Department of Energy

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Mr. Steven Gunderson
Rocky Flats Cleanup Agreement Project Coordinator
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Mr. Timothy Rehder
Rocky Flats Team Lead
U. S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 500
Denver, Colorado 80202-2466

Dear Mr. Gunderson and Mr. Rehder:

Enclosed is the Rocky Flats Cleanup Agreement (RFCA) Implementation Quarterly Status Report for the First Quarter Fiscal Year 2001. Please provide your comments on this document as soon as possible.

If you have any questions or comments, please contact me at (303) 966-5918 or Glenn Doyle at (303) 966-3087.

Sincerely,

GM Doyle

Joseph A. Legare
for Assistant Manager
for Environment and Infrastructure

Enclosure

cc w/Enc:
J. Legare, AMEI, RFFO
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QUARTERLY STATUS REPORT

ROCKY FLATS CLEANUP AGREEMENT IMPLEMENTATION

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

FIRST QUARTER FISCAL YEAR 2001

1.0 Introduction

Pursuant to paragraph 263 of the Rocky Flats Cleanup Agreement (RFCA or Agreement), this quarterly status report presents the progress toward implementation of activities covered under the Agreement. The RFCA is a legally binding agreement between the Department of Energy (DOE), the Environmental Protection Agency (EPA), and the Colorado Department of Public Health and Environment (CDPHE) to accomplish required cleanup of radionuclide and hazardous substance contamination at and from the Rocky Flats Environmental Technology Site (RFETS or Site).

This report describes activities that occurred from October 2000 through December 2000 (referred to as the first quarter of fiscal year [FY] 01). The sections of this report are organized into the following topics: (1) Introduction; (2) Site-wide Activities Implementing RFCA and Supporting Site Closure; (3) Site Closure Projects; (4) RFCA Milestones and Target Activities; (5) Water Management; and (6) List of Approved Decision Documents.

2.0 Site-wide Activities Implementing RFCA and Supporting Site Closure

Site-wide activities implementing RFCA and supporting site closure during the first quarter of FY01 included: (1) Closure Project Baseline (CPB); (2) RFCA Standard Operating Protocol (RSOP) Update; (3) Integrated Monitoring Plan (IMP) Update; (4) Actinide Migration Evaluation (AME) Update; (5) Site-wide Water Balance Update; and (6) Land Configuration Design Basis.

2.1 Closure Project Baseline

Kaiser-Hill Company, L. L. C. (Kaiser-Hill) is now operating the Closure Project in accordance with the CPB that was submitted to the DOE Rocky Flats Field Office (RFFO) on June 30, 2000. During the first quarter of FY01, Kaiser-Hill received comments from RFFO regarding the CPB. Planning personnel from the various projects have worked with their respective RFFO counterparts, and have responded to the RFFO concerns with specific actions. The great majority of these actions have been closed, and the remaining actions will be tracked to closure during the upcoming quarter.

Kaiser-Hill is also working to support the RFFO in the development of an Integrated Closure Project Baseline (ICPB), which will include DOE complex activities as well as

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the Kaiser-Hill activities contained in the CPB. This ICPB is the first of its kind in the DOE/Environmental Management complex, and will form the basis for overall management of the Closure Project in a coordinated manner.

2.2 RFCA Standard Operating Protocol Update

The RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, once approved, may be applied to all facilities at RFETS that require decommissioning activities including: physical removal of facility components; size reduction of components to meet property reuse, waste management and/or transportation requirements; and decontamination of components in preparation for removal, size reduction, and/or building demolition. This RSOP underwent formal review by the Lead Regulatory Agency (LRA) and the public during the fourth quarter of FY00 and the first quarter of FY01 (September 11, 2000 through October 27, 2000). A meeting was held with the stakeholders and LRA to discuss the draft responsiveness summary on December 12, 2000. Approval of the Facility Component Removal, Size Reduction, and Decontamination Activities RSOP is anticipated during the second quarter of FY01.

Also planned for development during FY01 are RSOPs for environmental restoration (ER) activities and soil and asphalt management. The goal of the ER RSOP is to address routine remediation of soil and associated debris at individual hazardous substance sites (IHSSs), potential areas of concern (PACs), and under building contamination (UBC) sites, as well as the remedial decision for groundwater contaminant plumes. Non-routine actions such as closure of the Present Landfill, Original Landfill, Solar Evaporation Ponds, final Site configuration or the design for groundwater remediation systems will be addressed through other documents. The Draft Annotated Outline of the ER RSOP was sent to CDPHE and EPA at the end of the first quarter of FY01.

The goal of the RSOP for soil and asphalt management is to provide a standardized methodology for the management and disposition of soil and asphalt generated during site investigation drilling, well and borehole sampling and operations, new construction, maintenance or decontamination and decommissioning (D&D) activities. This RSOP will not include any remedial action decisions.

Additional information on these RSOPs will be provided when available.

2.3 Integrated Monitoring Plan Update

The FY01 IMP was distributed at the November Quarterly Data Exchange/Water Working Group Meeting, and the Background Document was finalized for distribution in December. The FY01 IMP (Summary Document) was posted on the Environmental Data Dynamic Information Exchange (EDDIE) webpage (found at www.rfets.gov).

The IMP Surface Water Working Group met once during the first quarter of FY01, wrapping up the changes proposed during the development of the FY01 IMP and

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Background Document, and discussing the path forward on several issues yet to be resolved. The most significant surface water topic to be resolved in the next few months is the incorporation of appropriate criteria for sample volume for surface water samples subject to regulatory requirements under RFCA, and handling provisions for samples that do not satisfy the minimum sample volume criteria. The IMP presently contains a requirement that a sample volume consist of at least four liters. The continuing discussion relates to the minimum detectable activity (MDA) necessary to assure acceptable uncertainty in the analytical result, the methodology used to calculate both the MDA and the blank uncertainty, and what is to be done when smaller volumes are collected. The discussion will continue in the first quarter of FY01.

