

2.0 Site Operations and Maintenance

2.1 Annual Site Inspection

Evidence of significant erosion and IC violations must be inspected for annually, in accordance with RFLMA Attachment 2, Sections 5.3.4 and 5.3.6. This year's inspection was conducted on April 14, 2008, and reported in the *Rocky Flats Site Quarterly Report of Site Surveillance and Maintenance Activities, Second Quarter Calendar Year 2008* (DOE 2008d).

The following categories were monitored during the inspection:

- Evidence of significant erosion in the COU and evaluation of the proximity of significant erosion to subsurface features in RFLMA Attachment 2, Figures 3 and 4. This monitoring included visual observation for precursor evidence of significant erosion (cracks, rills, slumping, subsidence, sediment deposition, and so forth);
- The effectiveness of ICs, as determined by any evidence of their being violated; and
- Evidence of adverse biological conditions, such as unexpected morbidity or mortality, observed during the inspection and monitoring activities.

As part of the IC inspection, the Environmental Covenant's presence in the Administrative Record and in Jefferson County records was verified. This verification is required annually. In addition, physical controls (signs placed along the COU fence) were also inspected.

Marker flags were placed where conditions showed evidence of the three condition categories listed above, to track their location for follow up by Site subject matter experts. Areas that required evaluation were documented in the Site Observation Log for evaluation and follow up. Rocky Flats field operations subject matter experts subsequently visited the areas, made minor repairs, collected debris, and determined that the debris was not a significant indication of erosion or exposure of the subsurface. Several areas with evidence of erosion, possible depressions, or holes were noted, but these imperfections appeared to be minor and of very limited areal extent.

The most notable features were several small depressions, sinkholes, or burrowing-animal holes related to the historical East Trenches Area. These were filled in, soil was added to bring the surface to surrounding contour, and the area will be observed for any continued evidence of depressions or sinkholes.

No evidence of violations of ICs or physical controls was observed.

On April 8, 2008, a team member verified that the Environmental Covenant for the COU remains in the administrative record and on file with the Jefferson County land records, which are used by the Planning and Zoning Department.

No adverse biological conditions were noted during the inspection.

2.2 Colorado Water Quality Control Commission (WQCC) Proceedings Related to Rocky Flats

Three WQCC rulemaking proceedings involving possible changes to Site-specific surface-water standards for Big Dry Creek segments 4a, 4b, and 5, which encompass North and South Walnut Creek and portions of Woman Creek (including the ponds and tributaries associated with these creeks) in the COU, occurred in 2008 and will continue into 2009. WQCC promulgated Site-specific surface-water standards are the basis for the surface-water standards incorporated into RFLMA Attachment 2, Table 1.

The Rocky Flats Stewardship Council was briefed on the status of the proceedings at each Rocky Flats RFLMA annual and quarterly report presentations during 2008. The following summary provides information regarding the three proceedings in 2008.

2.2.1 Uranium (U), Gross Alpha and Gross Beta Standards

This rulemaking is to consider revising *Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin, Regulation #38 (5 CCR 1002-38)* (Regulation 38) to eliminate the Site-specific standards in Big Dry Creek segments 4a, 4b, and 5 for U, gross alpha, and gross beta in Regulation 38, Table 2, due to changed hydrological conditions after cleanup and closure of Rocky Flats. The Site-specific ambient-based radionuclide standards for these analytes were first adopted in 1989 based on ambient conditions during operations. DOE petitioned WQCC to remove the Site-specific U standard, which would result in the statewide basic standard for U becoming the RFLMA standard. The statewide basic standard is the U.S. Environmental Protection Agency's (EPA's) maximum contaminant level (MCL) for U, and the MCL is approximately twice the RFLMA standard. There is no promulgated statewide basic standard for gross alpha and gross beta. The basis for DOE's petition is the changed conditions resulting from cleanup and closure.

