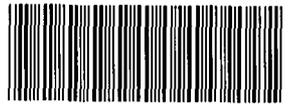


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CORRES. CONTROL  
LTR. NO.

DOE Order #

96 - RFP-WM - 00104-KH



**Rocky Mountain  
Remediation Services, L.L.C.**  
... protecting the environment

Rocky Flats Environmental Technology Site  
P.O. Box 464  
Golden, Colorado 80402-0464  
Phone: (303) 966-2677  
Fax: (303) 966-8244

July 10, 1996

96-RM-WM-00104-96 <sup>jav</sup> KH

T. G. Hedahl  
Director  
ER/WM&I Operations  
Kaiser-Hill Company, L.L.C.  
Bldg. T130C

GENERATOR APPLICATION TO SHIP WASTE FOR TREATMENT TO THE OAK RIDGE RESERVATION K-25 SITE TOXIC SUBSTANCES CONTROL ACT INCINERATOR - JLM-116-

Rocky Mountain Remediation Services, L.L.C. (RMRS) is pleased to submit the enclosed application in accordance with the protocols outlined in ES/EM-65, *Application Protocol for Accessing Oak Ridge Reservation Waste Treatment Facilities*. The contents of the application have been developed cooperatively between multiple groups within RMRS, as well as Kaiser-Hill Waste Certification and Oversight and the Lockheed Martin Energy Systems contact at the Oak Ridge Reservation. We request that you approve the application and forward it to Shirley Olinger, DOE-RFFO for her signature approval.

It is our understanding that this application will be reviewed by the appropriate Program and Facility managers within Lockheed Martin Energy Systems to determine whether or not the generator has met the Waste Acceptance Program requirements and that the waste will be acceptable at the TSCA Incinerator. The results of this review will be a finding of "Not Acceptable", "Conditionally Accepted" or "Insufficient Information". We further understand that Lockheed Martin Energy Systems will conduct a generator audit July 16-18, 1996, that all audit findings must be closed, and that any necessary modifications to the application must be made before waste stream approval is received.

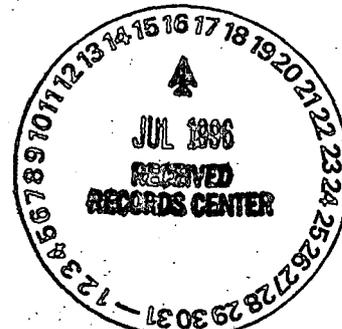
We believe the enclosed package is responsive to the guidelines provided by Lockheed Martin Energy Systems. Should you have any questions or if additional information is necessary, please contact Bob Griffis at 966-4934. Thank you for your consideration in this matter.

*James L. McAnally*  
James L. McAnally  
President  
Rocky Mountain Remediation Services, L.L.C.

RLG:mln

Enclosure:  
As Stated

cc:  
S.A. Anderson - Kaiser-Hill  
C.E. Kennedy - Kaiser-Hill  
F.J. Valenzuela - Kaiser-Hill



ADMIN RECCRD

SW-A-004257

| DIST.          | LTR | ENC |
|----------------|-----|-----|
| BARTHEL, J.M.  |     |     |
| BENGEL, P.R.   |     |     |
| BENSON, C.A.   |     |     |
| BOARDMAN, C.   |     |     |
| FINDLEY, M.E.  |     |     |
| FITZ, R.C.     |     |     |
| GUINN, L.A.    |     |     |
| JIERREE, C.C.  |     |     |
| McANALLY, J.L. | X   | X   |
| PARKER, A.M.   |     |     |
| POWER, A.P.    | X   | X   |
| WAGNER, M.J.   |     |     |
| ZEILE, H.J.    |     |     |

RL Griffis X X

LF Johnson X X

n-wheeler X X

RMRS CORRES.  
CONTROL X X

CORRES. CONTROL X X  
TRAFFIC  
PATS/T130G

CLASSIFICATION:

|              |  |
|--------------|--|
| UCNI         |  |
| UNCLASSIFIED |  |
| CONFIDENTIAL |  |
| SECRET       |  |

AUTHORIZED CLASSIFIER  
SIGNATURE:

Date: N/A  
IN REPLY TO RFP CC NO.:

ACTION ITEM STATUS:  
q PARTIAL/OPEN  
q CLOSED

LTR APPROVALS:  
ORIG. & TYPIST INITIALS:  
1/35

July 10, 1996

Ms. S. Olinger  
Department of Energy  
Rocky Flats Field Office  
P.O. Box 464  
Golden, CO 80402-0464

DRAFT

GENERATOR APPLICATION TO SHIP WASTE FOR TREATMENT TO THE OAK RIDGE RESERVATION K-25 SITE TOXIC SUBSTANCES CONTROL ACT INCINERATOR

Kaiser-Hill Company, L.L.C. is pleased to submit the enclosed application in accordance with the protocols outlined in ES/EM-65, *Application Protocol for Accessing Oak Ridge Reservation Waste Treatment Facilities*. The contents of the application have been developed cooperatively between multiple groups within RMRS, as well as Kaiser-Hill Waste Certification and Oversight and the Lockheed Martin Energy Systems contact at the Oak Ridge Reservation. We request that you approve the application and forward it to Joy Sager, DOE-OR.

It is our understanding that this application will be reviewed by the appropriate Program and Facility managers within Lockheed Martin Energy Systems to determine whether or not the generator has met the Waste Acceptance Program requirements and that the waste will be acceptable at the TSCA Incinerator. The results of this review will be a finding of "Not Acceptable", "Conditionally Accepted", or "Insufficient Information". We further understand that Lockheed Martin Energy Systems will conduct a generator audit July 16-18, 1996, that all audit findings must be closed, and that any necessary modifications to the application must be made before waste stream approval is received.