Internal discussions were held among the RFCA parties to determine how to address several outstanding air monitoring issues related to potential emissions during demolition of buildings. IMP discussions have already identified radionuclide monitoring during demolition as an unresolved concern of stakeholders. An additional concern is the potential for emissions of beryllium dust from building(s) that contained significant beryllium manufacturing processes. Both of these monitoring issues will be addressed formally when the air working group reconvenes during the second quarter of FY01.

2.4 Actinide Migration Evaluation Update

Kaiser-Hill established an AME (formerly called the Actinide Migration Studies) Group to provide expert guidance and data on issues of actinide (plutonium, americium, and uranium) behavior and mobility in surface water, groundwater, and soil environments. Specifically, the goal of the AME is to answer the following questions in the order of urgency shown:

- Urgent: What are the important actinide migration sources and migration processes that account for recent surface water elevated values?
- Near-term: What will be the impacts of actinide migration on planned remedial actions? To what level do sources need to be cleaned up to protect surface water from exceeding action levels for actinides?
- Long-term: How will actinide migration affect surface water quality after Site closure (what soil action levels would sufficiently protect surface water over the long-term)?
- Long-Term: What is the long-term off-site actinide migration, and will it impact downstream areas (e.g. accumulation)?

The Advisors to the AME Group have been delegated to draw on the state-of-the-art understanding in the scientific community on actinide chemistry, geochemistry, and biological transport and apply them to actinide migration issues at RFETS.

During the first quarter of FY01, the AME Group conducted the following activities: (1) held AME Group and Stakeholder meeting on October 12-13, 2000 to discuss results of FY00 activities (with emphasis on the air scenario modeling and the watershed erosion and sediment transport modeling) and to discuss FY01 activities which are summarized

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in the "Actinide Migration Evaluation for the Rocky Flats Environmental Technology Site Fiscal Year 2001 Activities", dated December 14, 2000; (2) initiated channel erosion evaluation and erosion scenarios; and (3) installed erosion plots near GS42 to measure actual erosion if a significant storm event occurs. The AME Group welcomes two new members, Dr. A. J. Francis of Brookhaven National Laboratory (who specializes in microbiologically-enhanced environmental transport of actinides) and Dr. Annie Kersting of Lawrence Livermore National Laboratory, who specializes in actinide colloidal transport in groundwater. Drs. Francis and Kersting will be brought up to speed on the AME topics and issues in December 2000 and January 2001.

The next stakeholder meeting will be held on April 30, 2001 to discuss the progress of the Pathway Analysis Report.

2.5 Site-wide Water Balance Update

The purpose of the Site-wide Water Balance is to develop information to support a hydrologic design basis for RFETS closure activities. The objectives of the Site-wide Water Balance are to provide RFETS with a management tool to: (1) evaluate how the site-wide hydrology is likely to change from its present configuration to the final Site configuration at closure; (2) assist in predicting surface water impacts from groundwater based on the present and final Site configurations; (3) provide hydrologic profiles that guide decisions concerning the final Industrial Area configuration to protect surface water quality; and (4) provide information for the RFCA Integrating Decision Document, the comprehensive risk assessment (CRA), and the Final Corrective Action Decision/Record of Decision (CAD/ROD).

During the first quarter of FY01, Site-wide Water Balance activities included: (1) intensive review, collection, compilation, and synthesis of data for model input; (2) built most of the model input files; (3) peer review of the Model Code and Scenario Selection Report (which will be finalized in January 2001); and (4) held internal meetings and a meeting with project peer reviewers, Dr. Tom Sale of Colorado State University and Dr. Jim Mercer of GEOTRANS, to discuss the model progress to date, calibration, scenarios, and roles/responsibilities of Site-wide Water Balance team members.

Next quarter the Site-wide Water Balance will focus on finalizing the Model Code and Scenario Selection Report and on calibrating the Mike SHE model. (The code is named after Michael B. Abbott, the principal author of the code, and the Systeme Hydrologique Europeen [European Hydrologic System].)

2.6 Land Configuration Design Basis

The Land Configuration Design Basis (LCDB) will provide a conceptual design for the land configuration at closure along with the design basis by which the final design will be completed. The LCDB will integrate previous studies and modeling completed at the Site, such as the Actinide Migration Evaluation and the Site-Wide Water Balance. The

LCDB will also identify the data gaps that must be addressed prior to development of the final design.

During the first quarter of FY01, the LCDB project developed the Strategy for Land Configuration Design Basis Project (Strategy) document. The Strategy document describes the objectives and scope of the project, including a description of the actual work to be performed. The Strategy Document provides the reader with a general overview of the project and the interfaces that will be required to perform the work.

Also during the first quarter of FY01, the Preliminary Data Quality Objectives (DQOs) for the LCDB were identified and refined, the Statement of Work was completed to procure a subcontractor, the request for proposals issued, and the technical evaluation of the proposal completed.

During the second quarter of FY01, the DQOs will be finalized, appended to the Strategy Document and distributed. Agency and Stakeholder meetings will be also be held to discuss the project. The contract should be in place at the start of the second quarter of FY01, so that data acquisition, evaluation and work plan development may commence immediately.

3.0 Site Closure Projects

3.1 Industrial Area Operable Unit, Building 771 Closure Project

The 771 Closure Project Decommissioning Operations Plan (DOP) was approved by CDPHE on January 11, 1999. Two D&D work sets were completed during the first quarter of FY01. The 771 Closure Project DOP modification was submitted for formal public review in the first quarter of FY01 (November 20, 2000 through January 10, 2001). This major modification will include demolition activities, under building remediation, and streamline the Resource Conservation and Recovery Act (RCRA) closure process. It is anticipated that the major modification will be approved during the second quarter of FY01.

During the first quarter of FY01, it was discovered that 11 workers within the project had received potential internal uptakes of plutonium. The actual dose to the individuals is in-determinant at this time; however, bioassay sampling and analysis is continuing in order to identify the doses received This is expected to take several months. The project is currently determining the cause for the uptake. All dismantlement work in the facility is being conducted using respirators until additional information is obtained.

