

Rocky Flats Environmental Technology Site

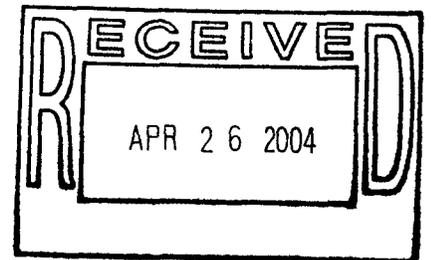
SITE TREATMENT PLAN COMPLIANCE ORDER

QUARTERLY PROGRESS UPDATE

April 15, 2004



**U S Department of Energy
Rocky Flats Project Office
Golden, Colorado 80402**



ADMIN RECORD

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1 0 INTRODUCTION

This Quarterly Progress Update (QPU) report, required by the Site Treatment Plan (STP) Compliance Order, is the second quarterly report for fiscal year 2004 (FY04) and reports on the period from January 1, 2004 through March 31, 2004. This QPU describes the progress made toward implementing the plans and treatment options presented in the FY03 Annual Progress Report (APR), which was submitted to the Colorado Department of Public Health and Environment (CDPHE) on October 31, 2003.

2 0 LOW-LEVEL MIXED WASTE PROGRESS REPORT

Rocky Flats Environmental Technology Site (Rocky Flats) personnel made significant progress during the past quarter toward characterization and offsite shipment of Low Level Mixed Waste (LLMW) scheduled for FY04 disposition, as well as the preparation and shipment of Mixed Transuranic Waste (MTRU) streams. The mixed waste program continues to address treatment and disposition issues unique to Rocky Flats that present complex and challenging hurdles that need to be overcome to meet the final STP milestones. This report provides detailed information on the progress made for each waste stream for which activities were scheduled and/or performed during the quarter. Issues that may affect achieving STP milestones are also discussed.

Note that this QPU provides status for waste streams that historically were assumed to require treatment and were therefore STP-regulated. This includes waste populations that, following detailed characterization and reassessment activities, have been determined to not require treatment.

Significant accomplishments achieved during the first quarter FY04 include:

- Shipped 2174 drums (453 m³) of solidified bypass sludge (RF-W009) to Waste Control Specialists (WCS) for stabilization. The entire waste stream population has been shipped offsite for treatment completing this milestone.
- Awarded treatment/disposal contract for over 300 m³ STP-regulated debris drums.
- Obtained treatment variances to facilitate shipment of problematic STP-regulated waste chemicals to Envirocare.
- Received analytical data indicating that approximately 7 m³ of non-STP regulated PCB/organic liquids are acceptable for receipt at the TSCA Incinerator (TSCAI). A Batch 6 tanker will be loaded and shipped in August 2004.
- Closed the pondsludge treatment process, there are now no active onsite treatment processes.

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Issues affecting Rocky Flats LLM waste disposition include

- The continued unavailability of disposal facilities – specifically Hanford and the Nevada Test Site (NTS) – to accept LLMW generated at Rocky Flats with a transuranic activity greater than 10 nCi/g Rocky Flats staff continues to work with both Hanford and NTS personnel by providing waste forecast and waste profile data Rocky Flats also continues to explore alternative disposition pathways for this waste
- Nationwide thermal treatment options are very limited for LLMW Should either the PermaFix or Envirocare thermal desorption systems become unavailable to Rocky Flats, the organic and PCB non-debris solid waste stream milestones may be affected Although both PermaFix and Envirocare are working to permit their thermal systems, neither are presently able to receive TSCA-regulated waste for treatment

2.1 Status of FY04 Milestones

Table 1 below provides a summary of FY04 milestones achieved, or progress towards achieving milestones