U in groundwater at Rocky Flats is predominantly natural, as determined prior to closure, through hundreds of samples analyzed at LANL using high-resolution analytical methods. Post-closure high-resolution analysis of targeted groundwater and surface-water locations also shows that the U is predominantly natural. U that has been confirmed to be 100 percent natural has been measured in Rocky Flats groundwater at concentrations of more than 30 times the current Site-specific standard. With the quantity of runoff reduced through the removal of impervious surfaces and the elimination of imported water, the relative contribution of groundwater to surface-water flows at Rocky Flats has increased greatly, and consequently, U concentrations are also increasing. The groundwater U contribution to surface-water base flow indicates that the post-closure ambient U concentration may approach or exceed the 1989 ambient-based standards developed when the plant was operating.

Gross alpha and gross beta standards are used for screening purposes to limit radionuclide concentrations when specific radionuclides contributing to alpha or beta radioactivity are uncertain. The characterization of soil and water during cleanup and closure identified the radionuclide contaminants of concern as U-233,234, U-235, U-238, americium-241 (Am), and plutonium-239/240 (Pu). Specific standards for these isotopes are established in RFLMA Attachment 2, Table 1, making gross alpha and gross beta standards redundant and unnecessary.

Related activities included keeping stakeholders informed and soliciting stakeholder feedback regarding the proposed changes, which DOE proposed (and which WQCC accepted for a rulemaking hearing) in August 2007. Consultation with stakeholders continued during 2008 in order to develop consensus or agreement on the proposed changes, if possible, which may be helpful in WQCC final determination. Select groundwater and surface-water locations, some of which were suggested by stakeholders, were sampled to confirm that the predominance of natural U in post-closure groundwater is similar to that determined by pre-closure sampling. The sampling locations and results are included in the groundwater and surface-water sections of this annual report.

The rulemaking hearing is scheduled for January 12, 2009. The outcome of the proceeding will be reported in the next quarterly report.

2.2.2 Temporary Modifications (TMs)

TMs for nitrate, nitrite, benzene, carbon tetrachloride, 1,2-dichloroethane, 1,1-dichloroethene (DCE), tetrachloroethylene, and trichloroethylene are in effect for segment 5 of Big Dry Creek as Site-specific standards in Regulation 38, Table 3. These TMs are set to expire on December 31, 2009, at which time the underlying statewide basic standard for the organic analytes, and the Site-specific standard for nitrate and nitrite in Regulation 38, Table 1, will become effective. The underlying standards are based on a water supply classification for segment 5.

The Colorado Water Quality Control Act (WQCA) directs WQCC to periodically review all TMs at least once every 3 years. The 2008 review was for TMs set to expire before February 28, 2011. The purpose of the review was to consider whether revisions to or elimination of any TMs is warranted prior to scheduled expiration.

The segment 5 TMs were also considered during the review process in 2007 for TMs set to expire before February 28, 2010, and the 2008 review was essentially the same as the 2007 review. At the rulemaking hearing on December 8, 2008, DOE submitted evidence that progress to meet the underlying standards is continuing and that any proposed changes to the TMs or the expiration date will be addressed in the 2009 triennial review rulemaking hearing, discussed below.

No changes to the TMs or expiration date were adopted as a result of the hearing.

2.2.3 Regulation 38 Triennial Review

The WQCA directs WQCC to review all water-quality classifications and standards at least once every 3 years. There are three steps in the triennial review process:

1. An issues scoping hearing, to identify early any issues that will likely need to be addressed in the next major rulemaking hearing;
2. An issues formulation hearing, to formulate the specific issues that will be addressed in the next major rulemaking hearing; and
3. A rulemaking hearing.

The rulemaking hearing is scheduled for June 8, 2009. The issue scoping informational hearing was held on October 9, 2007, and the issues formulation informational hearing was held on November 10, 2008. Informational hearings are informal WQCC hearings that do not result in any formal action. Written comments submitted prior to the hearing are encouraged, but written or oral comments are accepted at the hearing.

The schedule for documents or filings leading up to the June 8, 2009, hearing is scheduled to be published by WQCC in the Public Notice of Rulemaking in March 2009.