We believe the enclosed package is responsive to the guidelines provided by Lockheed Martin Energy Systems. Should you have any questions or if additional information is necessary, please contact Colburn Kennedy at 966-7543. Thank you for your consideration in this matter.

T.G. Hedahl  
Director  
ER/WM&I Operations

Enclosure:  
As Stated

cc:

S. A. Anderson - Kaiser-Hill  
R. L. Griffis - RMRS  
L. F. Johnson - RMRS  
C. E. Kennedy - Kaiser-Hill  
A. P. Power - RMRS  
W. P. Prymak - DOE, RFFO  
F. J. Valenzuela - Kaiser-Hill

2

Date

Ms. J. L. Sager  
Department of Energy  
Oak Ridge Operations Office  
P.O. Box 2001  
Oak Ridge, TN 37831

DRAFT

GENERATOR APPLICATION TO SHIP WASTE FOR TREATMENT TO THE OAK RIDGE RESERVATION K-25 SITE TOXIC SUBSTANCES CONTROL ACT INCINERATOR

DOE-RFFO is pleased to submit the enclosed application in accordance with the protocols outlined in ES/EM-65, *Application Protocol for Accessing Oak Ridge Reservation Waste Treatment Facilities*. The contents of the application have been developed cooperatively between multiple groups within RMRS, as well as Kaiser-Hill Waste Certification and Oversight and the Lockheed Martin Energy Systems contact at the Oak Ridge Reservation.

It is our understanding that this application will be reviewed by the appropriate Program and Facility managers within Lockheed Martin Energy Systems to determine whether or not the generator has met the Waste Acceptance Program requirements and that the waste will be acceptable at the TSCA Incinerator. The results of this review will be a finding of "Not Acceptable", "Conditionally Accepted", or "Insufficient Information". We further understand that Lockheed Martin Energy Systems will conduct a generator audit July 16-18, 1996, that all audit findings must be closed, and that any necessary modifications to the application must be made before waste stream approval is received.

We believe the enclosed package is responsive to the guidelines provided by Lockheed Martin Energy Systems. Should you have any questions or if additional information is necessary, please contact Regina Sarter at 966-7252. Thank you for your consideration in this matter.

Shirley Olinger  
Acting Assistant Manager  
Program and Planning Integration

Enclosure:  
As Stated

cc:  
S. A. Anderson - Kaiser-Hill  
R. L. Griffis - RMRS  
L. F. Johnson - RMRS  
C. E. Kennedy - Kaiser-Hill  
A. P. Power - RMRS  
W.J. Prymak - DOE-RFFO  
R. Sarter - DOE-RFFO  
F. J. Valenzuela - Kaiser-Hill

Rocky Flats Environmental Technology Site

Generator Application to Ship Waste  
for Treatment to the  
Oak Ridge Reservation  
K-25 Site TSCA Incinerator

July 1996  
Revision 0

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (RFETS)  
GENERATOR APPLICATION TO SHIP WASTE FOR TREATMENT  
TO THE OAK RIDGE OPERATIONS K-25 INCINERATOR**

**I. GENERATOR INFORMATION**

**A. Signature Approvals:**

\_\_\_\_\_  
Department of Energy/Rocky Flats Field Office (DOE/RFFO)

\_\_\_\_\_  
The Kaiser-Hill Company, L.L.C. (KH)

\_\_\_\_\_  
The Kaiser-Hill Company, L.L.C., Waste Certification and Oversight

*Mark Wheel* **MANAGER LIQUID WASTE OPERATIONS**  
\_\_\_\_\_  
Rocky Mountain Remediation Services, L.L.C.

**B. Facility Name and Location:**

Rocky Flats Environmental Technology Site (RFETS)  
P.O. Box 464  
Golden, Colorado 80402-0464

**C. EPA Identification Number**

CO7890010526

**D. DOE Field Organization/Contacts:**

Rocky Flats Field Office (DOE/RFFO)  
Regina Sarter; (303) 966-7252

**E. Contractor Names/Contacts:**

Kaiser Hill Company L.L.C. (KH):  
Colburn Kennedy; (303) 966-7543

Rocky Mountain Remediation Services, L.L.C.  
Bob Griffis; (303) 966-4934  
Joe Molter; (303) 966-2808

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (RFETS)  
GENERATOR APPLICATION TO SHIP WASTE FOR TREATMENT  
TO THE OAK RIDGE OPERATIONS K-25 INCINERATOR**

**II. WASTE STREAM INFORMATION - TSCAI-RF-001**

**A. Waste Type:**

Low Level Mixed Waste (RCRA/TSCA/Radioactive); legacy waste  
EPA Waste Codes: D008, F001, F002, F005  
PCB Concentration: >50ppm <500ppm  
PCB Source: >500ppm

**B. Generation Process:**

Contaminated oils have been generated by various machining, degreasing, maintenance, and other processes in the 400, 800, and Protected Areas and the Building 331 garage. The processes required lubricating oils, compressor oils, and hydraulic oils, as well as various organic solvents. The oils generated in Building 331 may have become contaminated with solvents and metals outside any Radioactive Materials Management Area and therefore were not generated as low-level waste. These oils are managed as radioactively contaminated after being stored in Building 776 for several years. While no radioactivity is expected to have actually been added, the oils are managed as radioactive because of their location in a building in which operations with radioactive materials were conducted. Oils generated in the 400, 800, and Protected Areas may have become contaminated with solvents and metals during routine operations. Waste solvents were also added to the tanks while oils were accumulating. In addition to the solvents and metals, these oils may also contain ethylene glycol (coolant), Freon refrigerant, alcohols, and other organic chemicals.

**C. Waste Description:**

Contaminated oil containing low levels of radioactivity, PCBs, and RCRA constituents. These oils were collected during the mid 1980s and stored in tanks in Building 774 for treatment in the Rocky Flats Plant Fluidized Bed Incinerator (FBI), hence the name FBI Oils. The FBI was never operational because it was never permitted for treatment.

