of the RFP terminal ponds is storm water detention, which helps protect downstream features.</p>
<p>City of Broomfield December 12, 1991 ltr Item (8) pg. 2, P7</p>	<p>2.0 RFP Background Information Table 2.5-2, there are proposed changes to the CHS Statewide Standards and the SWDA Standards for radionuclides. It would be useful to have the proposed standards also listed in this table, since some of them may be adopted before this document is finalized.</p>	<p>The current standards were included in Table 2.5-2, for comparison purposes only. Changes to the Colorado Health Standards (CHS) Statewide Standards are proposed for an April 1992 CWQCC hearing.</p>
<p>City of Broomfield December 12, 1991 ltr Item (9) pg. 3, P1</p>	<p>3.0 Current Surface Water Knowledge Page 3-1, last paragraph eludes to a connection between process waste water and the sanitary sewer system. This should not be the case. Please clarify</p>	<p>This paragraph has been reworded for clarification. Section 3.3.1 gives an accurate description.</p>

Record of Response to Comments

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Document Reviewer: City of Broomfield

Date: 1/24/92

<p>City of Broomfield December 12, 1991 ltr Item (10) pg. 3, P2</p>	<p>3.0 Current Surface Water Knowledge Page 3-4, last bullet under normal operational activities, should indicate that treatment capability will be maintained at Pond C-2 for discharges to BDD when the water quality in Pond C-2 does not meet CWQCC standards for Walnut Creek.</p>	<p>Pond C-2 is to be recycled, as described in Section 4.1.5, which will eliminate the need for maintaining the Pond C-2 treatment capability.</p>
<p>City of Broomfield December 12, 1991 ltr Item (11) pg. 3, P3</p>	<p>3.0 Current Surface Water Knowledge Page 3-19, last sentence indicates that mean plutonium levels in Pond C-2 are higher than the remaining locations. This is the reason why Broomfield objects to the Pond C-2 to B-5 transfer and why Broomfield wants treatment capability at Pond C-2 maintained until Option B is in place.</p>	<p>Although the Pu levels for Pond C-2 appear statistically elevated compared to other locations, Pond C-2 Pu discharges meet the CWQCC standards for either drainage.</p>
<p>City of Broomfield December 12, 1991 ltr Item (12) pg. 3, P4</p>	<p>4.0 Workplan to Control Radionuclides in RFP Discharges Some general comments on section 4.0, Broomfield understands the dilemma of getting representative samples, getting timely analytical results, and managing pond levels all at the same time. The city supports the discharge without treatment when CWQCC standards are met and the use of a 30-day moving average for application of the CWQCC standards.</p>	<p>Informational comment acknowledged, no response required.</p>
<p>City of Broomfield December 12, 1991 ltr Item (13) pg. 3, P5</p>	<p>4.0 Workplan to Control Radionuclides in RFP Discharges Page 4-5, 4.1.6.2 Split Sampling, states that <u>RFP will coordinate onsite predischage sampling efforts.</u> This has been inconsistent in the past. Sometimes Broomfield is notified along with CDH, sometimes just before discharge, sometimes not until the discharge has already started. Broomfield worked out a FAX notification process at one time, but with the personnel turnovers in DOE, EG&G and the subcontractors, the process doesn't get passed along and has to be re-established with every new face. Is this our responsibility or is RFP really responsible for coordinating as indicated in this paragraph? Broomfield does get notification of the actual discharge, it is the predischage sampling notification that gets overlooked.</p>	<p>It is acknowledged that there has been inconsistent notification of Broomfield concerning predischage sampling has been a problem in the past and RFP intends to work with Broomfield to resolve these problems. The RFP will notify Broomfield by telephone, 24-hours in advance, of any predischage sampling. Water technicians should allow a minimum of two to three hours to follow the established sampling SOPs, QA/QC procedures, safety, and security requirements at RFP</p>

Record of Response to Comments

Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991

Document Reviewer: City of Broomfield

Date: 1/24/92

City of Broomfield
December 12, 1991 ltr
Item (14) pg. 3, P6

4.0 Workplan to Control Radionuclides in RFP Discharges When the proper notification is made for predischage sampling, the coordination of the actual sampling and sampling time are problems. Most of Broomfield's field samples can be collected in less than one hour. Our water resource technician has spent anywhere from two to six hours trying to collect one pond sample at Rocky Flats. Again, the problem is in lack of coordination (not having all the right people, in the right place, at the right time, with the right clearance, and having to wait for it all to come together). A protocol needs to be established in the Workplan that addresses this problem. Broomfield cannot afford the wasted time waiting, and neither can anyone else.

