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BOGENBERGER, V.		
BOGNAR, E.		
BRAILSFORD, M.D.		
BURNS, T. F.		
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DIETERLE, S. E.		
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FERRI, M.S.		
GERMAIN, A. L.		
GIACOMINI, J.		
HALL, L.		
ISOM, J. H.		
MARTINEZ, L.A.	X	X
NORTH, K.		
PARKER, A.M.	X	X
POWERS, K.		
RAAZ, R. D.		
RODGERS, A. D.		
SANDLIN, N. B.		
SCOTT, G.K.	X	X
SHELTON, D.C.	X	X
SPEARS, M.S.		
TRICE, K.D.		
TUOR, N.R.		
VOORHEIS, G.M.		
WILLIAMS, J. L.		
BROOKS, L.	X	X
KELLERGERT, C.	X	X

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11/8/01 Date By

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DOE ORDER #
NONE

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

Mr. Tim Rehder
Rocky Flats Cleanup Agreement Team Leader
United States Environmental Protection Agency
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 Fourth Quarter Fiscal Year 2001. Notable achievements this quarter include: production of over 125 plutonium containers by the Plutonium Stabilization and Packaging System and reduction of the Protected Area.

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

Sincerely,

Joseph A. Legare
Assistant Manager
for Environment and Stewardship

Enclosure
cc w/Encl:
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QUARTERLY STATUS REPORT

ROCKY FLATS CLEANUP AGREEMENT IMPLEMENTATION

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

FOURTH QUARTER FISCAL YEAR 2001

1.0 Introduction

Pursuant to paragraphs 122 and 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 the Site. For the purposes of this report, the term, the Site, refers to both DOE and the Kaiser-Hill Company, L. L. C. (Kaiser-Hill).

This report describes activities that occurred from July 2001, through September 2001, (referred to as the fourth 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) Water Management; and (5) 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 fourth quarter of FY01 included: (1) Closure Project Baseline (CPB) and Status of RFCA Milestones; (2) Integrated Monitoring Plan (IMP) Update; (3) Actinide Migration Evaluation (AME) Update; (4) Site-wide Water Balance (SWWB) Update; (5) Land Configuration Design Basis (LCDB) Update; and (6) Environmental Remediation (ER) RFCA Standard Operating Protocol (RSOP).

2.1 Closure Project Baseline and Status of RFCA Milestones (Pending #'s)

During the fourth quarter of FY01, the Plutonium Stabilization and Packaging System (PuSPS) continued operations. The system, which is used to safely package plutonium metal and oxide at RFETS for storage at the Savannah River Site, has now produced more than 125 plutonium containers. The other major accomplishment for the past quarter was the reduction of the Protected Area (PA). This reduction minimizes the area of the site that requires heavy security, thus allowing greater access for Decontamination & Decommissioning (D&D) operations. This was accomplished on July 19, 2001, and follow-on operations, such as removal of the personnel access buildings and the security fence have now been largely completed. The original baseline plan called for a drastic reduction in security measures following the reduction of the PA. Due to the terrorist attacks on September 11, 2001, however, security at the Site remains high.

Decommissioning progress continued through the last quarter. This has been enabled by the continued improvement in safety related performance, which allows the buildings to operate without compliance related work stoppages. Schedule variances in the Decontamination & Decommissioning (D&D) areas continue from earlier in the fiscal year, but the performance trend now points to continued improvement.

During the third quarter of FY01, a formal change was made to the method used for calculating schedule progress on transuranic (TRU) and low-level/low level mixed (LL/LLM) waste shipments. The former method allowed schedule credit to be taken by Kaiser-Hill only when a specific waste stream (similar materials) was completely finished (e.g., 100% earned value credit at completion). This resulted in no earned value being credited despite a significant increase in the number of TRU waste shipments. This approach was necessary in order to continue shipments while incorporating the Waste Isolation Pilot Plant (WIPP) waste acceptance criteria into the Kaiser-Hill process. The new schedule credit method focuses on the actual quantities of waste shipped as a percentage of the total. As a result, the schedule variance numbers for TRU waste shipments have significantly improved.

The focus during the first quarter of FY02 will be to maintain and improve PuSPS production, accelerate D&D of the Site's south side (uranium buildings), and continue progress in Decommissioning of plutonium facilities.