Table 1 Summary of FY04 Activities and Milestones

Section	Waste Stream	Activity/Milestone	Due Date	Progress/Status
2.1.1	Solidified Bypass Sludge RF W009	• <u>Complete shipment offsite</u>	<u>9/30/04</u>	<ul style="list-style-type: none"> • Sludge drum shipments to WCS in IP 2 nine packs commenced on 11/6/03 • Entire population of 2174 drums shipped completing milestone
2.1.2	B374 Wet Slurry RF W079	• <u>Complete shipment offsite</u>	<u>9/30/04</u>	<ul style="list-style-type: none"> • Five intermodals of treated LDR compliant B374 wet slurry remain onsite repackaging required for DOT compliance prior to shipment • Generated ~37 m³ (179 drums) B374 wet slurry requiring treatment planning to ship drum to WCS for treatability study • 86 IP 2 metal half crates of LDR compliant wet slurry presently in storage in Rocky Flats B460 • Remainder of RF W079 waste stream (~500 m³) shipped offsite for disposal
2.1.3	Organic Solids RF W027	• <u>Complete shipment offsite</u>	<u>9/30/04</u>	<ul style="list-style-type: none"> • Population comprised of 54 drums (11 m³) PCB/organic non-debris solids • Analytical data indicates non debris solids cannot be accepted at TSCA I • Seeking permitted commercial treatment facility for treatability studies/treatment PCBs are problematic
2.1.4	PCB Solids RI W081			
2.1.5	Waste Chemicals RF W083	• <u>Complete shipment offsite</u>	<u>9/30/04</u>	<ul style="list-style-type: none"> • 19 containers (3 m³) shipped to M&EC and PermaFix Florida for treatment • Received treatment variance for P015 beryllium powder to be shipped to Envirocare • Received treatment variance for >260 ppm mercury sludge to be shipped to Envirocare
2.1.6	Soil and Cleanup Debris (RF W050)	• <u>Complete shipment offsite</u>	<u>9/30/04</u>	<ul style="list-style-type: none"> • STP regulated portion of population includes 35 drums of non LDR compliant soil requiring stabilization

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Section	Waste Stream	Activity/Milestone	Due Date	Progress/Status
217	Debris RF W005 RF W006 RF W023 RF W024 RI W030 RI W035 RI W045 RI W075	<ul style="list-style-type: none"> Complete shipment offsite of 300 m³ 	9/30/04	<ul style="list-style-type: none"> Contract awarded to Envirocare to treat and dispose of more than 300 m³ SIP regulated debris shipments to start in 5/04

2 1 1 Solidified Bypass Sludge, RF-W009

Milestone Complete shipment of 437 m³ of waste offsite – 9/30/04

Rocky Flats awarded the treatment contract for the solidified bypass sludge waste population to WCS. Shipping was initiated on 11/6/03 and the final shipment was made on 3/31/04. A total of 2174 drums were shipped for treatment, thereby completing the STP milestone for this waste stream. Following treatment, the final waste form will be an LDR-compliant packaged monolith with an average transuranic activity >10 nCi/g. Treated waste will be packaged in B-12 metal crates. DOE is seeking a final long-term storage or disposal path.

2 1 2 B374 Wet Slurry, RF-W079

Milestone Complete treatment/shipment of waste offsite – 9/30/04

Rocky Flats awarded a contract to Duratek to treat non-LDR compliant B374 wet slurry using the 750 Pad pondsludge treatment system. The system blended B374 wet slurry, B374 LLM waste water, and Wastelock 770 absorbent polymer to treat chromium and cadmium to below LDR standards. Treated waste was loaded in intermodals and shipped to Envirocare for disposal.

Through the FY04 second quarter, 23 intermodal shipments (nearly 500 m³) were made. Five treated, LDR-compliant intermodals remain onsite requiring repackaging for DOT compliance. Shipments of the remaining treated wet slurry is expected in FY04 third quarter.

B374 generated an additional 179 drums of LLMW wet slurry requiring treatment that was previously characterized as TRU. A waste profile is being prepared for WCS where this subpopulation of wet slurry will be shipped for treatment. Treated waste will be >10 nCi/g transuranic activity and will be managed with the treated solidified bypass sludge waste population – interim storage until Hanford or NTS becomes available to receive Rocky Flats LLMW.