Physical Characteristics: Organic Liquid

Quantity: 20,000 gallons stored in (2) 10,000 gallon tanks

Tank Names/Location: T102 & T103 located in Building 774

**III. WASTE CHARACTERIZATION PROGRAM**

**A. Process Knowledge**

The current process knowledge characterization for FBI Oils is defined in the RFETS Backlog Waste Reassessment Baseline Book. "Waste Form 3, Fluidized Bed Incinerator Oil" is provided as a separate, uncontrolled supporting reference to this application. This application applies to Subpopulation 3N in that reference.

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (RFETS)  
GENERATOR APPLICATION TO SHIP WASTE FOR TREATMENT  
TO THE OAK RIDGE OPERATIONS K-25 INCINERATOR**

**B. Sampling and Analysis Plan**

The Sampling and Analysis Plan for Fluidized Bed Incinerator Oil is included as Attachment 1 to this document.

**IV. WASTE CERTIFICATION PROGRAM PLAN**

**A. Low Level Mixed Waste Certification Procedure**

The Low Level Mixed Waste Certification procedure is provided as a separate controlled document.

**B. Low Level Waste Management Plan**

This plan is available upon request.

**V. EXEMPTION REQUESTS**

None.

**VI. RESIDUALS MANAGEMENT PLAN**

This plan is included as Attachment 1 to this document.

**VII. PROCEDURES AND SUPPORTING DOCUMENTATION**

**A. Procedures and Documentation Referenced in the Application**

The following procedures are referenced here as relevant to this application. Copies are available upon request.

RFETS Site Quality Assurance Manual

FY96 Waste Minimization Program Plan

1-M12-WRM-WO-4034, Radioactive Waste Packaging Requirements

4-D99-WO-1100, Solid Radioactive Waste Packaging Inside of the Protected Area

4-C77-WO-1101, Solid Radioactive Waste Packaging Outside of the PA

1-31000-COOP, Rocky Flats Plant Conduct of Operations (COOP) Manual

1-T91-TRAFFIC-100, Transportation Manual

1-94700-TRAFFIC-101, Transportation Quality Assurance Manual

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (RFETS)  
GENERATOR APPLICATION TO SHIP WASTE FOR TREATMENT  
TO THE OAK RIDGE OPERATIONS K-25 INCINERATOR**

4-T01-TRAFFIC-102, Traffic Document Control

1-T95-TRAFFIC-120, Off Site Transportation Manual

4-T02-TRAFFIC-121, Approved Shipping Addresses

4-C19-OSS-001, Offsite Shipment of Non-Radioactive Waste

**B. Procedures and Documentation Submitted Along With the Application**

The following documents are provided as a separate, uncontrolled supporting reference to the application:

1-A65-ADM-15.01 - Control of Nonconforming Items

2-U76-WC-4030, Control of Waste Nonconformances

1-G64-ADM-21.01, Quality Assurance Surveillance

1-77000-RM-001, Records Management Guidance for Records Sources

1-AO3-PPG-004, Procedure Edit, Review, and Comment

1-C80-WO1102-WRT, Waste/Residue Traveler Instructions

1-M60-WPC-001, Waste Process Control

Table of Contents of RFETS Site Quality Assurance Program Procedures Manual

Table of Contents of RFETS Site Quality Assurance Manual

Waste Stream and Residue Identification and Characterization Program Manual

QSP WCO, Qualification Standard Package, Waste Certification Program  
Waste Certification Official (WCO)

QSP AWCO, Qualification Standard Package, Waste Certification Program  
Alternate Waste Certification Official (AWCO)

Waste Form 3, Fluidized Bed Incinerator Oil, in Backlog Waste Reassessment  
Baseline Book.

L-6294, Waste Characterization Sampling Procedure Inside Radiological Buffer  
Areas (replaces L-3306, Waste Characterization Sampling Procedure Inside the  
PA)

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (RFETS)  
GENERATOR APPLICATION TO SHIP WASTE FOR TREATMENT  
TO THE OAK RIDGE OPERATIONS K-25 INCINERATOR**

3-21000-ALQAP, Analytical Services On-Site Laboratories Quality Assurance  
Plan

L-3004, Chain of Custody

ATTACHMENT 1

Sampling and Analysis Plan

for

Fluidized Bed Incinerator Oil  
Tank T-102/T-103

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (RFETS)  
GENERATOR APPLICATION TO SHIP WASTE FOR TREATMENT  
TO THE OAK RIDGE OPERATIONS K-25 INCINERATOR**

Attachment 1

**SAMPLING AND ANALYSIS PLAN  
FOR  
FLUIDIZED BED INCINERATOR OIL  
TANK T-102/T-103**

May 24, 1996

Prepared for:

**Rocky Flats Environmental Technology Site  
Golden, Colorado 80402-0464**

Prepared by:

**Rocky Mountain Remediation Services**

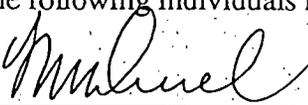
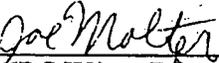
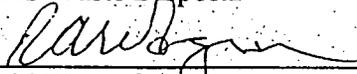
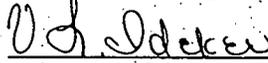
REVIEWED FOR CLASSIFICATION/UCN

BY M.D. Shepard (UNO)

DATE 6-4-96

### CONCURRENCE SIGNATURES

The following individuals have reviewed this plan and concur with its contents.

|  |         |
|--|---------|
|   | 5/30/96 |
| RMRS Waste Systems   | Date    |
|   | 5/30/96 |
| RMRS Waste Disposal  | Date    |
|   | 6/4/96  |
| Liquid Waste Operations  | Date    |
|   | 5/30/96 |
| Analytical Projects Office   | Date    |
|  | 5/30/96 |
| Waste Certification and Oversight, K-H   | Date    |