During the first quarter of FY01, the ER team (i.e., the ER Group 700-4 Project team) compiled and reviewed Building (B) 771/774 historical release information, developed preliminary characterization sampling approach for B771, and prepared the Draft Addendum 1 to the Industrial Area Sampling and Analysis Plan (IASAP). Preliminary characterization of B771 is scheduled to begin in February 2001. Samples will be

collected near the internal perimeter of B771 to assist the D&D group in developing a strategy for building demolition. Additional characterization sampling will be performed at a later date to encompass the remainder of the B771 UBC, the B774 UBC and all associated IHSSs and PACs in the 700-4 Group.

3.2 Industrial Area Operable Unit, Building 776/777 Closure Project

The B776/777 Closure Project DOP was approved by CDPHE on November 5, 1999. During the first quarter of FY01, the B776 Closure Project Team completed tasks required to support the Site Protected Area (PA) Reduction Project. Significant progress in the D&D of B776/777 was made during the first quarter of FY01. Five D&D sets were completed during the quarter, bringing the total to 21 sets completed to date. There are a total of eighty-four work sets in the 776/777 project.

Mixed Residue Consent Order activities during the first quarter of FY01 included draining and removal of raschig rings from Tanks SRV-3, SRV-4, and SRV-5 and verification of the physically empty status of three tanks in the Size Reduction Vault (ball mill washer, annular tank, and collection pan). This completes draining of all mixed residue tanks in B776/777; however, some mixed residue ancillary piping and equipment remains to be drained.

3.3 Industrial Area Operable Unit, Building 371/374 Closure Project

During the first quarter of FY01, the B371/374 Closure Project Team conducted the following activities:

(1) Submitted to CDPHE the Reconnaissance Level Characterization (RLC) Report on November 8, 2000. A letter on non-concurrence was sent from CDPHE on November 27, 2000 regarding the typing of B374. A meeting will be held in January to address CDPHE's concerns and resolve the typing issue
(2) The 371 Closure Project DOP was submitted for formal public review on December 21, 2000. The formal comment period will be completed in early February.
(3) The cerium (IV) nitrate decontamination paper was completed and reviewed by DOE and the LRA. The comments have been incorporated and the documentation is complete.
(4) Obtained LRA concurrence on the removal and size reduction of a glovebox in room 3701.

Activities planned for the second quarter of FY01 include:

(1) Resolve LRA concerns on the RLC Report.
(2) Obtain DOE and LRA approval of the final DOP.
(3) Obtain LRA concurrence on the use of the cerium (IV) nitrate decontamination technology. It is anticipated that concurrence will be obtained after demonstrating the decontamination of a cold tank in the attic.

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3.4 Industrial Area Operable Unit, Building 707 Closure Project

During the first quarter of FY01, the B707 Closure Project Team conducted the following activities:

(1) The B707 Closure Project Team submitted a Closure Description Document for the closure of Treatment Unit 707.3B, Ash Reprocessing to CDPHE on December 4, 2000.
(2) Completed the 45-day public review period for the B707 DOP, hosted a meeting to discuss comments, incorporated the changes resulting from the public comments into the document, and prepared the responsiveness summary. The DOP responses have been reviewed informally with regulator staff, and the document will be formally transmitted to the LRA for approval at the beginning of the second quarter of FY01.

Activities planned for the second quarter of FY01 include: (1) anticipated DOP approval by the LRA; (2) begin D&D training; and (3) begin decommissioning activities in D and G modules.

3.5 Remediation, Industrial & Site Services Project

3.5.1 Decontamination and Decommissioning

During the first quarter of FY01, the Remediation, Industrial & Site Services (RISS) D&D team completed the following activities:

(1) Personnel and property were removed from B111 and the RLC was initiated. Building 111 is a typical administrative facility and is expected to be "Type I" as defined in the Decommissioning Program Plan. A commercially-based approach is being applied to the demolition of B111 to determine if this approach may be applied to other similar administrative facilities. Property was also removed from B333 and the RLC is being conducted concurrently with the B111 RLC. The RLC Report will be submitted for review by CDPHE in the first quarter of FY01.
(2) Approximately 80% of the property and hazards were removed from B865 in preparation for RLC.
(3) Property and hazard removal was initiated in B881 and approximately 10% has been removed as of December 31, 2000.
(4) Repackaging and shipment of classified beryllium and depleted uranium components stored in the PA was completed to support the PA reduction project. Components were removed from the PA and repackaged in B444. The majority of the components were disposed at the Nevada Test Site and thirteen weapons-related components were shipped to the Los Alamos National Laboratory to support the Stockpile Stewardship Program.
(5) The B444 hazard stabilization crew was assigned to B776 to repackage 47 drums of classified waste. The B444 crew was assigned to supplement the B776 project to meet the PA reduction schedule. Furthermore, some of the drums contained

beryllium contamination and by using the B444 crew, the overall number of Beryllium Workers could be minimized as required by the site beryllium worker policy.

(6) Removal of beryllium components and beryllium-contaminated equipment (loose) was initiated in B444 as the top priority in the RISS hazard stabilization effort. This work has been funded through the sale of RFETS property removed from RISS and other project facilities.

The second quarter of FY01 will focus on property and hazard removal in B865, B886, B444, and B881. RLC may be initiated for B865 and other small 800 Area facilities depending on funding levels.

3.5.2 Environmental Restoration

3.5.2.1 Buffer Zone Operable Unit, Group 900-11 (903 Pad)

A closure strategy similar to the Industrial Area (IA) Strategy will be implemented for the closure of the Buffer Zone (BZ) operable unit (OU) and OUs 5, 6, 7 which reside geographically in the BZ of the RFETS. The BZ closure strategy integrates characterization and remediation of BZ IHSSs and PACs.

The first action of the BZ closure strategy is to develop a Buffer Zone Data Summary Report which will accumulate all existing analytical data available in the Soil Water Database for all sample locations outside the Industrial Area OU. These data will be evaluated for usability and those data passing the data quality filters will be utilized to provide starting point characterization data for individual IHSS'.

DQOs to support characterization requirements will be outlined in the BZ Sampling and Analysis Plan (BZSAP). The BZSAP is the sampling plan to gather analytical data from IHSSs and PACs in the BZ for future decision making purposes. These data will be evaluated to determine whether no further action (NFA), additional characterization, or remedial/management action is required. The plan will be written to enable analytical results from samples collected outside of IHSSs and PACs (white space) to be used for the CRA that evaluates residual risk following completion of all accelerated actions. The BZSAP sampling requirements will contain the final site characterization requirements for the RFETS BZ.