Additionally, as reported in the FY03 APR, 86 IP-2 metal half-crates of LDR-compliant B374 wet slurry are presently stored in B460. When Hanford becomes available to receive Rocky Flats waste, these crates will be shipped for Hanford Category 3 stabilization prior to disposal.

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2 1 3/2 1 4 Organic Solids, non-PCB, RF-W027/ PCB Solids, RF-W081

Milestone Complete shipment offsite – 9/30/04

The non-debris (sludge-like) organic and PCB solids waste stream is comprised of 54 containers (~11 m³), the FY04 first QPU reported approximately 90 containers. The difference is attributed to detailed characterization data review and waste reassessment to other waste populations. Analytical data from recent sampling evolutions indicates that solids targeted for destruction at the TSCA do not meet acceptance criteria. Two disposition paths are therefore under consideration: 1) ship non-PCB organic solids to a commercial vendor(s) for treatment, and 2) ship PCB solids to a commercial vendor(s) for treatability studies.

Two treatment facilities, Envirocare and PermaFix (M&EC), are in various stages of accepting waste for thermal desorption treatment. Envirocare is anticipating accepting organic solid waste for treatment in the near future, and PermaFix expects to resolve Facility Use Determination (FUD) issues within two months. PermaFix also expects to receive its TSCA permit by the end of June 2004. Treatment/treatability study contracts will be awarded when these facilities are approved to accept this waste stream for thermal treatment.

As discussed in Section 2.0, nationwide options for LLMW organic treatment are very limited. Should either or both of the Envirocare or PermaFix thermal desorption systems encounter permitting, political, or technical issues limiting or curtailing their availability, Rocky Flats will have no viable treatment options available for this waste stream. CDPHE will be kept apprised of issues surrounding the treatment of PCB and organic non-debris solids.

2 1 5 Waste Chemicals, RF-W083

Milestone Complete shipment offsite – 9/30/04

The F027 lab pack population was recharacterized as non-radioactive and shipped to the Swan Hills Treatment Centre in Alberta, Canada in the FY04 first quarter. Additionally, 19 drums (~3 m³) of waste chemicals were shipped to PermaFix Florida and M&EC for treatment on 1/15/04.

The remaining STP-regulated waste chemical population includes approximately 5 m³ contained in 34 containers. The FY04 path forward for this waste stream is as follows:

- 6 containers (approximately 1 m³) of waste chemicals with various waste codes are being prepared for shipment to PermaFix,
- 8 containers (approximately 0.8 m³) of P015 beryllium is being prepared for repack and shipment to Envirocare for stabilization followed by macroencapsulation. The State of Utah granted a treatment variance to Envirocare for this waste population,
- 13 containers (approximately 1.6 m³) of liquid and solid waste chemical carrying the D009 waste code for mercury. This waste stream is considered high mercury (>260 ppm) and, following treatability studies, is targeted for treatment at PermaFix,

- 7 containers (approximately 14 m³) of liquid and solid waste chemicals that is either planned for repack, or has contract issues requiring resolution prior to shipment

2.1.6 Soil and Cleanup Debris, RF-W050

Milestone Complete shipment offsite – 9/30/04

The soil and cleanup debris waste stream is comprised of 8 wooden crates of 903 pad drill cuttings, 35 drums of soils requiring metals treatment only, 47 containers of LDR compliant investigative-derived soils, and approximately 100 drums of LDR-compliant miscellaneous soil/asphalt. The non-LDR compliant soils will be shipped to Envirocare for stabilization, the treatment task order is expected to be in place in April 2004 and the waste will be shipped by the end of the FY04 third quarter.

2.1.7 Debris, RF-W005, RF-W006, RF-W023, RF-W024, RF-W030, RF-W035, RF-W043, RF-W045, RF-W075

Milestone Complete shipment offsite of 300 m³ – 9/30/04

The Rocky Flats STP-regulated debris population of approximately 1,100 m³ includes combustibles, light metals, glovebox parts and lead, crushed glass, insulation and filter media. 14 m³ of primarily light metal and glass was shipped to Envirocare for treatment in FY04 first quarter. A contract to treat approximately 1700 drums (~350 m³) of STP-regulated legacy debris has been awarded to Envirocare.