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## ABBREVIATIONS AND ACRONYMS

|          |  |
|----------|--|
| APO      | Analytical Projects Office                                   |
| ASO      | Analytical Services Organization                             |
| ASTM     | American Society for Testing and Materials                   |
| CFR      | Code of Federal Regulations                                  |
| CHWR     | Colorado Hazardous Waste Regulations                         |
| DOE      | U.S. Department of Energy                                    |
| DOT      | U.S. Department of Transportation                            |
| DSSI     | Diversified Scientific Services, Inc.                        |
| EG&G     | EG&G Rocky Flats, Inc.                                       |
| EPA      | U.S. Environmental Protection Agency                         |
| FBI      | Fluidized Bed Incinerator                                    |
| FSO      | Field Sampling Office  |
| IWCP     | Integrated Work Control Program                              |
| LDR      | Land Disposal Restrictions                                   |
| LLM      | low-level mixed  |
| LMES     | Lockheed Martin Energy Systems                               |
| LWC      | LDR Waste Compliance   |
| PCB      | polychlorinated biphenyl                                     |
| ppm      | parts per million  |
| QA/QC    | Quality Assurance/Quality Control                            |
| RCRA     | Resource Conservation and Recovery Act                       |
| RMRS     | Rocky Mountain Remediation Services                          |
| Site     | Rocky Flats Environmental Technology Site                    |
| SAP      | Sampling and Analysis Plan                                   |
| SMO      | Sample Management Office                                     |
| SVOC     | semivolatile organic compound                                |
| TCLP     | Toxicity Characteristic Leaching Procedure                   |
| TSCA     | Toxic Substances Control Act                                 |
| VOC      | volatile organic compound                                    |
| WIC      | Waste Identification and Characterization                    |
| WSRIC    | Waste Stream and Residue Identification and Characterization |
| WSRIC PD | WSRIC Program Description                                    |

15

## 1.0 PROJECT DESCRIPTION

This plan describes sampling and analysis of the Fluidized Bed Incinerator (FBI) oil waste in Tanks T-102 and T103 in Building 774 generated and stored at the U.S. Department of Energy (DOE) Rocky Flats Environmental Technology Site (Site). The purposes of the plan are:

- To direct the production of sound, defensible waste characterization data, and
- To obtain information for the treatment of the waste.

FBI oil waste was generated throughout the Site. The oil is called "FBI oil" because, historically, it was destined for incineration in the FBI in Building 776. The FBI in Building 776 never became fully operational and, as a result, the oil which was to be feed material accumulated and is now in storage. The contents of the storage tanks are currently characterized as a Resource Conservation and Recovery Act (RCRA)-hazardous waste, with low-level radioactive contamination (low-level mixed [LLM] waste). This characterization is based upon existing analytical data and knowledge that spent solvents were put into the tanks. In addition, the oil is suspected to be regulated under the Toxic Substance Control Act (TSCA) because of polychlorinated biphenyl (PCB) contamination. Sampling of the FBI oil is necessary to ensure the proper characterization, handling, management, and treatment of the waste with regard to applicable regulations and criteria.

This Sampling and Analysis Plan (SAP) is an integral part of the *WSRIC Program Description* (WSRIC PD) (EG&G 1993). The WSRIC PD defines the quality assurance goals and protocol for waste and residue characterization activities at the Site. In addition, the WSRIC PD identifies the responsible organizations, describes program operations, and delineates the associated procedures and policies. This SAP addresses the specific elements of waste sampling not addressed in or deviating from the WSRIC PD, including defining the waste to be sampled and project objectives, describing sampling and analysis strategies, and identifying unique sampling considerations. Sampling and onsite analysis activities described in this SAP will be conducted in accordance with the WSRIC PD and the requirements of the treatment facility. The treatment facility is expected to be the Toxic Substance Control Act (TSCA) incinerator located at Oak Ridge, Tennessee.

### 1.1 Description of the Site

The Site is located in northern Jefferson County, Colorado, about 16 miles northwest of Denver, and is a government-owned, contractor-operated facility that is part of the nationwide nuclear weapons production complex. More than 270 buildings and structures, of which about 75 are trailers, are located at the facility. Major manufacturing, chemical processing, plutonium recovery, and waste treatment facilities occupy about 1.6 million square feet of this space. The remaining floor space is occupied by laboratories; administrative offices; warehouses; and utility, security, storage, and construction contractor facilities.

The primary mission of the Site was production of components for nuclear weapons. Plutonium, uranium, beryllium, and stainless-steel parts were fabricated and shipped off-site for final assembly. Additional activities included chemical processing to recover

plutonium from scrap material, metallurgical research and development, machining, assembling, nondestructive testing, coating, engineering, chemistry, and physics.

At present, waste handling operations at the Site include storage, transportation, treatment, and packaging of waste materials. Wastes managed at the facility include nonhazardous, hazardous, radioactive, and mixed radioactive.

## 1.2 Identification of Types of Waste to be Evaluated

FBI oils were generated throughout the Site from the maintenance of radioactively contaminated equipment, solvent degreasing operations, and the changing of hydraulic pump oil. Historically, waste oil was accumulated for incineration by the FBI in Building 776. The FBI has never been in full operation and is not presently in operation. The oil has been collected in two large storage tanks (T-102 and T-103) and in 55-gallon drums.

This SAP addresses the oil in Tanks T-102 and T-103. Both tanks are above-ground storage tanks located inside Building 774. The tanks are approximately 22 feet high and 9 feet in diameter, and have a capacity of about 10,000 gallons.

Based on process knowledge, there is a high probability of a sludge layer in the bottom of the tanks as a result of solids settling out of the oil. One sample of the sludge from each tank will be collected and analyzed for informational purposes.