DOE submitted written comments to WQCC for the issues formulation hearing regarding the following potential issues that could affect water standards currently included in RFLMA:

- TMs expire on December 31, 2009, and water quality may not meet the underlying Site-specific and statewide standards for nitrate+nitrite. Thus, Rocky Flats may request that certain changes to the underlying standards or stream classifications be adopted in the June 2009 rulemaking hearing.
- A new statewide basic standard for arsenic (10 micrograms per liter [$\mu\text{g/L}$]), consistent with the EPA promulgated MCL, has been adopted and is lower than the current Site-specific standard (50 $\mu\text{g/L}$). WQCC is required to reassess Site-specific standards in relation to any new or changed statewide basic standards as part of each triennial review. Several post-closure surface-water samples have exceeded 10 $\mu\text{g/L}$. This may present an ambient condition that could be considered by WQCC in establishing a new Site-specific standard.

In addition, because the triennial review hearing occurs after the U standard hearing, any issues related to Regulation 38, Table 2, that are not resolved by the January 2009 hearing could become an issue for the triennial review.

2.3 Pond Operations

Twelve constructed ponds collect and manage surface-water runoff at the Site. The ponds are grouped together in series based on the drainage in which they are located, with the A-Series Ponds in North Walnut Creek, the B-Series Ponds in South Walnut Creek, the C-Series Ponds in Woman Creek, and the Landfill Pond in No Name Gulch. Ponds A-4, B-5, and C-2 are referred to as “terminal ponds” because they are the farthest downstream ponds in their respective drainages, and because they are the ponds from which water is discharged off Site. Off-Site discharges of water from the terminal ponds are currently performed using a batch-release method.

In September 2008, the Site began the reconfiguration (breaching) of several dams in sections of North and South Walnut creeks. The reconfiguration eliminates the dams from ongoing monitoring and maintenance requirements and returns the stream reaches to a more natural system, while preserving existing wetlands and habitat. The project was completed in March 2009.

The breaching involved constructing grouted boulder-lined “notches” (Figure 2–1) with adjustable stoplog structures (Figure 2–2) that allow water to flow through the ponds or wetlands while still maintaining the wetland areas upstream. The ponds being modified include Ponds A-1

and A-2 on North Walnut Creek and Ponds B-1, B-2, B-3, and B-4 on South Walnut Creek. Once vegetation is reestablished, streamflows will ultimately be routed through the notched structures, instead of being diverted around these ponds through bypass pipes. The bypass pipes will remain in place after project completion.



Figure 2–1. Completed Notch at Dam B-2



Figure 2–2. Completed Stoplog Structure at Dam A-2

During CY 2008, the Site performed no terminal pond discharges. Pond A-3 was discharged to Pond A-4 twice in CY 2008 (Table 2–1). For habitat enhancement, water was periodically allowed to enter Pond B-1 (from South Walnut Creek) and Ponds A-1 and A-2 (from North Walnut Creek). As of December 31, 2008, the Landfill Pond and Ponds A-3, A-4, B-5, and C-2 were holding a total of approximately 14.4 million gallons (14.5 percent of total capacity).

Table 2–1. CY 2008 Pond Water Discharges and Transfers

Discharge/Transfer	Dates	Volume (million gallons)
Pond A-3 to A-4	3/24–4/11/08	3.63
Pond A-3 to A-4	4/14–4/15/08	0.26

As described in Section 3.1.2.11, pre-discharge samples were collected during CY 2008 at Ponds A-4, B-5, and C-2 to facilitate annual valve exercise. The valves at Ponds A-4 and B-5 were successfully exercised with no water reaching the downstream POCs. Pond C-2 was not exercised due to a broken valve handle; C-2 will be exercised during CY 2009.

Routine dam inspections, pond-level measurements, and piezometer measurements were performed as scheduled during the year. Annual dam mowing and vegetation removal was completed in July and August. Semiannual or quarterly (as applicable to specific dams) movement monument surveys and inclinometer readings were also performed as scheduled.

In compliance with the State of Colorado Rules and Regulations for Dam Safety and Dam Construction, a registered professional engineer conducted a formal dam safety inspection for Dams A-3, A-4, B-3, and C-2 and the PLF in September. All inspected dams received a “satisfactory” condition rating and a recommended safe storage level of “full.” Several recommendations to improve dam safety were made.