For the period October 1, 2000, through September 30, 2001, the cumulative schedule variance reported by Kaiser-Hill* for the four areas of RFCA Earned Value Milestones is:

1. Decontamination and Decommissioning ***-$+2,889 Thousand (+11.7%).***
2. Low Level Waste Shipments ***-$+7,999 Thousand (+252.3%).***
3. Transuranic Waste Shipments ***-$-540 Thousand (-46.6%).***
4. Environmental Restoration - No Earned Value activities in this area are scheduled for FY01.

* *These numbers have not yet been validated by the Department of Energy, Rocky Flats Field Office.*

On September 18, 2001, Kaiser-Hill received formal acceptance of the Closure Project Baseline from the Rocky Flats Field Office.

2.2 Integrated Monitoring Plan Update

The Integrated Monitoring Plan (IMP) Surface Water Working Group began the 2002 revisions to the IMP in June 2001. The major discussion at the first meeting centered on proposed changes in CDPHE's RFETS monitoring, particularly with regard to surface water. CDPHE has proposed changes in both the water and air-monitoring protocols,

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aimed at reducing or eliminating components that do not relate directly to the closure activities at RFETS, or adding elements related to RFETS D&D/ER activities. The changes include the following:

For water:

1. Sampling is increased above the terminal ponds, specifically for organics and metals in the A and B-series streams; lithium and nickel are added to the metals suite of analytes at all locations.
2. Predischarge analyses for organics, metals, uranium, and tritium will be eliminated, complementing the increased sampling above the terminal ponds.
3. Increased attention is to be given to sewer collection system monitoring.
4. Some other parameters, not specified at this time, will be eliminated from the monitoring suite.

For air:

1. Beryllium (Be) will not be monitored in ambient air.
2. Continuous volatile organic compounds (VOC) monitoring will be eliminated.
3. Continuous monitoring for oxides of nitrogen (NOx) will be eliminated.
4. Particle monitoring will be discontinued for particulate matter less than 10 micron aerodynamic diameter (PM-10), total suspended particulates (TSP) monitoring will change from every-six-days at the external-series stations to continuous, matching the schedule maintained by DOE.

At the meeting, CDPHE staff agreed to formalize the proposed changes, including development of data quality objectives (DQOs). Their suggested DQO's were provided to the specific working groups in July 2001, for review and discussion.

In other work pertinent to the IMP, Site air quality staff have investigated the capabilities of the Oxford Alpha Spectroscopy Integrated System (OASIS) as an analytical tool for short-term analysis of ambient air concentrations of plutonium. While the method provides a means of estimating plutonium activity within four days of the start of a monitoring period, it does not provide any greater sensitivity than previously practiced alpha counting methods. A final proposal for radionuclide performance monitoring around demolition projects will be developed prior to the Building (B) 111 demolition, scheduled for the first quarter of FY02.

A final sampling and analysis plan (SAP) for monitoring Be during demolition projects has been developed and will also be finalized in October.

2.3 Actinide Migration Evaluation Update

Kaiser-Hill and DOE established an Actinide Migration Evaluation (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, air, soil, and biota environments.

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, hydrogeology, and biological transport and apply them to actinide migration issues at RFETS.

During the fourth quarter of FY01, the AME Group conducted the following activities:

1. AME Group and stakeholder meetings held on July 23, 2001, through July 24, 2001, to discuss progress on, and select pathways to be evaluated in the Pathway Analysis Report and the results of Texas A&M University's ultrafiltration and pond residence time experiments.

2. Continued working on the groundwater, surface water, air, and biological components of the Pathway Analysis Report and responded to internal comments.

3. Completed work on erosion and sediment transport scenarios (which will be presented at the October 2001, stakeholder meeting).

4. Completed the sum-of-ratio (total activity) kriging for RFETS surficial soil.

5. Completed a draft report on ultrafiltration and pond residence time experiments.

6. Collected manual depth-integrated total suspended solid samples during a storm as requested by Dr. Tom Hakonson.

7. Completed refinements of the air dispersion model based on the wind tunnel and prescribed burn studies and prepared a draft report discussing the results.