## 1.3 Sampling and Analysis Plan Objectives

The characterization objectives for the FBI oil in Tanks T-102 and T-103 are described within this section. Data generated by this sampling effort will be evaluated to determine if these objectives have been achieved.

The objectives of this SAP are to:

- Produce sound, defensible waste characterization data for the oil under RCRA and TSCA regulations;
- Obtain information necessary for the treatment of the oil and produce data in keeping with the acceptance criteria of the treatment facility and its reporting requirements.
- Generate data to meet the requirements of the U.S. Department of Transportation (DOT) and the *Rocky Flats Transportation Safety Manuals* for possible shipment of the oil to an off-site treatment facility; and,
- Obtain information on the sludge in the tank.

Characterization requirements based on the SAP objectives are summarized in Table 1-1.

**Table 1-1 Characterization Requirements**

| <b>Characterization Parameter</b>   | <b>Requirement</b>   |
|---|----------------------|
| Characteristic of Toxicity (D004-D011)                                    | 40 CFR 261.24        |
| Hazardous wastes from non-specific sources (F-listed wastes) <sup>1</sup> | 40 CFR 261.31        |
| PCBs <sup>1</sup>   | 40 CFR 761.3         |
| Transportation for Interstate Commerce                                    | 49 CFR 173           |
| Transportation Radioactive Limits   | 49 CFR 173 Subpart I |
| Radiological components <sup>1</sup>                                      | Treatment            |
| Fingerprint <sup>1</sup>  | Treatment            |
| Heat Content (BTU)  | Treatment            |
| Ash content   | Treatment            |
| Water content   | Treatment            |
| Chlorine  | Treatment            |
| Fluorine  | Treatment            |
| Non-RCRA-regulated metals <sup>1</sup>                                    | Treatment            |

Notes: 1. See Section 5.0 for the specific analytes.

Acronyms: BTU British Thermal Unit  
 CFR Code of Federal Regulations  
 PCBs Polychlorinated Biphenyls  
 RCRA Resource Conservation and Recovery Act

#### 1.4 Use of Process Knowledge and Analytical Data

The current characterization of FBI oil is based on the assessment of the waste made during the Backlog Waste Reassessment program conducted by the Waste Identification and Characterization (WIC) group at the Site (EG&G 1994). Based on this reassessment, FBI oil is a RCRA-hazardous waste that does not meet the Land Disposal Restrictions (LDR) treatment standards as defined by 40 CFR Part 268. The Environmental Protection Agency (EPA) Hazardous Waste Numbers applicable to the oil in Tanks T-102 and T-103 are D008, F001, F002 and F005. The WIC reassessment is based on process knowledge and historical analytical data for the oil in Tank T-103. Even though analytical data are not available for the oil in Tank T-102, the chemical constituents of the oil in Tanks T-102 and T-103 are thought to be very similar based on process knowledge. There is no analytical data for the sludge in either tank.

Analytical data from sampling done in 1994 on the oil in Tank T-103 indicate that the oil exhibits the characteristic of toxicity for lead (D008) only. The other hazard codes are applied based on process knowledge and the application of the mixture rule. Other RCRA-hazardous metals analyzed were below their respective regulatory threshold level. The

analytical data also indicate that the physical and chemical characteristics of the oil is relatively uniform throughout the tank, i.e., little stratification exists. An investigative, non-validated analysis indicates PCBs in excess of 50 parts per million (ppm). Consequently, the oil in Tanks T-102 and T-103 is presently being managed under TSCA.

### **1.5 Use of Results**

The data generated from the execution of this plan will be reviewed to determine if the objectives outlined in Section 1.3 have been satisfied.

Results from sampling and analysis of the oil in Tanks T-102 and T-103 will be used for characterization under RCRA and TSCA regulations. The results will also be used to support development of waste treatment technologies, and to gain information on the sludge in the tank.

In addition, the results from the SAP will be used to determine if DOT requirements and the selected treatment facility waste acceptance criteria are met. At this time, the sludge is not under consideration for shipment offsite for the purpose of treatment.

## **2.0 SAMPLING AND ANALYSIS ORGANIZATION AND RESPONSIBILITIES**

The organizations that will be involved in this sampling effort and their responsibilities are presented below.

### **2.1 Waste Management**

Rocky Flats Waste Management evaluates waste forms at the Site for appropriate characterization, and identifies waste treatment methods, disposal methods, or both. Waste Strategy is the group within Waste Management responsible for coordinating the project and obtaining the appropriate reviews and approvals. Waste Systems is also a group within Waste Management and is responsible for data review, management, and writing the characterization advisory.

### **2.2 Analytical Laboratories**

In order to expedite approvals, analysis of the oils will be conducted by Lockheed Martin Energy Systems (LMES) Analytical Services Organization located in Oak Ridge, Tennessee. LMES is the operating contractor of the TSCA incinerator facility. Analysis of sludge material will be conducted by a laboratory designated by the Site Analytical Projects Office.

### **2.3 Liquid Waste Operations**

Liquid Waste Operations will assist Waste Strategy, Waste Systems, the Analytical Projects Office (APO), and the on-site analytical laboratories to ensure the sampling team has access at the appropriate times to collect the samples. Building 774 Operations will be responsible for providing the necessary resources to access Tanks T-102 and T-103 to collect the samples.

### **2.4 Analytical Projects Office**

The APO collects and prepares the samples for on-site transfer or off-site shipment to the laboratory. The APO is also responsible for the tracking of samples. The APO generates sample requests and sample labels, and receives the data packages from the laboratory. Data verification is also accomplished by the APO.

### **2.5 Environmental Technologies**

ET developed a tool for sampling the sludge in Tanks T-102 and T-103, and will insure that the tool is available for sampling the sludge.