BZSAP addenda will be prepared for each IHSS, IHSS group or PAC which provides background information of the IHSS or PAC, sampling requirements to meet the BZSAP's DQO's, and analytical data currently available and usable to support the identified sampling requirements. The BZSAP addendum will define the study area and optimize the sampling design for the IHSS or PAC to meet the DQO's identified in the BZSAP.

The Buffer Zone Data Summary Report and BZSAP are currently being prepared and will be submitted concurrently to CDPHE and EPA upon completion in August 2001. The BZSAP will include the IHSS 140, Hazardous Disposal Area addendum.

3.5.2.2 Plume Maintenance and Monitoring

Operation, maintenance and monitoring continue for the three reactive barriers and two other plume treatment systems at Rocky Flats. The reactive barriers are the Mound Site Plume, East Trenches Plume and Solar Ponds Plume groundwater collection and treatment systems. The other two plume systems collect and treat groundwater at OU1–881 Hillside and at the OU 7 – Present Landfill Seep. The quarterly activities and performance monitoring data for the five systems are provided in the Quarterly Report for the Rocky Flats Groundwater Plume Treatment Systems that was completed December 30, 2000. This document will be provided to CDPHE and EPA during the first quarter of calendar year 2001.

3.5.2.3 OU1

The final Modification to the OU1 CAD/ROD was submitted to EPA and CDPHE in the first quarter. The final Modification presents the rationale for changing the remedial actions presented in the original OU1 CAD/ROD Declaration, based on additional subsurface sampling performed downgradient of IHSS 119.1. The modification provides for pumping and treating groundwater from the OU1 Collection Well for a period of one year after signing the final Modification, and continued groundwater monitoring at IHSS 119.1 consistent with the RFETS IMP. The DOE and EPA are expected to sign the OU1 Modification to the CAD/ROD early in the second quarter of FY01.

Decommissioning of the French Drain was completed in September 2000. The French Drain system was breached at the lowest point and the collected groundwater now flows to the South Interceptor Ditch. The French Drain Decommissioning Closeout Report was prepared in December 2000 and is under review.

It is anticipated that the closeout of the OU1 project will be finalized and documented in the second quarter of FY01.

3.5.2.4 Characterization of Under Building Contamination 123 and B886 Implementing Horizontal Directional Drilling Environmental Measurement While Drilling

This project was performed and funded as a technology deployment of Sandia National Laboratory's Environmental Monitoring While Drilling (EMWD) technology in conjunction with a local drilling subcontractor (Corrocon Inc.) for horizontal directional drilling to characterize UBC 123 and B886. Four boreholes were drilled at 123 with nineteen samples taken and one borehole at B886 with two samples. The horizontal directional drilling implemented hammer drilling versus the traditional rotary drilling to help in the reduction of waste generation. At 123, 3-1/2 drums of personal protection

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equipment (PPE) were generated, ½ drum of investigation derived material and 80 gallons of decon water for the total project. Conventional samples were collected using a geoprobe to compare with the EMWD results. Thirty conventional samples were collected under B123 and four geoprobe samples were taken on the west side of B886. Twelve more geoprobe holes inside rooms 101 and 103 of B886 will be collected in January 2001. A completion report will be prepared during the second quarter of FY01 after the analysis of all samples has been completed.

3.5.2.5 Group 000-5 (Present Landfill), Group 000-1 Solar Ponds, and Group SW-2 Original Landfill Cap

This project involves the modeling and conceptual design of proposed Evapotranspiration Covers for the following three RFETS sites: Original Landfill, Solar Evaporation Ponds and the Present Landfill. A statement of work was developed during the first quarter of FY01 and has been sent to Kaiser-Hill Procurement for solicitation of a proposal. The project team anticipates by the end of January to have a contract awarded. The subcontractor will first develop a work plan for the three sites and specific tasks as outlined under the statement of work. This project will include regulatory agency input during the work plan and DQO development. The work scope has accelerated conceptual design for this FY and, pending EM-50 additional funding, could accelerate conceptual design for groundwater barriers at the Present Landfill.

3.5.2.6 Industrial Area Characterization

During the first quarter of FY01, DOE sent the Draft IASAP and the Draft CRA Methodology to EPA and CDPHE for review. The IASAP is the sampling plan to support characterization and remediation of potentially contaminated soil in IHSSs, PACs, and UBC sites in the Industrial Area. Copies of the IASAP were also provided to reading rooms and stakeholders. There is no formal public comment period for the IASAP. Preliminary comments on the IASAP have been received from CDPHE and formal comments are expected during the second quarter of FY01. It is anticipated that the IASAP will be finalized in the second quarter of FY01.

The Draft CRA Methodology contains the methodologies for conducting the final human health and ecological risk assessments for Site closure. It is anticipated that the regulatory agencies will provide comments and the CRA Methodology will be finalized during the second quarter of FY01.

3.6 Material Stewardship

During the first quarter of FY01, 194.04 cubic meters of TRU waste; 2875.60 cubic meters of LLW; and 25.2 cubic meters of LLMW were shipped offsite.

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4.0 RFCA Milestones and Target Activities

On October 26, 2000, the RFCA Principals reached agreement on an earned value regulatory milestone framework for FY01, FY02, and FY03. On December 6, 2000, EPA and CDPHE designated the framework agreed to by the RFCA Principals as Tier I RFCA milestones. Also on December 6, 2000, EPA and CDPHE established Tier I milestones for the 903 Pad and the outyears. This framework and the established 903 Pad and Outyear Milestones are included in Attachment 1. DOE prepared an information sheet on earned value, contract management, and FY01 regulatory milestones dated January 2, 2001. The information sheet is included as Attachment 2.

5.0 Water Management

Water management activities during the first quarter of FY01 are summarized by (1) Watershed Improvements; (2) Surface Water Management; (3) Surface Water Monitoring; (4) Groundwater Monitoring; and (5) the Rocky Flats Water Working Group.