The stakeholder meeting scheduled for October 16, 2001, included discussions of the results of the FY01 water shed erosion and sediment transport modeling scenario results and the Pathway Analysis Report.

2.4 Site-wide Water Balance Update

The purpose of the SWWB is to develop information to support a hydrologic design basis for RFETS closure activities. The objectives of the SWWB 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

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surface water impacts from groundwater for the present and final Site configurations; (3) provide hydrologic profiles that guide decisions concerning the final Industrial Area (IA) configuration to protect surface water quality; and (4) provide information for the comprehensive risk assessment (CRA), and the Final Corrective Action Decision/Record of Decision (CAD/ROD).

During the fourth quarter of FY01, SWWB activities included the following:

1. Continued calibration of the MIKE SHE model and integration of the unsaturated zone, groundwater, and surface water components.
2. Worked on the water balance computer code optimization to reduce simulation time of modeling computer runs.
3. Finalized work on the model code verification and validation.

Next quarter the SWWB activities will include completion of the model calibration and initiation of the planned modeling scenarios and uncertainty analyses. A modeling status meeting with the regulators and stakeholders is planned for late October to early November 2001. As soon as a definite date is chosen, notification will be provided.

2.5 Land Configuration Design Basis Update

The purpose of the LCDB Project is to define the design basis upon which a final land configuration can be developed. In conjunction with identifying the functional design objectives and developing the design basis, three bounding scenarios were identified to represent relative extremes of distinct and unique approaches. These bounding scenarios represent a reasonable range of viable approaches and allow for evaluation of individual components of the condition. The bounding scenarios have been modeled and are currently being evaluated by the AME Project. Output from these evaluations will be used to aid in construction of an initial conceptual design (ICD). This ICD will be used as a discussion point and to help guide D&D and ER interim decisions. The LCDB will also identify the data gaps that must be addressed prior to development of the final design.

During the third quarter of FY01, the Draft Work Plan was provided to DOE for review and comment; the Pond Methodology was completed; and key components of scenario development were identified. From this, three bounding scenarios were identified, modeled, and provided to the AME Group for evaluation. Additional RFETS features were analyzed with respect to long-term stability.

During the fourth quarter of FY01, the three bounding scenarios were evaluated by the AME Group and further analyzed using a weighing system for comparison to project objectives and RFETS closure requirements. Remaining data gaps were identified and schedules to fill them were developed. The work plan was provided to the CDPHE and

EPA for information. Criteria for constructing the conceptual design from the bounding scenarios were documented and development of the initial conceptual design was initiated.

2.6 Environmental Remediation RFCA Standard Operating Protocol

The 45-day public comment period for the Draft ER RSOP for Routine Soil Remediation started on September 10, 2001. The ER RSOP describes routine soil remediation activities at individual hazardous substance sites (IHSSs), potential areas of contamination (PACs), and under building contamination (UBC) sites. Comments from the regulatory agencies and stakeholders on the Working Draft RSOP were incorporated into the Draft RSOP. A stewardship analysis, As Low As Reasonably Achievable (ALARA) analysis, and the Original Process Waste Line (OPWL) strategy were added, as well as additional information on regulatory agency responsibilities and public participation opportunities. The public comment period ends on October 24, 2001. The Draft Final RSOP for Routine Soil Remediation and a responsiveness summary will be prepared during the first quarter of FY02.

3.0 Site Closure Projects

Site Closure activities conducted during the fourth quarter of FY01 include: (1) Industrial Area Operable Unit, Building 771; (2) Industrial Area Operable Unit, B776/777; (3) Industrial Area Operable Unit, B371/374; (4) Industrial Area Operable Unit, B707; and (5) Remediation, Industrial & Site Services Project (RISS).

3.1 Industrial Area Operable Unit, Building 771 Closure Project

The B771 Closure Project Decommissioning Operations Plan (DOP) was approved by CDPHE on January 11, 1999. Five-D&D work sets were completed in the fourth quarter of FY01, which included Sets 67, 68, 69, 43, and 38. The B771 team completed removal of System 11, which was the final system necessary to meet the Mixed Residue Consent Order Milestone, and it was completed five months ahead of schedule. The B771 team also completed the Reconnaissance Level Characterization for the stack.