The time required for RFP to sample may vary, though a minimum of two hours is required for sampling in order to follow the established sampling SOPs, QA/QC procedures, safety, and security requirements. In one instance, samples were being collected for RFP, off-site laboratories, CDH, Broomfield and Los Alamos National Laboratories which required 75 gallons of water to be equally divided between approximately 45 sample containers for each site. This sampling effort for Ponds A-4 and C-2 required a total of six hours. As this example illustrates, the time required for sampling increases when the volume and number of samples increases.

Record of Response to Comments

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Document Reviewer: City of Boulder

Date: 1/24/92

Citation	Comment/Issue	Disposition
City of Boulder November 22, 1991 ltr Item (1) P2	<p>Although the City does not presently have any diversions for drinking water purposes downstream of the Rocky Flats Plant, the City strongly believes that it is important to protect any and all drinking water supplies for front range municipalities. The use of the streams on the front range is highly complex and inter-related, and a failure of any component has possible ramifications for all other users. When a water supply becomes unavailable, then that municipality must seek water elsewhere from an already overappropriated system. The result can be as "minor" as increasing the cost of water, or as "major" as contributing to the destruction of critical agricultural areas.</p> <p>The City may well benefit economically from the replacement of certain water supplies, but that does not change our belief that from a policy perspective, this plan must create adequate protection for all foreseeable downstream uses.</p>	RFP agrees that Front Range water resources should be protected and has been operating in good faith to meet the stream standards and is committed to provide high water quality discharges according to the CWQCC standards. The CWQCC standards are based on ambient water quality levels and are not health-based. (For SDWA MCL's, see the July 19, 1991 Federal Register.) RFP process water is treated separately from other RFP water systems and is not released. Additionally, all surface water runoff is collected and tested prior to obtaining approval for discharge from CDH. The Surface Water Management Plan (SWMP) more thoroughly addresses these water management concerns. The scope of this Workplan is more focused on the IAG-directed issues of analytical and treatment methodology.
City of Boulder November 22, 1991 ltr Item (2) P4	<p>More specifically, a review of the above referenced document indicates a willingness to engage in the release of water that violates state water quality standards in order to satisfy certain management practices associated with the various ponds. The report suggests that when conflicts arise between water management and discharges violative of stream standards, the water management must control. The result is unacceptable. The DOE should clearly implement an alternative that is protective of state water quality standards. In the case of the ponds, that may well result in increasing the size of the ponds, improving the integrity of the dams, and separating storm water. But the commitment from DOE must be that all discharges will meet state water quality standards.</p>	RFP discharge water routinely meets all water quality requirements. There are contingency plans to release water in an emergency to protect a dam as described in Section 3.1.3. Plans to improve dam integrity are listed in Section 4.1.2.

Record of Response to Comments

<p>Document Reviewed: Final Workplan for Control of Radionuclide Levels in Water Discharges from the Rocky Flats Plant, September 1991</p>	
<p>Document Reviewer: City of Boulder</p>	<p>Date: 1/24/92</p>

<p>City of Boulder November 22, 1991 ltr Item (3) P5</p>	<p>The City remains concerned about the ability of contamination at Rocky Flats to migrate beyond the areas that have already been identified as contaminated. As such, it is imperative that extensive monitoring continue well into the future, so that problem spots can be identified early and hopefully cleaned up expeditiously.</p>	<p>Extensive water quality monitoring has been performed for more than two decades and continues to be performed at RFP to aid in restoration/remediation activities and to protect the public health and the environment. Restoration/remediation activities are given a high priority and are proceeding according to the IAG schedules.</p>
<p>City of Boulder November 22, 1991 ltr Item (4) P5</p>	<p>Finally, the City generally supports the comments submitted by the City of Westminster. It is our understanding from discussions with the City of Broomfield, that we would also be supportive of their comments, but those comments will not be submitted for a few weeks. At such time, the City reserves the right to comment further, if necessary.</p>	<p>No additional comment were received from the City of Boulder. No response required.</p>