2.4 Landfills

The annual report of the results of inspections, monitoring data, and maintenance activities for the PLF and OLF is provided below.

2.4.1 Present Landfill

The PLF consists of an approximately 22-acre engineered RCRA Subtitle C-compliant cover over a former sanitary and construction debris landfill. A diversion channel surrounds the landfill and diverts stormwater runoff away from the landfill to No Name Gulch. The landfill has a passive seep interception and treatment system (the Present Landfill Treatment System [PLFTS]), installed to treat landfill seep water and Groundwater Intercept System (GWIS) water that discharges into the Landfill Pond. A gas extraction system is also built into the landfill and allows subsurface gas to vent to the atmosphere.

Subsidence and consolidation at the PLF is monitored by visually inspecting the surface of the landfill cover for cracks, depressions, heaving, and sinkholes. The landfill final construction site conditions are used as a baseline for comparisons made during Site inspections. In addition to the visual inspection, settlement monuments are used to evaluate the actual settlement at these specific locations compared to the expected settlement calculated in the final design. Nine settlement monuments were installed across the top of the landfill cap, with an additional six monuments located on the east face of the landfill. The monuments were monitored quarterly for the first year and annually thereafter.

Inspections and monitoring tasks follow the format and protocol established in the PLF M&M Plan and include groundwater and surface-water monitoring, and monitoring subsidence and consolidation, slope stability, soil cover, vegetation, stormwater management structures, and erosion in surrounding features so that corrective actions can be taken in a timely manner. Monthly inspections were initiated in October 2005. Quarterly inspections were initiated in the fourth quarter of CY 2007 as described in RFLMA Contact Record 2007-08 (Appendix G).

2.4.1.1 Inspection Results

Four inspections were performed at the PLF in CY 2008. The inspection process followed the format and protocol established in the PLF M&M Plan. No significant problems were observed during these inspections. Appendix C contains the landfill inspection forms for the fourth quarter of CY 2008; earlier 2008 inspection forms are included in the applicable quarterly reports.

PLF area surface-water and groundwater monitoring, and operation of the PLFTS, is covered in those respective sections of this report.

2.4.1.2 Slumps

On February 13, 2007, a slump was discovered on the north-facing hillside just east of the PLF. The slump is not on the PLF, and engineering review determined that it does not impact the PLF cover. The slump was likely caused by heavy snow conditions and influenced by the post-closure lower water levels in the Landfill Pond. Therefore, regrading the slump is not necessary; however, deep-rooted plants were planted in the slump area to promote stabilization. There were no significant changes to the slumping area in CY 2008.

2.4.1.3 Settlement Monuments

The annual survey was completed in March 2008. Results of the settlement monument survey indicate that settling at each monument does not exceed expected settlement calculated in the final design and does not trigger any maintenance activity under the PLF M&M Plan.

2.4.2 Original Landfill

The OLF consists of an approximately 20-acre soil cover over a former solid sanitary and construction debris landfill. The final cover consists of a 2-foot-thick Rocky Flats Alluvium soil cover that was constructed over both a regraded surface and a buttress fill, and revegetated. The original surface was regraded to provide a consistent slope. A 20-foot-high, 1,000-foot-long soil mass buttress fill was placed at the toe of the landfill. Erosion is controlled by a series of diversion berms that carry stormwater runoff away from the cover to channels on the east and west perimeter of the cover.

The OLF is inspected monthly in accordance with the OLF M&M Plan (DOE 2006b).

2.4.2.1 Inspection Results

Twelve inspections were performed at the OLF in CY 2008. The inspection process followed the format and protocol established in the OLF M&M Plan. Appendix C contains the landfill inspection forms for the fourth quarter of CY 2008; earlier 2008 inspections forms are included in the applicable quarterly reports.

OLF area surface-water and groundwater monitoring is covered in those respective sections of this report.

2.4.2.2 Settlement Monuments

The settlement monuments were surveyed in March, June, September, and December 2008. Survey data indicate that settling at each monument does not exceed expected settling calculated in the final design and does not trigger any maintenance activity under the OLF M&M Plan.