The B771 Phase 1 UBC characterization sampling was completed on June 6, 2001. The preliminary sampling was performed to evaluate whether soil beneath the building foundation footing is contaminated and requires removal. The Phase 1 characterization was conducted to assist the B771 D&D Project in developing a demolition strategy.

The Phase 1 characterization sample locations were selected in areas of known or suspected releases around the inside perimeter structural supports and along expansion joints and footings within the interior of B771. A total of 16 sample points were identified for sampling. Soil samples were collected beneath the foundation slab from

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two depth intervals at each sample location. Discrete samples were collected from the 0- to 2-foot and the 2- to 4-foot depth intervals beneath the foundation using a hand auger. A total of 32 discrete samples were collected. Groundwater was encountered and sampled at four of the 16 sample locations. The soil and groundwater samples were analyzed for both radiological and chemical constituents. Results of the sample analyses are summarized below:

1. No analytes were detected above RFCA Tier I Action Levels for subsurface soil.
2. Arsenic was detected above the RFCA Tier II Action Level for subsurface soil at all 16 locations sampled, but was below background concentrations at all but three locations.
3. No analytes were detected above the RFCA Tier I Action Levels for groundwater.
4. One or more actinides were detected in groundwater above Tier II Action Levels at the four locations groundwater was encountered. One or more metals were detected above Tier II Action Levels at all four locations. VOCs were detected in groundwater above Tier II Action Levels at two of the four locations sampled.

Further information on the Phase 1 characterization sampling in B771 is provided in the *Building 771 Phase 1 Under Building Contamination Characterization Sampling Report, September 2001.*

Phase 2 characterization will be conducted in conjunction with D&D. The Phase 2 characterization will be conducted at the time of building D&D to address the remainder of the potential B771 UBC, B774 UBC, and all associated IHSSs and PACs in the 700-4 Group. Phase 2 sampling activities are planned for completion in 2003.

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. Seven minor modifications to the DOP have been approved so far, including Modification #7 on June 27, 2001.

During the fourth quarter of FY01, the B776/777 Closure Project Team conducted the following activities:

1. Three D&D sets were completed during the quarter, bringing the total to 40 sets completed to date. There are a total of 84 work sets in the B776/777 project. The three sets completed this quarter were Sets 18, 27, and 35.

2. Installation of the inner tent dismantlement chamber (ITDC) is complete. This is a hard-sided containment chamber to be used for size reduction of contaminated gloveboxes and equipment. A Management Self Assessment will be held in early October 2001, and an Operations Self Assessment will be held in late October 2001.

3. The following Resource Conservation and Recovery Act (RCRA) tanks were closed by removal in the fourth quarter of FY01. The mixed residue vacuum accumulators V-626 and V-627 were removed on 8/21/01.

4. The Pre-Demolition Survey Report (PDSR) for the Type I outbuildings/cooling towers was approved by DOE and CDPHE. This includes B702, B703, B712, B712A, B713, and B713A.

5. Approval was received from CDPHE on August 29, 2001, to manage gloveboxes in B707 and B776/777 as remediation waste, including gloveboxes taken out of service prior to approval of the facilities' DOPs. This approval also allowed the transfer of remediation waste from B707 to B776/777 for size reduction and packaging in the ITDC. (Reference Contact Record between Ted Hopkins and James Hindman on August 29, 2001.)

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

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

1. The project continues to make preparations to commence additional decommissioning. The Site Joint Evaluation Team (JET) approved a Management Startup Assessment to initiate D&D component removal.

2. Raschig Ring Removal commenced in Set 5 (Room 3573). Tank isolation commenced in Set 3 (Room 3517), Set 4 (Room 3571) and Set 13 (Room 2317).

3. Commenced D&D worksets in B371 and B374 including the demolition of the out of commission reagent and water tanks, cooling tower and cement storage silo.

4. The following RCRA tanks in Building 374 were put into RCRA stable status: Tanks D806, D807A & D807B, D808, D813, D814, D815, and D816.

Activities planned for the first quarter of FY02 include the "hot" test for the cerium decontamination system.