5.1 Watershed Improvements

Site water quality protection was enhanced by the application of 2800 gallons of a soil erosion and dust control agent (Top-Seal) to stabilized 3.5 miles of high use buffer zone roads.

5.2 Surface Water Management

5.2.1 First Quarter of FY01

During the first quarter of FY01, Rocky Flats Site Closure Services completed the following pond water transfers and discharges totaling 27.37 Million Gallons (MG). This discharge represents a decrease of 19% compared to the first quarter of FY00 (33.77 MG).

Pond A-3 activity included one routine outlet-valve direct discharge to Pond A-4 totaling 3.46 MG. This discharge occurred during the period of October 2 through 5, 2000.

Pond B-1 activity included one transfer of treated effluent from the B995 Wastewater Treatment Plant (WWTP) totaling 0.10 MG that occurred on October 10, 2000. This transfer was performed to supply adequate water in Pond B-1 to keep the pond sediments covered.

Pond A-4 activity included one routine outlet-valve direct discharge to North Walnut Creek totaling 11.17 MG. This discharge occurred during the period of November 13 through 27, 2000. Water quality samples were collected and analyzed, and all approvals were obtained prior to the discharge. The City of Broomfield diverted the Pond A-4 discharge around Great Western Reservoir via the Broomfield Diversion Ditch.

Pond B-5 activity included one routine outlet-valve direct discharge to South Walnut Creek totaling 12.64 MG. This discharge occurred during the period of November 13 through 29, 2000. Water quality samples were collected and analyzed, and all approvals were obtained prior to the discharge. The City of Broomfield diverted the Pond B-5 discharge around Great Western Reservoir via the Broomfield Diversion Ditch.

There were no Pond A-1, A-2, B-2, C-2, or Landfill Pond transfers or discharges during the first quarter of FY01.

Transfers and discharges from the Site ponds during the first quarter of FY01 are summarized in Table 1.

Table 1. Site Pond Water Transfers and Discharges - First Quarter FY01

Dates	Pond Activity	Total MG	Mode
10/2 to 10/5	A-3 to A-4	3.46	Outlet-valve direct discharge
10/10	WWTP to B-1	0.10	WWTP effluent transfer
11/13 to 11/27	A-4 to NWC	11.17	Outlet-valve direct discharge
11/13 to 11/29	B-5 to SWC	12.64	Outlet-valve direct discharge
	Total for Quarter	**27.37 MG**	

5.3 Surface Water Monitoring

5.3.1 First Quarter of FY01

During the first quarter of FY01, 50 automated monitoring system samples were collected and submitted for analysis. In addition to the RFCA base program, six samples were collected and submitted for analysis as part of the synoptic sampling event for DOE's ongoing GS10 source investigation (as prescribed in the *Sampling and Analysis Plan for Automated Synoptic Surface-Water and Sediment Sampling for the GS10 Source Investigation*).

The Kaiser-Hill Team is still waiting on analytical results for isotopic radiological analysis of the fifth (and final) synoptic sampling event for the GS10 special source investigation. Receipt of these results will conclude the data acquisition phase of this source investigation. Evaluation and interpretation of analytical data received for the first four synoptic events and sediment sampling are well underway. Preparation of a final report for GS10 sub-drainage source investigation will be initiated at the start of the second quarter of FY01.

On November 30, 2000, the Kaiser-Hill Team received validated analytical results that indicated RFCA reportable values had been observed for plutonium at RFCA Point of Compliance (POC) GS08 which is located at the out flow from Pond B-5 on South Walnut Creek. Calculated 30-day moving averages for plutonium first triggered the reporting requirements under RFCA Attachment 5, Section 2.4 (B) on September 14, 2000. The reportable 30-day moving value for this one-day reportable event is summarized in Table 2. The analytical results for the composite samples that contributed to the 30-day average calculation are summarized in Table 3. Americium did not exceed reportable concentrations for these monitoring periods.

Table 2 - Calculated 30-Day Average Value at RFCA POC Monitoring Location GS08

Analyte	Date of Reportable Value	Reportable 30-day Avg. Value (pCi/L)
Plutonium	9/14/00 (Only Reportable Date)	0.151

Table 3 – Validated Analytical Results for Composite Sample Collected at GS08

Analyte	Composite Sample Period (Starting and Ending Dates)	Composite Sample Analytical Results (pCi/L)
Plutonium	5/2/00-5/10/00	0.008
Plutonium	6/14/00-6/18/00	0.000
Plutonium	6/19/00-8/26/00	0.000
Plutonium	8/3/00-8/6/00	0.000
Plutonium	8/7/00-8/10/00	0.005
Plutonium	8/11/00-8/17/00	0.864

Analytical results from the next composite sample (sample date September 14, 2000) ended this reportable event after one day on September 15, 2000.

The 30-day moving averages for all other RFCA Points of Evaluation and all POC monitoring locations were below the RFCA action levels and standards during the first quarter of FY01 for all monitored metals and radionuclides.

5.4 Groundwater Monitoring

The second (calendar) Quarter 2000 groundwater monitoring report was presented to the stakeholders at the Quarterly Information Exchange Meeting on November 30th, 2000. The 1999 Final RFCA Annual Groundwater Monitoring report was submitted to stakeholders in November 2000 as scheduled.

The SAP for the D&D Monitoring of Buildings 707, 371/374, 776/777 and 883/865 was approved and monitoring wells have been installed at Buildings 776/777 and 707. Wells

will not be installed this quarter for Buildings 883/865 or 371/374 because schedule changes have moved D&D of these buildings further out than originally planned.

The SAP for the natural attenuation monitoring of the PU&D Yard have been approved by CDPHE and EPA and well installation and sampling is complete.

All groundwater samples and water level measurements for the fourth quarter of calendar year 2000 were completed on December 29, 2000.

The ICP/MS Uranium sampling and analysis project, which is being conducted jointly with CDPHE, was completed as of August 30, 2000. Final sample shipment is on hold pending the re-opening of the Los Alamos National Laboratory.

Additional groundwater monitoring requirements were outlined in March 2000 to supply additional data for the site water balance modeling effort. Additional groundwater monitoring was completed for the fourth quarter of FY00, and consisted of water level measurements from 72 wells and real time water level measurements from 13 wells.