2.2 Status of FY05 Milestones

Rocky Flats is planning to complete the offsite shipment of all STP-regulated LLMW by the end of FY05. Assuming that all FY04 shipping milestones are successfully met, only two waste streams will require disposition in FY05:

- 830 m³ of STP-regulated LLMW debris, and
- Small volumes of waste that may enter the STP-regulated population as RCRA storage areas are evacuated, RCRA-regulated waste storage/processing tanks are emptied, or analytical solutions/waste chemicals are discovered as laboratories are deactivated for D&D operations.

3.0 PROPOSED CHANGES TO THE APPROVED SITE TREATMENT PLAN

No significant changes to the FY03 APR are proposed, minor waste volume adjustments reflect a better understanding of each regulated waste stream.

4 0 TREATMENT AND DISPOSAL ALTERNATIVES

The following section updates progress and/or changes to onsite and offsite commercial and DOE treatment and disposal facilities utilized by Rocky Flats that has occurred during the second quarter of FY04 Table 4 below presents treatment options for all STP waste streams for which status is reported in this QPU

Table 2 STP Waste Stream Treatment Options

STP Waste Stream	Waste Volume (m ³)	Primary Treatment Option (s)	Contingency Treatment Option(s)
Solidified Bypass Sludge ¹	449	WCS (under contract)	NA
B374 Wet Slurry	108	Rocky Flats (Duratek LATA under contract)	NA
	37	WCS	PEcoS
Organic Solids Non PCB	17	PermaFix (M&EC) Envirocare	NA
PCB Solids	3	PermaFix (M&EC) Envirocare	NA
Waste Chemicals	5	PermaFix Envirocare	PFcoS WCS
Debris (<10 nCi/g)	-715	Envirocare	PEcoS UltraTek macro container ²
Debris (>10 nCi/g)	-385	PEcoS	UltraTek macro container

¹Shipping milestone complete

²A detailed description of the UltraTek macro container is provided in the FY03 APR

4 1 Onsite Treatment Facilities

There are presently no treatment facilities being operated onsite

4 2 Offsite DOE Facilities

4 2 1 TSCAI

The DOE-owned TSCA incinerator can accept low activity organic and PCB liquids and debris No Rocky Flats waste was shipped to TSCAI in the FY04 second quarter Rocky Flats is planning to ship a tanker batch 6 of newly generated, non-STP regulated PCB/organic liquids to TSCAI in June FY04

4 2 2 Hanford

The DOE Richland Operations Office has released the Final Hanford Site Solid (Radioactive and Hazardous) Waste Program Final Environmental Impact Statement (HSW EIS) The official Notice of Availability was published in the Federal Register in February 2004 Approval of the Record(s) of Decision [ROD(s)] identifying preferred waste storage, treatment and

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disposal options is expected in the near future (April 2004) Following approval, the ROD(s) will be published in the Federal Register and Hanford may begin to accept Rocky Flats LLMW for disposal

Rocky Flats personnel continue to work closely with Hanford DOE and contractor personnel to identify waste streams for disposal acceptance Hanford is licensed to accept LLMW with a transuranic activity up to 100 nCi/g Rocky Flats has developed two waste profiles that have been submitted to and reviewed by Hanford The first is for macroencapsulated heterogeneous debris, a current debris profile revision has been approved by Hanford The second profile is for treated solidified bypass sludge Approval of the submitted bypass sludge profile is expected by April 30, 2004

Although approval of the NEPA documentation may soon allow for the shipment of Rocky Flats LLMW to Hanford for disposal, there remains some probability that waste planned for Hanford disposal will require long-term storage at Rocky Flats, WCS, or another DOE or commercial facility Until a certain disposition path is established, this waste will remain an orphan CDPHE will be kept apprised of any developments regarding Hanford availability