3.4 Industrial Area Operable Unit, Building 707 Closure Project

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

1. Physical Deactivation was completed for the following areas:

A. Modules G, J, & K, Contaminated Area (CA) Rooms, and 1st Floor Corridors were completed in July 2001.
B. Modules C & H were completed in August 2001.
C. Modules A & B were completed in September 2001.
D. Modules D, E, F, and Cold Offices were completed in June 2001.

2. D&D equipment and glovebox strip-out activities began in July, and August 2001, for all 10 modules (A-K) and CA Rooms. Emphasis had been placed on removal of glovebox internal items, chainveyor pendant removal and size reduction, and lead shielding removal. The contaminated work (commonly known as Steelworker scope) for Modules F, G, and H was completed in the fourth quarter of FY01. This included the isolation and removal of ventilation hoods, machining lathes and boxes, brazing units, downdraft tables, and sections of transfer chainveyors.

3. Four gloveboxes, which included two machining mills and a machining lathe, have been isolated, removed, and disposed as waste. In addition, removal and final dispositioning of three significant controller panels was completed.

4. Approximately 1,400 cubic meters of waste has been shipped from the B707 Cluster Closure Project in the 4th quarter. Over 1,100 cubic meters were shipped in the 3rd quarter.

5. A significant amount of planning and engineering effort has been expended creating numerous Standard Work Packages (SWPs) to provide concise work instructions and improve worker safety during decommissioning tasks.

3.5 Remediation, Industrial & Site Services Project

RISS activities supporting site closure during the fourth quarter of FY01 include D&D as well as ER.

3.5.1 Decontamination and Decommissioning

During the fourth quarter of FY01, the RISS D&D Team completed the following activities:

1. Asbestos abatement activities commenced in B111 with the basement and first floor projected for completion by September 30, 2001.

2. Recent draft communication from the EPA and the DOE indicate that using the risk-based approach for the use of rubbleized concrete containing paint with polychlorinated biphenyls (PCBs) as backfill in the B111 basement is considered acceptable. However, until formal written approval is received from the EPA, the

backfilling of concrete is on hold. This approach was communicated to the stakeholders via the monthly status meeting.

3. Property removal and hazard stabilization in B881 is 98% complete, with the remaining materials and activities scheduled to be completed by September 30, 2001. All legacy waste drums and crates (158) in B881 have been repackaged and prepared for shipment.

4. Hazard stabilization in B444 is 70% complete, which includes shipment of all depleted uranium (DU) oxide and chips, approximately 20% of the remaining legacy waste drums, and approximately 50% of the DU stock material (~50,000 lbs.). Scheduled hazard stabilization activities will be completed by October 31, 2001.

5. The accelerated hazard stabilization work in the 800 and 400 area have resulted in a positive cost variance of approximately $6M and a positive schedule variance of approximately $9M when compared to the 2005 working plan. This acceleration has provided an opportunity for a new RISS strategy that dramatically improves schedule, and accelerates ER work.

6. The Reconnaissance Level Characterization Report, (RLCRs) for B865, B442L&W, and trailer (T) 551D have been completed and submitted to DOE. The B886 pre-demolition survey Phase 1 (administrative areas) has been completed and submitted to DOE. The RLCRs for B883 and B881 are expected to be completed in October 2001.

3.5.2 Environmental Restoration

ER activities implementing RFCA and supporting site closure during the fourth quarter of FY01 included: (1) Buffer Zone (BZ) Operable Unit (OU), Group 900-11; (2) Plume Maintenance and Monitoring; (3) OU 1; (4) Characterization of UBC 123 and B886 Implementing Horizontal Directional Drilling Environmental Measurement While Drilling; (5) Group 000-5 Present Landfill, Group 000-1 Solar Ponds, and Group SW-2 Original Landfill Cap; and (6) IA Characterization.

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

A closure strategy similar to the IA Strategy will be implemented for the closure of the BZ OU and OUs 5, 6, and 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 BZ Data Summary Report which will accumulate all existing analytical data available in the Soil Water Database for all sample locations outside the IA OU. This data will be evaluated for usability and data passing the data quality filters will be utilized to provide starting point characterization

data for individual IHSS'. A draft of the BZ Data Summary Report was presented to the regulators for review in July 2001.