## **3.0 SAMPLING PROCEDURES**

Before sampling proceeds, industrial hygiene and safety requirements addressed in the IWCP package must be met. Sample collection, preparation, and packaging shall be performed in accordance with the requirements of this SAP, and the Rocky Flats waste sampling procedure L-3306, *Waste Characterization Sampling Procedure Inside the Protected Area* (EG&G 1991).

### **3.1 Sampling Approach**

In an effort to collect a representative sample, five samples from evenly spaced depths will be taken of each tank. The five samples from each of the tanks will account for the five one-liter containers to be sent to LMES for analysis. One sample of the sludge layer from each tank will also be taken for on-site analysis.

The selected depths for each tank are at 2 feet, 6 feet, 10 feet, 14 feet and 18 feet.

Tanks T-102 and T-103 are located in Room 220 of Building 774. The tanks are constructed of 3/16" carbon steel and are 9 feet in diameter and 22.4 feet high. The tanks are symmetrical and the bottom is not significantly rounded or cone shaped. Sampling will be accomplished using a 3-foot teflon bailer for sampling the oil and a 6-foot sludge sampler for taking a sample from the surface of the sludge. The sampling procedures describe basic procedures concerning the use of a bailer. The sludge sampling tool is a square coring tool with a hammer device that will drive the tool into the sludge.

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On the top of Tank T-102, directly below the walkway between the two tanks, there is a process waste fill line for T-102. This line will be breached temporarily to provide an opening of approximately 2 inches to collect the samples.

On the top of Tank T-103, before the walkway, there is a blanked port that was previously used for the sampling of Tank T-103. This blanked port will be temporarily breached to provide an opening of approximately 4 inches to collect the samples.

The bailer cord shall be marked as needed to gauge the depth of the sample, giving the sampler the ability to collect samples at a specified depth in the tank. A square coring tool and hammer device will be used to collect a sample from the surface of the sludge. Sample collection containers will be one liter amber colored glass for analytical aliquots to be sent offsite to the treatment facility. Sample containers for on-site analysis will be glass and have sufficient volume for all analytical aliquots. The APO shall generate a sufficient number of sample requests and container labels prior to sampling. One sample from each tank will be identified by the letter "D", as requested by LMES.

The tanks will be sampled by the APO Sample Team using the following steps:

**NOTE: The sample material collected from each identified depth of Tanks T-102 and T-103 will be equally divided among the five containers for analysis by LMES.**

1. Lower the bailer into the oil.
2. Raise the bailer to the surface and empty equal portions of the oil into each of the five collection containers. Also collect a sample of oil for radioactivity screening. Record the depth from which the sample was collected on the sampling worksheet. Also record the physical appearance of the liquid and any other observations made in the sampling logbook.
3. Lower the bailer to the depth of the next identified sample point.
4. Repeat Steps 2 and 3 until the required sample volume is achieved.
5. Send the radioactivity screening sample aliquots to Building 559 laboratory for radioactivity screening.
6. Prepare oil samples for transfer to LMES Analytical Services Organization for analysis. **Note: Samples are to be stored with refrigeration at +/- 4° C while awaiting radioactivity screening results.**
7. Lower the sludge sampler into the tank until it reaches the sludge, then collect a sample of the sludge. Record the depth on the sampling worksheet at which the sludge was encountered.  
**Note: An equipment blank of the sludge sampling device shall be collected prior to sampling.**

8. Raise the sludge sampler to the surface, and empty the sludge into the collection container. Record the physical appearance of the sludge and any other observations made in the sampling logbook and field worksheets.
9. Collect a subsample from one of the sludge collection containers, and send the samples to the Building 559 laboratory for radioactivity screening analysis.
10. Prepare sludge samples for transfer to the designated analytical laboratory.  
**Note: Samples are to be stored with refrigeration at +/- 4° C.**

### 3.2 Number of Samples

To obtain as representative a sample as possible, five sample points in each of Tanks T-102 and T-103 have been preselected. Five one liter containers per tank are required for analysis at LEMS. Three containers are required for the required analyses, one container for the uranium duplicate, and one container for archiving. One sample of the sludge shall be collected from each tank for analysis at a laboratory designated by the APO.

### 3.3 Sample Volume

The volume of the bailer is 1050 milliliters. A sufficient number of bailer samples shall be collected to provide enough sample volume for performing all the required analyses. Five one liter containers per tank are requested for analysis. The quantity of sludge to be collected will be determined by the APO.

### 3.4 Sampling Equipment

Equipment required for this sampling effort includes the following:

- Teflon bailer (1.5 inch diameter and 36 inch length)
- Square coring tool with hammer device (1.5 inch square tube, 6 feet in length)
- Marked glass containers (amber)
- Personal protective equipment (the job-specific IWCP indicates the level needed)
- Additional equipment as specified in the sampling procedures or as determined by the samplers.

Specific equipment used for taking the samples will be documented in the samplers' log book. Waste generated as the result of sampling will be turned over to Building 774 personnel for disposition.

### 3.5 Sample Handling

Sample handling addresses procedures from the time samples are collected in the field until they arrive at the laboratory for testing. To ensure sample integrity, specifications for sample holding times, preservation temperatures, container types, and sample volumes have been established.

Sample holding time requirements have been established to limit loss or chemical change of organic and inorganic analytes. Sample holding times are specified in the WSRIC PD. The clock for assessing whether holding time requirements have been met starts when the sample is collected, not when the sample is received by the analytical laboratory. Container type and sample preservation are specified in sampling procedures L-3306. Sample holding times, preservation, and container types listed in EPA SW-846 shall be followed. Deviations to EPA SW-846 protocol will be identified in the sampling procedures (EPA 1994). Sample volumes are laboratory dependent and shall be specified at the time of the request. Return of excess samples must be coordinated with Building 774 Operations personnel.