5.5 Rocky Flats Water Working Group

The RFETS Water Working Group was combined with the Quarterly Exchange of Information Meeting held on November 28, 2000. In addition to the quarterly exchange of information, the following topics were discussed: 1) a status update for Site pond operations, 2) a status update for the RFCA GS10 special source evaluation, 3) a review of issues associated with the NPDES permit renewal, 4) a briefing on PCE/TCE in Well 23296, 5) a progress update on preparation of the Site Integrated Monitoring Plan FY01, and 6) highlights of groundwater annual report including a review of the ICP/MS uranium study and the east IA plume.

6.0 Approved Decision Documents

CDPHE and EPA approved the Facility Disposition RSOP on October 5, 2000. This approved decision document provides the information for the update to RFCA Attachment 12.

Attachment 1
RFCA Milestones

Fiscal Year 2001 – 2003 Three-year Rolling Milestones

FY01			
M1	50%	FY01 Scheduled D&D Earned Value	Tier I
M2	50%	FY01 Scheduled Low Level Waste Earned Value	Tier I
M3	50%	FY01 Scheduled TRU Waste Earned Value[1]	Tier I
Tier II Milestones: TBD			
FY02			
M1	50%	FY02 Scheduled D&D Earned Value	Tier I
M2	50%	FY02 Scheduled Low Level Waste Earned Value	Tier I
M3	50%	FY02 Scheduled TRU Waste Earned Value[1]	Tier I
M4	50%	FY02 Scheduled ER Earned Value	Tier I
M5		FY01 Remaining Earned Value	Tier I
Tier II Milestones: TBD			
FY03			
M1	50%	FY03 Scheduled D&D Earned Value	Tier I
M2	50%	FY03 Scheduled Low Level Waste Earned Value	Tier I
M3	50%	FY03 Scheduled TRU Waste Earned Value[1]	Tier I
M4	50%	FY03 Scheduled ER Earned Value	Tier I
M5		FY02 Remaining Earned Value	Tier I
Tier II Milestones: TBD			

Outyear milestones at baseline + 12 months TBD

[1] Characterization credit for TRU waste: one-half earned value credit taken for characterization and one-half earned value credit taken for shipping.

Established 903 Pad and Outyear Milestones for Rocky Flats
December 2000

FY03	Complete field mobilization and begin implementing the remedy described in the approved 903 Pad IM/IRA Decision Document by June 1, 2003.
FY05	Complete the remedial action identified in the 903 Pad IM/IRA decision document, including disposition of remedial waste by September 30, 2005.
FY06	Complete the demolition of Bldg. 776 by October 31, 2006.
FY07	Complete D&D of Building 371 by October 31, 2007.
FY07	Complete shipments of all TRU waste from Rocky Flats by December 15, 2007.
FY07	Complete all Individual Hazardous Substance Sites remedial actions, not including operations and maintenance, by December 15, 2007.

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Attachment 2

January 2, 2001

TO: Rocky Flats Citizens Advisory Board
FROM: Joe Legare, Assistant Manager for Environmental Compliance
Frazer Lockhart, Assistant Manager for Closure Project Management
DOE, Rocky Flats Field Office
RE: Earned Value, Contract Management and FY 2001 Regulatory Milestones

This information sheet is designed to support the discussion at the January 4 RFCAB meeting on earned value. It covers earned value as a contract management tool and as a method for regulatory milestones. It also discusses other aspects of the FY 2001 RFCA milestone agreement that complement the Earned Value milestones

It is written in question and answer format. Please feel free to call Joe Legare at 303-966-2282 or Frazer Lockhart at 303-966-7846 for more information on any aspect of this.

CONTRACT EARNED VALUE

What is Earned Value?

Earned Value (EV) is one of several measures that are part of the overall cost and schedule control system for any large project. The specific purpose of EV is to serve as a measure of actual work completion, and thus also act as an indicator of problem areas within the project. EV is defined by the work actually performed in a given time period (called Budgeted Cost for Work Performed or BCWP). All measurements in the cost and schedule control system are determined in dollars to allow comparisons with a single unit of measure. For planned versus actual costs the use of dollars is obvious. For planned schedule versus actual schedule the conversion is made by assigning a cost to a portion of work planned or actually completed in a time period. This then is the root of the Earned Value terminology, the dollar value "earned" or completed during the time period being analyzed.

How is Earned Value used to measure contractor performance?

For the current contract with Kaiser-Hill, Earned Value (EV) is the primary indicator of schedule performance and one of several key indicators used to determine the provisional quarterly fee payments. (All fee under this contract is provisional until the full terms of the contract are met.) Kaiser-Hill (K-H) delivered a project baseline on June 30, 2000 that aligned to the new contract and projected the work tasks, the task schedules, and the task costs or value for the entire project through 2006. As a subset of this total project baseline, K-H developed a list of critical tasks that actually serve to complete the total scope of the closure project as defined in Section C of the contract. Routine and supporting tasks such as accounting, personnel management, steam plant operation, and road maintenance to name just a few, are excluded from the calculation of EV as used under this contract. Each quarter K-H reports and the DOE evaluates the completion of

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tasks from this EV list. Only EV tasks that are 100% complete are considered as complete, no partial credit is taken. The EV completed is compared with the EV scheduled and a proportional adjustment to the provisional fee is made based on whether the EV analysis indicates that K-H is ahead or behind schedule. Fee adjustments may also be made for cost performance compared with the baseline plan, and for safety and health, environmental, or safeguards and security performance.

How is Earned Value Calculated?

To calculate the two variances (Cost Variance and Schedule Variance) constituting Earned Value, three key parameters must be determined. These parameters are:

1. Budgeted Cost of Work Scheduled (BCWS): This is the cost estimate (that which is budgeted to be spent) for each project task, during a given period. The sum total of BCWS estimates for all the activities in a project add up to the baseline cost estimate for the project.
2. Budgeted Cost of Work Performed (BCWP): This is the "dollar value" of the work that was actually accomplished during a given period. It represents the proportion of the BCWS that pertains to work that was completed during the given period. The "dollar value," or credit for work that was actually accomplished, is calculated using the same estimating basis that was used to develop the BCWS.
3. Actual Cost of Work Performed (ACWP): This is the total of all costs actually incurred in accomplishing work on the task under consideration, during a given period.