A draft of the BZSAP was presented to the regulators for review and delivered to Rocky Flats Reading Rooms in July 2001. DQOs to support characterization requirements are outlined in the BZSAP. The BZSAP is the sampling plan to gather analytical data from IHSSs and PACs in the BZ for future decision making purposes. This data will be evaluated to determine whether no further action (NFA), additional characterization, or remedial/management action is required. The plan is to be written to enable analytical results from samples collected outside of IHSSs and PACs (white space) to be used for the Comprehensive Risk Assessment (CRA) that evaluates residual risk following completion of all accelerated actions. The BZSAP sampling requirements contain the final site characterization requirements for the RFETS BZ.

BZSAP addenda will be prepared for each IHSS, IHSS group, or PAC. Addenda provide background information on 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. Each 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 BZSAP FY02 addendum, scheduled for an October 30, 2001 submittal, will include: (1) Characterization scope for IHSS Groups 900-2, which includes IHSS 153, Oil Burn Pit No. 2, and IHSS 154, Pallet Burn Site; and (2) Characterization scope for IHSS Group NE/NW including IHSSs 216.1, 216.2, and 216.3, East Spray Fields-North Area, -Center Area, -South Area, respectively. PACs in the Northeast (NE)/ Northwest (NW) to be characterized include: (1) NE-1404 Diesel Spill at Pond B-2 Spillway; (2) NE-1407 OU2 Treatability Facility; (3) NE-1409 Modular Tanks and 910 Treatment System Spill; (4) NE-1412 Trench 12; and (5) NE-1413 Trench 13. The FY02 addendum will also include scope to address areas of concern identified in CDPHE's BZ Contamination Report.

A Phase 1 treatability test was conducted at an off-site location in June 2001, to evaluate the effectiveness of using compressed air to dislocate the fine-grained portion of topsoil then collect the displaced soil using vacuum techniques. Initial testing indicated that the vegetation must be mowed in advance to allow the air stream to reach the surface soils. The equipment was successful in dislodging the fine-grained soil fraction of the surface soils to a depth of 1.5 to 2.5 inches while leaving cobbles and larger rocks in place. Quantitative surveys of the plant community within the test plot showed no substantial differences in plant cover, litter cover, rocks, or soil before and after testing of the vacuum treatment for soils. Additional equipment modifications are required to increase the volume of dislodged soils recovered during the vacuum process. Recovery rates for excavated soils were estimated at 60%-70% percent.

A Phase 2 demonstration at an offsite location using full-scale equipment occurred in September 2001. The equipment used a redesigned vacuum system to increase recovery rates of excavated soils, containment of soils in a soft-sided waste container, and HEPA filtration of the exhaust of the vacuum system. Additional engineering changes will be required prior to implementation of this promising technology.

The monitoring network designed to establish baseline (pre-remediation) water quality for surface waters draining from the 903 Pad and Lip Areas has been installed. One surface water monitoring station was installed last quarter, four additional stations were installed this quarter, and all are operational.

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 RFETS. 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 the OU1– 881 Hillside and at the OU 7 – Present Landfill Seep. Maintenance included replacing the flow meters at all Mound Site Plume, East Trenches Plume and Solar Ponds Plume systems with bubbler-type flow meters that are more effective at the low flow rates seen for these systems.

The activities and performance monitoring data for the five systems are provided in the Quarterly and Annual Reports for the Rocky Flats Groundwater Plume Treatment Systems. The Quarterly Report was completed September 30, 2001, and contains information on the Solar Ponds Plume Treatment System and the status of the Property Utilization & Disposal (PU&D) Yard Treatability Study. The status of the remaining plume treatment systems will be reported annually after the close of the calendar year.

3.5.2.3 OU1

The DOE and EPA signed the final Modification to the OU1 CAD/ROD in January 2001. Because soil removal is not necessary, the modified remedy deleted the requirement to remove soil, and includes 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. No other activities were performed during the fourth quarter.