2.4.2.3 Geotechnical Investigation and Repairs

Conditions that warranted further repair and that triggered further investigation were found at the OLF beginning in 2007, as documented in the RFLMA quarterly and annual reports for 2007 and quarterly reports for 2008 (DOE 2007c, 2007d, 2008d, 2008e, 2008f, 2008g, 2009e). These conditions involved the localized slumping and settling of the OLF cover, seeps observed to daylight intermittently on the cover, and the development of a continuous seep at the eastern toe of the buttress (identified as Seep 8). In addition, ponding in lengths of the diversion berm channels from precipitation and snowmelt runoff were observed, and a topographic survey showed that portions of the diversion berms did not meet the minimum OLF M&M Plan–specified 2-foot height. DOE notified CDPHE and EPA of the observed conditions, and the parties discussed actions to address them. DOE continued monitoring conditions and made minor repairs as provided by the OLF M&M Plan, adding and compacting soil to localized areas to maintain berm and cover integrity.

CDPHE approved an OLF Action Plan on July 16, 2007. The OLF Action Plan included Phase 1 (near-term) repair, Phase 2 geotechnical investigation, and Phase 3 design and construction for long-term repair. Phase 1 repairs to address localized differential settlement, slumping, and surface cracks were made in 2007 by filling, grading, and compacting.

CDPHE approved the Phase 2 *Rocky Flats Site Original Landfill Geotechnical Investigation/Engineering Work Plan* (Work Plan) (DOE 2007f) on November 30, 2007. The goal of the Work Plan was to determine subsurface conditions and the possible causes of observed localized slumping and settling of the OLF cover, and to develop feasible alternatives for mitigating the localized areas of slope instability. The investigation also considered the possible impacts of the seeps and the maintenance of berm heights and channel slopes to ensure adequate water run-on and runoff controls.

Investigation fieldwork for Phase 2 began in December 2007 and was completed in April 2008. Work began with a geophysical survey to help determine the thickness and extent of waste placement and to aid in positioning investigative test pits and boreholes. Next, eight test pits, approximately 20 feet long and 11 to 13 feet deep, and a ninth test pit, approximately 20 feet long and 3 feet deep, were excavated. Seven boreholes, approximately 28 to 39 feet deep (into bedrock), were drilled to obtain continuous core samples and to install inclinometers to accurately measure movement. Throughout the work, a geologist made field observations, and laboratory analyses were conducted to determine mechanical properties of the test pit and borehole samples.

The *Rocky Flats Original Landfill Geotechnical Investigation Report* (Geotech Report) (Tetra Tech 2008) describes the Phase 2 work performed and concludes that a clay layer containing organic materials at or near the bedrock contact appears to be a weak interface area. As described in the Geotech Report, modeling predicts small-scale instability due to percolating moisture that lubricates this weak interval. The OLF buttress is providing stability as intended, and there is no large-scale instability predicted; therefore, the observed conditions do not appear to indicate a need for urgent or major responses.

CDPHE notified DOE on June 24, 2008, that the Geotech Report, having met the criteria agreed to in the Work Plan for the investigation, was acceptable. A summary of the results of the OLF

Action Plan implementation and the path forward is included in RFLMA Contact Record 2008-07, approved by CDPHE on September 2, 2008 (Appendix G). The construction to complete the necessary repairs and to implement design changes was completed in November 2008, and the as-built surveys for inclusion in the revised OLF M&M Plan are to be completed in March 2009. Construction of approved design changes and repairs and maintenance activities were performed as described below.

Diversion Berm Height

Minimum heights are based on subdrainage areas calculated for 200-foot lengths of each berm, and the minimum calculated height to convey the 1,000-year, 24-hour event. This provides freeboard capacity to convey the 100-year, 24-hour event, which is a design criterion for the berms. Approximately 24 percent of the total berm lengths had soil added to the top to meet this minimum height (which will represent the required berm height). This approach will minimize the impact to established vegetation because it will not require wholesale regrading or use of heavy construction equipment. Soil was added to raise berm heights in September and November 2008. The as-built topographic survey completed after this work will serve as a baseline for continued observation of berms for future maintenance. Inspections and future topographic surveys will be used to identify areas that require additional soil to maintain minimum heights.