### 3.6 Field Quality Control

The field sampling quality assurance and quality control (QA/QC) program will include routine maintenance of equipment (documented in an equipment log), quality control samples, and Chain-of-Custody (EG&G, 1994). Field quality assurance and quality control (QA/QC) samples shall be analyzed by LMES to provide a quality control check. Field quality assurance and quality control (QA/QC) samples will also be analyzed by the APO designated laboratory. The following QA/QC samples shall be collected:

- Trip Blanks (1 for each day of sampling)
- Field Blanks
- Field Duplicate (1) (oil samples only)
- Equipment Blank (sludge sampler only)

Trip Blanks consist of volatile organic compound vials filled with ASTM-Type II water. Trip blanks are transported in the same manner as other sampling containers to the sampling sites and returned unopened to the laboratory for analysis. One trip blank will be included each day when sampling VOC's.

Field blanks consist of sample bottles filled with ASTM-Type II water, preserved with appropriate reagents and taken to the field. They are to be opened at a specific sampling location and exposed to the sampling environment during the sampling event. The sample bottles will then be capped, sent to the laboratory, and analyzed to determine reagent and environmental airborne contamination. At least one field blank will be collected with each batch of samples or when the sample matrix changes.

Field duplicates are independent samples collected as close as possible to the same point in time and space. Duplicates are two separate samples taken from the same source, placed in separate containers, and analyzed independently. Duplicates are to be labeled with a "D" designator appended to the sample I.D. Since, in the case of the oil samples, all samples are essentially duplicates, one of the containers will be marked with a D. No duplicate sludge sample is to be taken.

Equipment Blanks, collected from the sampling equipment rinsate, will be collected only if reusable sampling equipment is used. Equipment Blanks will consist of the final rinse water (ASTM- Type II) from equipment cleaning that has been collected during sampling equipment decontamination. The sample will be analyzed for the same analytes as the samples collected that day.

### **3.7 Equipment Decontamination**

All sampling equipment shall be verified to be clean at the start of sampling. Following sampling, the sludge sampling device will be decontaminated, and disposable equipment will be discarded. Equipment decontamination and disposal will be performed in accordance with the WSRIC PD.

## **4.0 DOCUMENTATION AND SAMPLE CUSTODY**

This section describes documentation and sample custody procedures that will be used to ensure the data are legally defensible. Labels and seals identify samples and verify the sample has not been opened prior to analysis. Logbooks and sampling worksheets document sampling events so the event may be reconstructed at a later date, should the need arise. Logbooks contain other pertinent information such as the physical appearance of the sample. Specific label, seal, and logbook protocols presented in the WSRIC PD and in the sampling procedures will be followed during all sampling and analysis activities.

Chain-of-custody records demonstrating sample integrity and appropriate sample management will be maintained from collection through disposal. Chain-of-custody forms are initially completed and signed during sample collection and travel with the samples to receiving personnel at the laboratory. Chain-of-custody records and procedures are discussed in the WSRIC PD and laboratory procedure L-3004, *Chain of Custody*.

Sample Request Forms will be generated for each sample collected. The Sample Request Form will be filled out completely and will include information such as:

- Requestor and waste generator
- Location of sample material (Building, Room, Tank Number, Depth in tank at which sample was collected, and layer of sample)
- Radioactivity concerns

- Directions and comments to the sampling team
- Analyses requested

Unique sample identification numbers assigned to each sample container will also be printed on the Sample Request Forms.

## 5.0 ANALYSIS OF WASTE SAMPLES

Five samples of oil from each tank will be sent to LMES for the analyses prescribed by the Oak Ridge K-25 Site TSCA Incinerator Operations Division Waste Acceptance Criteria. The required analyses are provided in Table 5-1. The sludge samples will be analyzed in accordance with the requirements of Table 5-1 and the WSRIC PD. Results of all analyses will be provided to Waste Systems.

**Table 5-1 Fluidized Bed Incinerator Oil Waste Analysis Requirements Per Tank**

|   | NUMBER OF SAMPLES REQUIRED |        |
|---|----------------------------|--------|
|   | Oil <sup>1</sup>           | Sludge |
| Alpha/Beta Screen                         | 5                          | 1      |
| Gamma Spectroscopy                        | 5                          | 1      |
| Gross alpha/beta                          | 5                          | 1      |
| Isotopic <sup>2</sup>                     | 5                          | 1      |
| Metals using totals analysis <sup>3</sup> | 5                          | 1      |
| VOCs using totals analysis <sup>3</sup>   | 5                          | 1      |
| SVOCs using totals analysis <sup>3</sup>  | 5                          | 1      |
| PCBs using totals analysis <sup>3</sup>   | 5                          | 1      |
| Additional Parameters <sup>3</sup>        | 5                          | 1      |

- Notes:
1. 5 oil samples will be collected at identified depths of the oil.
  2. See Section 5.1 for specific isotopes.
  3. See Section 5.6 for specific analytes.

Acronyms:

PCBs Polychlorinated biphenyls  
 SVOCs Semivolatile organic compounds  
 VOCs Volatile organic compounds

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## 5.1 Radiological Components

An alpha/beta screen shall be performed on all samples so that a determination can be made of whether the waste meets the DOT definition of radioactive, and to assist in determining packaging, marking, labeling, and transport requirements in accordance with 49 CFR Parts 100-180. Table 5-2 lists the radiochemistry analyses that will be performed on the oil samples to meet the TSCA Incinerator Waste Acceptance Criteria. The same analyses will be conducted on the sludge samples.