3.5.2.4 Characterization of UBC 123 and B886 Implementing Horizontal Directional Drilling Environmental Measurement While Drilling

This project was performed and funded as a technology deployment of Sandia National Laboratories Environmental Monitoring While Drilling (EMWD) technology in

conjunction with a local drilling subcontractor (Corrocon Inc.) for horizontal directional drilling to characterize the potential UBC and the slab for B123 and at B886. This project is complete and additional information can be found in the *Final Data Summary Report for the Characterization of UBCs 123 and 886, August 2001, Rev.0.*

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 Solar Evaporation Ponds and the Present Landfill. The draft work plan for the conceptual design was completed and includes data quality objectives, conceptual design criteria, model recommendation and data gap analysis. A white paper was developed to justify that test plots will not be required for the proposed evapotranspiration covers based on available data. Concentrations of methane and oxygen in the first six feet of soil at the Present Landfill were determined and will be used to make design decisions. Modeling continues to determine the recommended thickness of the cover required. Work is proceeding on the development of the conceptual design with regulatory agency input.

The Original Landfill Project is proceeding with development of an Interim Measure/Interim Remedial Action (IM/IRA) Decision Document, which will include an analysis of potential remedial alternatives for the Original Landfill. The comparative analysis of alternatives will be submitted next quarter.

3.5.2.6 Industrial Area Characterization

An IASAP Addendum for FY02 describes soil-sampling locations in IHSSs, PACs, and UBC Sites. The FY02 Addendum includes sampling and analysis specifications for IHSS Groups 100-4, 100-5, 300-1, 300-6, 500-4, 500-6, 500-7, 600-1, 600-6, 700-12, 800-6, and 900-4&5. This IASAP Addendum contains maps of existing sampling locations and data, where available, and of proposed new sampling locations. The Addendum was provided to the regulatory agencies and approval is expected during the first quarter of FY02.

4.0 Water Management

Water management activities during the fourth 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.

4.1 Watershed Improvements

The annual Sediment and Erosion Control Structures and Measures Inspection was conducted during fourth quarter FY01. The results will be considered in revisions to the RFETS *Storm Water Pollution Prevention Plan* and used as a planning aid for structural improvements to the RFETS storm water control systems.

As an erosion control measure on the Perimeter Security Zone Closure Project, silt fences have been recommended and will be installed on the north perimeter of the old fence line in the first quarter FY02. The silt fence will minimize sediment entry into North Walnut Creek.

4.2 Surface Water Management

During the fourth quarter of FY01, the Site completed pond water transfers and discharges totaling 46.61 Million Gallons (MG), an increase of 9% compared to the fourth quarter of FY00 (42.83 MG). This increase is attributable to above average stormwater runoff during the quarter.

Pond A-3 activity included one outlet-valve direct discharge to Pond A-4 totaling 7.41 MG. This discharge occurred during the period of July 15 through 23, 2001.

Pond A-4 activity included one non-routine outlet-valve direct discharge to North Walnut Creek totaling 13.16 MG. This discharge occurred during the period of August 16 through 27, 2001. 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 two routine outlet-valve direct discharges to South Walnut Creek totaling 25.74 MG. The first discharge of 12.01 MG occurred during the period of June 28 through July 9, 2001. The second discharge of 13.73 MG occurred during the period of August 2 through 16, 2001. Water-quality samples were collected and analyzed, and all approvals were obtained prior to discharge. The City of Broomfield diverted the Pond B-5 discharges around Great Western Reservoir via the Broomfield Diversion Ditch.

Pond B-2 activity included one routine pumped-transfer to Pond A-2 totaling 0.30 MG. This transfer occurred during the period of July 9 through 11, 2001.

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

Transfers and discharges from the RFETS ponds during the fourth quarter of FY01 are summarized in Table 2.

Table 2. RFETS Pond Water Transfers and Discharges – Fourth Quarter FY01

Dates	Pond Activity	Total MG	Mode
6/28 to 7/9	B-5 to SWC	12.01	Outlet-valve direct discharge
7/9 to 7/11	B-2 to A-2	0.30	Pumped transfer
7/15 to 7/23	A-3 to A-4	7.41	Outlet-valve direct discharge
8/2 to 8/16	B-5 to SWC	13.73	Outlet-valve direct discharge
8/16 to 8/27	A-4 to NWC	13.16	Outlet-valve direct discharge
	Total for Quarter	**46.61 MG**	

4.3 Surface Water Monitoring

During the fourth quarter of FY01, 82 automated monitoring system samples were collected and submitted for analysis. This level of sampling activity is consistent with fourth quarter activities of the previous two years (FY00-84, FY99-75, FY98-47, FY97-69) and is significantly less than the number of samples collected during the FY01 rainy season (130 samples collected during the third quarter).