Diversion Berm Channels

Channels were regraded as needed during the berm height construction, based on observations of significant ponding, to promote drainage to the perimeter channels. This included installing a gravel drain at the western end of Diversion Berm 3 to improve drainage below Seep 4 into the West Perimeter Channel. Inspections and future topographic surveys will be used to identify areas of ponding or slopes that indicate channel areas may be conducive to ponding.

Seep 7 Drain Extension

An extension to the original drain was installed in September 2008 upgradient within the 2-foot cover depth in the general area where this seep has expressed (daylighted) on the surface and saturated surface soil. At its southern end, the excavation extended below the cover material for a short distance to a depth of 4 to 5 feet and was tied in to the existing drain.

Inclinometers and Settlement Monument

The seven inclinometers installed during the geotechnical investigation will be monitored as frequently as the settlement monuments. Installation of settlement monument E, located between Berms 1 and 2, was originally planned for completion in 2006, but was delayed during the severe weather in the winter of 2006–2007. Due to the observed slumping in this area, settlement monument E was not installed, pending completion of the geotechnical investigation. However, it was installed in September 2008 during construction of the Seep 7 drain extension.

West Perimeter Channel Side Slope Stability

The area generally between the western ends of Diversion Berms 1 and 3 was regraded by cutting and filling to lessen the OLF side slope and improve stability. The construction was completed in November 2008. The existing gravel drain between Diversion Berms 1 and 2 was located and tied in to an extension of the gravel drain to the southern end of the perimeter channel. The Diversion Berm 3 gravel drain was also tied in to the extension of the gravel drain to the southern end of the perimeter channel.

Other Repairs and Maintenance

Localized slumping, differential settling, and cracks observed between the western ends of Diversion Berms 1 and 2, and between the eastern end of Diversion Berms 5 and 6, were addressed by adding soil, regading, and compacting, as specified in the original OLF M&M Plan. The geotechnical investigation concluded that adding soil and regrading was acceptable to maintain cover integrity and does not have a negative impact on future slope stability.

A modification of the OLF M&M Plan is being prepared for CDPHE approval, to reflect the changes resulting from the completion of the OLF Action Plan.

2.5 Groundwater Plume Treatment Systems Maintenance

The system-specific summaries below focus on the maintenance and operation of the Mound Site Plume Treatment System (MSPTS), the East Trenches Plume Treatment System (ETPTS), and the Solar Ponds Plume Treatment System (SPPTS) during the fourth quarter of CY 2008. Refer to previous quarterly reports from 2008 (DOE 2008d, 2008e, 2009e) for information on the rest of the year.

Details of the monitoring of the systems, including the PLFTS, are presented in Section 3.1.2.10, and interpretations related to system operation and the corresponding contaminant plumes are provided in Section 3.1.5.3.

2.5.1 Mound Site Plume Treatment System

Routine maintenance activities continued at the MSPTS through the fourth quarter of CY 2008. These activities included weekly raking of the media and inspection of influent- and effluent-flow conditions. Air in the instrumentation vault is monitored periodically for industrial hygiene purposes as a conservative health and safety practice.

As has been reported (DOE 2008g), the flow direction through the system was changed from an upflow to downflow configuration in January 2008 due to the increased maintenance requirements under upflow conditions.

2.5.2 East Trenches Plume Treatment System

Routine maintenance activities continued at the ETPTS through the fourth quarter of CY 2008. This included weekly raking of the media and inspection of influent- and effluent-flow

conditions. Routine inspections were modified to include atmospheric monitoring in the instrumentation vault as a conservative health and safety measure.

As has been reported (DOE 2008g), the flow direction through the system was changed from an upflow to downflow configuration in January 2008 due to the increased maintenance requirements under upflow conditions.