4 2 3 Nevada Test Site

The Nevada Test Site is licensed to accept LLW with a transuranic isotopic activity less than 100 nCi/g NTS has submitted a modification to their Part B RCRA permit application to the State of Nevada to allow for the disposal of LLMW generated at DOE facilities other than NTS The State of Nevada continues to provide NTS with comments that are presently being resolved NTS expects resolution to all technical issues in several months culminating in the final submittal of a Part B Permit application technically satisfactory to NTS and the State of Nevada Rocky Flats expects that NTS may be able to accept >10 nCi/g LLMW in 12-18 months Rocky Flats continues to work with NTS personnel to identify specific waste streams that may be shipped to NTS for disposal

4 3 Commercial Treatment Facilities

4.3 1 Pacific EcoSolutions

Pacific EcoSolutions, LLC (formerly known as ATG), located in Richland, WA, maintains compaction/macroencapsulation treatment capabilities producing a waste product acceptable for Hanford disposal PEcoS also maintains sludge stabilization capabilities and is able to receive and process unique waste matrices To date, PEcoS has received and processed/treated over 1,000 Rocky Flats debris drums, over 300 B371 D008 stacker pallets, and 20 drums of treatability study solidified bypass sludge PEcoS is presently the only facility available to Rocky Flats to macroencapsulate LLMW debris with an activity greater than 10

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nCi/g PEcoS remains of interest to Rocky Flats as an efficient treatment conduit of waste that may be destined for Hanford disposal

Processed stacker pallets have been shipped to Envirocare for disposal. The treated bypass sludge has been shipped to WCS for processing with the entire waste stream population. The debris has been compacted and macroencapsulated into 108 110-gallon drums that continue to be stored at PEcoS. The present storage extension expires on April 30, 2004 at which time 1) the waste will be shipped to Hanford (assuming NEPA approval), 2) the State will approve another 6-month storage extension, or 3) the waste will be returned to Rocky Flats for storage.

4 3 2 PermaFix

PermaFix Environmental Services includes the PermaFix facility in Gainesville, Florida, Diversified Scientific Services (DSSI) in Kingston, Tennessee, and Material and Energy Corporation (M&EC) in Oak Ridge, Tennessee. Rocky Flats has utilized the DSSI boiler and industrial furnace (BIF) for destruction of waste chemicals. Rocky Flats personnel will evaluate additional offered services and technologies offered by PermaFix including repackaging, debris washing, stabilization, and chemical oxidation. PermaFix has also installed a thermal desorption unit and expects a TSCA permit to treat PCBs by June 30, 2004.

4 3 3 Envirocare

Envirocare presently provides treatment and disposal services for nearly all LLMW debris with an activity less than 10 nCi/g generated at Rocky Flats. Rocky Flats maintains over 25 task orders and over 30 waste profiles with Envirocare to macroencapsulate conforming and oversize debris (including gloveboxes), direct dispose environmental restoration soil and soil-like material, and direct dispose oversize LDR-compliant debris. Envirocare also offers treatment/stabilization services that Rocky Flats utilizes, or has utilized, for solar pond sludge, incinerator ash, mercury contaminated crushed light bulbs, lead acid batteries. A chemical oxidation treatment system is also available to treat organic wastes. The thermal desorption unit is presently not available, but may be in the near future. Envirocare also receives Rocky Flats Alternate Water Treatment System (AWTS) liquids for solidification and disposal.

4 3 4 Waste Control Specialists

WCS, located in Andrews, Texas, currently maintains waste stabilization, shredding and repackaging capabilities. Stabilization includes use of cement grout materials to reduce the leachability of regulated metals and form a solid matrix. WCS possesses a Class A and B/C radioactive license enabling the receipt and treatment of mixed waste with a transuranic activities greater than 10 nCi/g for storage and treatment. WCS has completed the treatment of nearly 800 drums of T231B wet slurry that has been shipped to Envirocare for disposal. In October 2003, WCS was awarded the contract to treat over 400 m³ of solidified bypass sludge.