During the fourth quarter of FY01, the 30-day moving averages for all RFCA Point of Evaluation (POE) and Point of Compliance (POC) monitoring locations were below the RFCA action levels and standards for all monitored metals and radionuclides.

During August 2001, the Source Evaluation Report for RFCA POC GS10 was completed and delivered to the regulators. This source evaluation addresses the June 29, 2000, RFETS notification of reportable 30-day moving average values for plutonium and americium water-quality results at the POE monitoring location GS10, located above Pond B-1 in S. Walnut Creek. Reportable values for Pu were measured for the periods April 29 through June 22, 2000, July 16 through August 14, 2000, and August 27 through September 19, 2000. Reportable values for Am were measured for the periods April 15 through June 22, 2000, July 10 through August 14, 2000, and April 11, 2001. This Source Evaluation Report specifically includes data collection and analysis activities as detailed in the *Sampling and Analysis Plan for Automated Synoptic Surface-Water and Sediment Sampling for the GS10 Source Investigation* (RMRS, 2000).

The final four new 903 Pad Area surface water performance monitoring stations (GS51, GS52, GS53, and GS54) were installed in subdrainage basins north of the South Interceptor Ditch. Of the five new 903 Pad Area performance monitoring stations, only SW055 collected enough water to be submitted for analysis. Monitoring station SW055

samples stormwater runoff from drainage ditch southeast of the 903 Pad Area for surface water performance monitoring of the 903 Pad and Lip Area Remediation Project. Water flowing from SW055 is sampled again at RFCA POE SW027 before flowing into Pond C-2.

In support of the AME project, additional automated samplers were installed at locations GS10 and SW093. These samplers are part of an AME evaluation to determine where distribution of total suspended solids varies with depth in the water column.

During the fourth quarter of FY01, several monitoring stations that were no longer needed were removed from service. Equipment from SWWB monitoring locations GS47 and GS48, Walnut Creek source evaluation station GS34 (flume is still installed for flow monitoring) and several of the GS10 special investigation synoptic sampling stations (including SW100100) were removed from the field and have been staged for redeployment at other locations.

4.4 Ground Water Monitoring

The first (calendar) quarter 2001 groundwater monitoring report was presented to the Stakeholders at the Quarterly Information Exchange Meeting on August 28, 2001.

Other activities completed during the fourth quarter of FY01 included:

1. CDPHE and EPA approved the SAP for the D&D Monitoring of B707, B371/374, B776/777 and B883/865, and monitoring wells have been installed at B776/777, B707 and B371/374. Wells will be installed in the fourth (calendar) quarter of 2001 for B883/865.

2. All groundwater samples and water level measurements for the fourth quarter of FY01 were completed on September 24, 2001.

3. The updated ICP/MS uranium sampling and analysis project, which is being conducted jointly with CDPHE, was completed as of March 15, 2001. Final sample analyses for the wells sampled were received on September 10, 2001, from Los Alamos National Laboratory.

4. The SAP for the D&D Monitoring of B991, B559 and B881 was approved by CDPHE and EPA on June 21, 2001. Well installation will commence in the fourth (calendar) quarter of 2001.

4.5 Rocky Flats Water Working Group

The RFETS Water Working Group was part of the Quarterly Exchange of Information Meeting held on August 28, 2001. In addition to the quarterly exchange of information, the following topics were discussed: (1) Status update for Site pond operations, (2) Status of GS10 Source Evaluation; (3) SWWB and related topics; and (4) Cities of Broomfield and Westminster NPDES Permit renewal update. The next Water Working Group will be held on November 27, 2001.

5.0 List of Approved Decision Documents

This list of approved decision documents provides the information for the update to RFCA Attachment 12.

1. The B771 Closure Project DOP modification and Proposed Action Memorandum for Under Building Contamination Remediation dated June 11, 2001, was approved by CDPHE on September 6, 2001.

2. The IASAP, June 2001, was approved by CDPHE on June 18, 2001.

3. The ER RSOP for Soil and Asphalt Management dated August 3, 2001, was approved by CDPHE and EPA on August 28, 2001.