Flow through Cell 1 of the system slowed during 2008, most likely due to increasing quantities of mineral precipitates within the zero-valent iron (ZVI) media, and flow was reconfigured to pass through Cell 2 before Cell 1. This switch caused frequent air locks in the ETPTS piping, particularly in the piping between cells. This raised water levels in Cell 2, requiring frequent flushing of air from the lines. Media changeout and system upgrades will mitigate these conditions and are planned for CY 2009.

2.5.3 Solar Ponds Plume Treatment System

Phase I of the SPPTS upgrades was completed in October 2008. See Section 3.1.5.3 for a detailed description of these upgrades.

Routine maintenance activities continued at the SPPTS through the fourth quarter of CY 2008. This included weekly inspection of the solar/battery systems that power the pumps, operation of the pumps, and monitoring of influent- and effluent-flow conditions.

As reported in the 2007 annual report (DOE 2008g), the solar pump system at SPIN (SPPTS influent collection sump) began operating erratically in December that year, first shutting down on December 8. The pump was restarted, but continued to shut down throughout the month, requiring a manual restart each time. Evaluations suggested the erratic operation was related to weather conditions, as the pump appeared to shut down only in extreme cold. These malfunctions might be caused either by insufficient power available to the pump during low temperatures, or by ice buildup in the water line. Improvements were made to address this problem, including changing out the battery bank and replacing the charge controller between the solar array and battery bank. However, the problem persisted through the winter of 2008 despite these improvements, and it was determined the Phase II and III upgrades planned for CY 2009 should address the issue. See Section 3.1.5.3 for a more detailed description of these upgrades.

2.6 Erosion Control and Revegetation

The existing erosion controls are maintained and repaired to protect the bare soil areas until the vegetation can stabilize the soil. Areas lacking sufficient vegetative cover are assessed, and typically reseeded; however, in some cases, soil amendments are added to help establish the native vegetation. Additional information on the revegetation activities conducted at the Site during 2008 is provided in Section 3.3.2.3 of this annual report.

2.6.1 Erosion Control

Maintenance, repair, replacement, and monitoring of the Site erosion control features continued through 2007, as needed. Assessing the erosion control is especially important following the high wind events that are common at the Site and after significant precipitation events. Typical repairs

included restaking (or weighting with rocks) wattles or erosion blankets that had loosened. The *Erosion Control Plan for the Rocky Flats Property Central Operable Unit* (DOE 2007b) was followed for various projects conducted in 2008. The plan addresses the regulatory approach, monitoring inspections, and the applicability and scope of erosion control activities at the Site. It outlines the responsibilities, BMPs, and implementation aspects for erosion control activities before, during, and after projects.

2.7 General Site Maintenance and Operations

The Site is managed and maintained, and activities are conducted, pursuant to DOE's jurisdiction and control responsibilities. These activities help maintain the general condition of the Site through BMPs. The Site is assessed both according to a scheduled and continuously. Highlights of the routine and nonroutine maintenance and operations are described below.

2.7.1 Road Upgrades

The Stoller Site manager and field operations lead inspected the Site roads on April 30 to determine areas that would require upgrades during the Roads 2008 Project. The field operations lead consulted with the DOE Site manager regarding the locations identified and added other locations based on his input.

The field operations lead and Legacy Management Support engineer inspected the Site roads on May 8. The new road that will be installed to allow access to the PLF was walked-down to determine necessary upgrades. The drainage was measured to estimate the size of the culverts that will be installed there and the amount of fill material that the installations will require.

The field operations lead and the ecology lead staked and sited on a global positioning system the location for the new PLF road on May 27.

The Roads 2008 Project was initiated on July 21. A new road to the PLF was cut in, and a new culvert that allows the road to cross the Walnut Creek drainage was installed. Other road areas were regraded, and road base was added through July 17. The first coat of surfactant was applied on July 17, followed by the second coat on July 18. All of the heavy equipment was demobilized from the Site on July 18.

2.7.2 Site Security

Site surveillance is performed during times when Site personnel are not normally in the field (i.e., evenings and weekends).

2.7.2.1 Security Issues

There were no security issues during the first, second, and third quarters of CY 2008. The Site security contract was discontinued on September 30, 2008.

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