Cost Variance (CV):

Mathematically, **CV = BCWP - ACWP**

Cost Variance measures the credit (in dollar terms) that can be taken for cost performance. In other words, the difference between what the task was estimated to cost and the amount that it actually did cost, to perform a given amount of work. A positive CV signifies that project cost performance is better than what you had estimated it to be. Expressed as a percentage of the BCWP, **Cost Variance % = (CV / BCWP) x 100 %**

Schedule Variance (SV):

Again, **SV = BCWP - BCWS**

Schedule Variance measures the credit (again in dollar terms) that can be taken for schedule performance on the project. In other words, SV is the difference between the budgeted (or estimated) cost of work that was actually performed and the budgeted cost of what was scheduled to be performed, during the time period in question. A negative SV implies that less work was accomplished than originally planned during the period in question. Expressed as a percentage of the BCWS, **Schedule Variance % = (SV /BCWS) x 100%**

Has earned value been used before as a project management tool?

Earned Value (EV) has been used as a project management tool for decades at Rocky Flats. It is a recognized industry and Government standard for measurement of project performance. Three adjustments have made under the new K-H contract to make EV simpler to use and more important than its previous usage at Rocky Flats. Firstly, the EV list has been focused to the critical completion tasks for the closure mission so that EV more truly measures the actual schedule completion of the project. Secondly, the EV is credited only upon 100% completion of an EV task, so that subjective evaluation of partial completions is eliminated. Finally, the EV is tied directly and predictably to the provisional fee payments as specifically defined in Section B.6 of the K-H contract.

RFCA EARNED VALUE MILESTONES

How is Earned Value being used for regulatory purposes?

Earned Value is being used as a basis for regulatory milestones. (These milestones are part of the enforcement system of the Rocky Flats Cleanup Agreement – RFCA). Under this system, the regulators are using the same earned value matrix that is used by DOE to measure the progress of Kaiser Hill. This matrix is derived from the closure project baseline.

DOE and the regulators agreed to establish earned value milestones on October 26. The regulators formally set these milestones December 6.

RFCA earned value milestones are "binned" into four categories: decontamination and decommissioning, low level waste shipments, transuranic waste shipments, and environmental restoration. Completing fifty percent of all EV in each binned area constitutes a separate earned value milestone. (Starting in Fiscal Year (FY) 2002, there is an additional milestone for completing any remaining earned value work from the prior year.)

For FY 2001 the CDPHE and EPA Region VIII selected three Tier 1 earned value milestones – that DOE will complete 50% of the Decontamination and Decommissioning earned value tasks, 50% of the transuranic waste earned value tasks, and 50% of the low- level waste shipping earned value tasks. This means that to meet these milestones, the Site must complete at least 50% of the earned value attributed to the tasks in these areas.

For FY 2002, there are five Tier 1 earned value milestones. In addition to the three from FY 2001 (completion of 50% of scheduled earned value tasks in low-level waste, transuranic waste and decontamination and decommissioning), there are also milestones for completion of 50% of earned value tasks in environmental restoration activities, and a milestone for completing the remaining 50% of earned value from FY 2001. These same milestones are also established for FY 2003.

In this way, the milestones ensure that the Site will be held to a maximum schedule slip of six months against its current 2006 closure baseline.

How is the earned value milestone selection process structured?

The Site gets credit for all completed earned value in the year in which it is completed, regardless of the year in which it was scheduled (e.g., if work scheduled in the out-years is completed early, it "counts" toward completion of the earned value milestone). For example, if earned value activities scheduled in the D&D category cannot be completed in a given execution year, equivalent D&D that had been planned for out-years can be used to make up for it. To achieve this fifty-percent threshold, the work must stay within the programmatic "bins" established as milestones.

Any RFCA regulated earned value scheduled for completion in a fiscal year and not completed in that same fiscal year (up to 50%) must be completed in the next fiscal year before earned value for the next fiscal year can be credited. This earned value serves as a gateway for each fiscal year's work. This "carryover" earned value can be credited from any RFCA EV "bin".

Are there other features of the FY 2001 milestone agreement?

In addition to the earned value milestones, this agreement has three other provisions. First, it calls for a few out year milestones (beyond FY 2003) for major cleanup and closure activities. On December 6, 2000 the regulators established these out-year Tier 1 milestones. They are:

- Complete field mobilization and begin implementing remedy described in the approved 903 Pad IM/IRA Decision Document by June 1, 2003.
- Complete the remedial action identified in 903 Pad IM/IRA decision document, including disposition of remedial waste by September 30, 2005.
- Complete the demolition of Building 776 by October 31, 2006
- Complete D and D of building 371 by October 31, 2007
- Complete shipments of all TRU waste from Rocky Flats by December 15, 2007
- Complete all Individual Hazardous Substance Sites remedial actions, not including Operations and maintenance, by December 15, 2007.

These milestones, with the exception of the first two covering the 903 pad remediation, are based on a schedule of 2006 + 12 months. The milestone dates above reflect a schedule that contains 12 months of float from the current site cleanup schedule.

Second, it allows for a small number of Tier 2 milestones for less critical activities that are nevertheless of regulatory importance. These might be regulatory documents, studies or other activities. (Tier 2 milestones were under consideration at the time this document was prepared.)

The agreement also recognizes the difficulty in shipping transuranic waste from Rocky Flats. Most of the effort in shipping this waste from the Site is expended in characterizing the waste and getting it ready to ship. The earned value milestone for transuranic waste, therefore, gives half of the earned value credit for each barrel of waste for characterizing the waste and half for shipping it. This incentivizes the Site to continue getting waste ready to ship even if it faces an unexpected and uncontrollable bottleneck in actual shipping.

Why has this method of regulatory enforcement being used in place of the method the agencies have used since 1996?