2174 drums of sludge have been shipped and the treatment campaign is expected to begin in May 2004

5.0 STATUS OF MIXED TRANSURANIC (MTRU) WASTE

Rocky Flats began shipping MTRU waste to WIPP on December 19, 2001, with a shipment of the MTRU Incinerator Ash waste stream. Through March 31, 2004, 9,704 drums (2,037.84 m³) and 369 standard waste boxes (SWBs) (701.1 m³) of MTRU waste have been shipped to WIPP from Rocky Flats. During the second quarter of FY04, Rocky Flats initiated shipments of four additional MTRU waste streams: 1) MTRU Metals with multiple EPA codes, 2) MTRU Combustibles with multiple EPA codes, 3) MTRU Heterogeneous Debris with multiple EPA codes, and 4) MTRU Inorganic Composite Debris with multiple EPA codes. A summary of MTRU waste shipments to date by waste stream profile is provided below.

Table 3 MTRU Waste Shipped to WIPP (through March 31, 2004)

Waste Stream	Drums Shipped	SWBs Shipped
MTRU Incinerator Ash (D004, D005, D006, D007, D008, D009, D010, D011, F001, F002, F005)	6,856	0
MTRU Leaded Gloves (D008)	365	0
MTRU Combustibles (F001, F002)	297	2
MTRU Plutonium Fluoride (D005, D006, D007, D010)	940	0
MTRU Heterogeneous Debris (D008)	0	183
Waste Stream	Drums Shipped	SWBs Shipped
MTRU Combustibles (F001, F002, F005)	156	5
MTRU Filters (D022, F001, F002)	43	0
MTRU Firebrick (D004, D005, D006, D007, D008, D009, D010, D011, F001, F002, F005)	415	0
MTRU Metals (D008)	0	48
MTRU Combustibles (F001)	86	0
MTRU Combustibles (F005)	203	0
MTRU Metals (multiple)	83	42
MTRU Combustibles (multiple)	258	11
MTRU Heterogeneous Debris (multiple)	2	46
MTRU Inorganic Composite Debris (multiple)	0	32
Totals	9,704	369

An additional MTRU waste stream profile form was submitted in the 2nd quarter of FY04 for low-grade oxide. Approval is expected soon, with shipment of this waste form expected to begin in April 2004.

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5.1 Point of Generation Solidification

The first campaign of solid sampling and analysis of the polymerized organic waste has been completed. The second, and hopefully the last, campaign is currently planned to be completed by the end of this fiscal year.

Last quarter it was reported that there was an inventory of 150 drums of polymerized aqueous TRU waste and that the TRU Programs anticipated the generation of an additional hundred drums. As of the writing of this report 265 drums of polymerized aqueous waste have been produced, however, most of the drums were re-designated as Low Level waste after formal assay leaving only a total inventory of 86 TRU drums.

The B559 laboratory has produced an additional drum of treated aqueous laboratory waste packaged in small containers for a total of 3 drums. It is anticipated that the lab may produce one or possibly two additional drums of polymerized aqueous waste (small packages) from future D&D activities.

The first sample and analysis campaign of the polymerized aqueous waste was completed this last quarter. A second sampling campaign, if needed, will be performed by the end of the fiscal year.

5.2 Legacy Solidified Organics

Over 400 drums of OASIS waste have gone through the new 10-day heated gas-generation test. OASIS was produced from the historic Organic and Sludge Immobilization System that was in operation from 1985 to 1990 and intermittently after that. Approximately 20 percent of these drums continue to exceed the current 60-day gas generation rate limit. However, when the NRC approves Revision 20 of the TRUPACT-II SAR, which establishes a new 10-day shipping period and associated gas-generation rate limit, then approximately 95 percent will qualify for transport and disposal without any additional management. The NRC approval of Revision 20 is anticipated by end of fiscal year 2004.

Rocky Flats is continuing to investigate additional administrative controls that may allow for shipment of the small percentage of drums that are expected to exceed the hydrogen or total gas generation rate limits for the 10-day shipping period. However, it is anticipated that the waste in some of these drums will have to be split and distributed into several new containers in order to meet the gas generation requirements. Splitting and repackaging operations, if needed, is expected to commence by the end of 3rd Quarter of FY04.