This milestone structure has several advantages over the traditional milestone structure. First, this system gives the site more flexibility in managing Site activities to reach a 2006 closure. By not selecting specific tasks in the Site baseline, the regulators are enabling the Site to shift resources and activities as needed to meet the closure schedule. At the same time, the milestones ensure that at least half of the scheduled earned value tasks in each programmatic area will be completed.

Second, this system holds the Site accountable to an aggressive closure schedule. The Rocky Flats Cleanup Agreement anticipated a closure schedule of about 2015. This milestone structure holds the Site accountable to no more than six months of schedule slip over the next three years, on a baseline for a 2006 closure. Further, the regulators are committed to an overall regulatory structure that holds the Site accountable to no more than twelve months of schedule slip for the lifetime of this project. That means that the milestones are enforcing a closure of no later than 2007, eight years in advance of the dates in RCFA.

Third, this milestone system helps reduce the possibility of conflicts between regulatory compliance and safety. In the past, regulatory milestones around specific activities completed on specific dates created the potential that the Site would feel pressure to complete those milestones even at the risk of compromising other Site priorities. While the Site always attempts to ensure that safety is never compromised, this new milestone structure places less stress on the Site's safety culture. If any specific task cannot be completed on schedule, a substitute task of equal earned value can be substituted without regulatory penalty.

Why is there no ER regulatory milestone in 01? Does this mean there is no ER work planned for FY 2001?

Earned Value only applies to work that "earns value" towards Site closure. It does not cover overhead activities or preparatory work. There is a great deal of planning and preparatory work planned for ER in FY 01, but no ER earned value tasks are planned until FY 2002. This also would have been the case under the old regulatory framework.

Why is only a small part of the total project cost of $4 billion covered by the regulatory Earned Value milestones?

The earned value system is used to measure the actual closure work of the contract. It does not cover preparatory work or overhead. This actual closure work corresponds to $1.1 billion in earned value. About 15% of this is activity regulated under the Atomic Energy Act – such as residue processing and SNM removal – and thus outside of the purview of RFCA. Most of this non-RFCA activity is scheduled for completion in the first two years of the contract. Accomplishing this work on schedule is critical to the successful closure of the Site. The amount

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of RFCA regulated earned value each year increases as the Site completes preparatory work and engages in increasing amounts of RFCA-regulated cleanup work.

Why are the regulators enforcing milestones against a schedule that is 12 months later than the schedule DOE is enforcing against Kaiser-Hill?

The DOE cleanup of Rocky Flats is currently well ahead of the dates anticipated in RFCA. The regulatory milestones need to balance the need to hold DOE accountable to a solid schedule without penalizing DOE for improving its cost and schedule estimates.

DOE and the regulators agreed that regulatory milestones could not and will not drive the clean up schedule. Rocky Flats will not be closed on schedule by the drive to avoid penalties. Rather, it will be closed on schedule by the incentive of the contractor to earn money. It therefore does not make sense to identify the same schedule as good enough performance to merit fee payments to the contractor and, at the same time, trigger penalty payments to the regulators. It would be similar to taking the same work and grading it A by one standard and F by another.

Enforcing against a schedule tighter than 2006 plus twelve months would have this effect. The same performance would earn Kaiser-Hill fee and require DOE to pay penalties. The goal of milestones is to ensure there is steady progress towards the goal of 2006 without limiting the Site's flexibility. The regulators and DOE believe that this system meets that goal.

Does earned value require a change to RFCA?

Earned Value does not require a change to RFCA. The RFCA language on the setting of milestones is flexible enough to accommodate this innovation.

How does this change the authority or influence of the regulators over the work at Rocky Flats?

The Rocky Flats Clean Up Agreement allows for the regulators to set up to 12 milestones and target activities each year. Under the old system, this meant that only up to 12 discreet tasks fell under RFCA milestones. Under the new system, the regulators have milestone authority over a wider set of tasks. For FY 2001, more than 50 discreet tasks are covered under the RFCA earned value milestones. Also, the grand total of work covered by earned value for the life of the closure project is $1.1 billion in tasks. (There is no clear way to measure the value of work potentially covered under the old system of milestones.)

It is important to remember that this agreement only covers the RFCA milestone process. It does not impact other regulatory authorities under RFCA or under state and federal environmental statutes such as RCRA, Colorado Hazardous Waste Act, CERCLA, Clean Air Act, Clean Water Act, and others.

How will a regulatory change that affects the scope of the clean up impact the earned value milestones?

The earned value matrix used by the regulators is the same matrix used by DOE to measure Kaiser-Hill progress. That matrix comes from the Kaiser-Hill closure baseline. A change in regulatory scope would potentially require a change in the contract scope. Such a change would result in a change in the baseline, and possibly a change in the earned value matrix. Since the milestones require a specific percentage of tasks to be completed, a change in the quantity of underlying tasks would likely not change the milestones. However, the regulators re-negotiate the milestones annually and are free to negotiate them more frequently as needed.

What happens if Kaiser-Hill falls significantly behind schedule?

If Kaiser-Hill fails in any specific fiscal year to meet the minimum amounts of work required by the RFCA milestones; the Site will be subject to regulatory penalties. It is possible that a major delay in the schedule might require a change in the milestones. If this were the case, DOE would have to approach the regulators with a proposed change. This would also be the subject of annual milestone setting discussions.

What happens if Kaiser-Hill gets way ahead of schedule?

If the Site manages to get significantly ahead of schedule this would suggest that the Site could achieve closure sooner than 2006. The regulators always reserve the right to propose new milestones. However, the earned value matrix is based on the Site baseline. Even in the unlikely event of major schedule acceleration, it is improbable that the baseline would be adjusted.

Why are the RFCA parties only putting this in place for three years?

The RFCA calls for establishing rolling milestones – these are milestones that are enforceable for the execution year and for the out-years. As each year's milestones approach they are revisited, as are milestones for execution year plus one and execution year plus two. This three year rolling milestone concept was incorporated into RFCA because it corresponds to the federal budget planning and appropriations process. The RFCA parties are committed to enforcing a schedule of 2006 plus twelve months, but specific milestones will not be in place more than three years at a time.

What happens if this system fails to work as anticipated?

These milestones are revisited annually. If this system does not work as planned, the parties are free to modify it as needed prior to establishing next year's milestones.

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