**Table 5-2 Radiological Parameters**

| Parameter   |
|---|
| Gamma Spectroscopy Scan (Cs-134, Cs-137, Co-57, Co-60, Pa-234, Th-234, Kr-85, U-gamma isotopes) |
| Gross Alpha/Beta  |
| Neptunium-237   |
| Plutonium-238   |
| Plutonium-239   |
| Technetium-99   |
| Thorium-228   |
| Thorium-230   |
| Thorium-232   |
| Total Activity  |
| Total Uranium and Percent Uranium-235   |
| Total Uranium and isotopes (U-234, U-235, U-236, U-238) Alpha Activity                          |

**Note: Total Uranium and Percent Uranium-235 requires duplicate analysis.**

## 5.2 Metals

The oil in Tank T-102 and T-103 shall be analyzed for total metals, as indicated in Table 5-3. This analysis will be used to determine if the waste exhibits the characteristic of toxicity as defined in 40 CFR Part 261.24. The sludge will also be analyzed for the total metal analytes.

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**Table 5-3 Metal Analytes**

| Constituents     | C A S<br>Number | E P A<br>Hazardous<br>Waste<br>Number | Base Method | LDR UTS<br>Nonwastewater (mg/l) |
|------------------|-----------------|---------------------------------------|-------------|---------------------------------|
| Aluminum         | 7429-90-5       | NR                                    | EPA - 6010  | N/A                             |
| Antimony         | 7440-36-0       | NR                                    | EPA - 6010  | N/A                             |
| Arsenic          | 7440-38-2       | D004                                  | EPA - 6010  | 5.0                             |
| Barium           | 7440-39-3       | D005                                  | EPA - 6010  | 100                             |
| Beryllium        | 7440-41-7       | NR                                    | EPA - 6010  | N/A                             |
| Cadmium          | 7440-43-9       | D006                                  | EPA - 6010  | 1.0                             |
| Copper           | 7440-50-8       | NR                                    | EPA - 6010  | N/A                             |
| Iron             | 7439-89-6       | NR                                    | EPA - 6010  | N/A                             |
| Chromium (Total) | 7440-47-32      | D007                                  | EPA - 6010  | 5.0                             |
| Lead             | 7439-92-1       | D008                                  | EPA - 6010  | 5.0                             |
| Lithium          | 7439-93-2       | NR                                    | EPA - 6010  | N/A                             |
| Magnesium        | 7439-95-4       | NR                                    | EPA - 6010  | N/A                             |
| Manganese        | 7439-96-5       | NR                                    | EPA - 6010  | N/A                             |
| Mercury          | 7439-97-6       | D009                                  | EPA - 7471  | 0.2 <sup>1</sup>                |
| Nickel           | 7440-02-0       | NR                                    | EPA - 6010  | N/A                             |
| Selenium         | 7782-49-2       | D010                                  | EPA - 6010  | 5.7                             |
| Silver           | 7440-22-4       | D011                                  | EPA - 6010  | 5.0                             |
| Sodium           | 7440-23-5       | NR                                    | EPA - 6010  | N/A                             |
| Thallium         | 7440-28-0       | NR                                    | EPA - 7841  | N/A                             |
| Titanium         | 7440-32-6       | NR                                    | EPA - 6010  | N/A                             |
| Zinc             | 7440-66-6       | NR                                    | EPA - 6010  | N/A                             |

Notes:

1.

The concentration-based treatment standard applies to wastes that contain less than 260 mg/kg of mercury. If the total mercury is greater than or equal to 260 mg/kg then a technology-based treatment standard must be used to treat the waste.

### **5.3 Volatile Organic Compounds**

The oil in Tanks T-102 and T-103 shall be analyzed for total VOCs. The sludge will also be analyzed for total VOCs. The VOCs will be determined using EPA method 8240/8260. Tentatively identified compounds identified during analysis will be reported and used as applicable for characterization purposes and to gain information for the treatment of the waste.

### **5.4 Semivolatile Organic Compounds**

The oil in Tanks T-102 and T-103 shall be analyzed for total SVOCs. The sludge will also be analyzed for total SVOCs. The base analytical method employed will be EPA method 8270. Results from this analysis will be used to gain information for the characterization and treatment of the waste.

### **5.5 Polychlorinated Biphenyls**

The oil and sludge in Tanks T-102 and T-103 shall be analyzed for total PCBs. The sludge in both Tanks T-102 and T-103 shall also be analyzed for total PCBs. The analytical base method will be EPA method 8080.

### **5.6 Additional Treatment Parameters**

In addition to the analyses listed above, selected additional analyses will be performed on the oil and sludge samples from Tanks T-102 and T-103 to obtain information for the treatment of the waste. LMES will be responsible for analysis of the oil matrix. The sludge matrix will be analyzed by an APO designated laboratory. Additional parameters to be evaluated are given in Table 5-4.

**Table 5-4 Additional Treatment Parameters**

| Parameter   | Base Method                   |
|---|-------------------------------|
| Flashpoint (°F)   | SW-846 1010/1020              |
| pH  | SW-846 9045                   |
| Boiling Point (°F)                                      | ASTM D1120-89 OR EQUIV.       |
| Freezing Point (°F)                                     | ACD-190609/ASTM-D1177-88      |
| Heat Content (BTU/lb)                                   | ASTM D240                     |
| Physical Description (include identification of layers) | Visual Inspection             |
| Ash Content (Wt. %)                                     | ASTM -D3174                   |
| Water Content (Wt. %)                                   | ASTM D-1533-88 OR EQUIV.      |
| Specific Gravity (@ 68 °F)/density (g/ml)               | ASTM D854/ACD-182402,03,07,08 |
| Chlorine  | ASTM D-3761, EPA 300 series   |
| Fluorine  | ASTM D-3761, EPA 300 series   |
| Phosphorous   | EPA-600/4-79-20               |
| Sulfur  | Lab Procedure                 |
| Total Cyanide   | SW-846 9010/9012              |
| Reactive Cyanide  | SW-846 9010                   |
| Reactive Sulfide  | SW-846 9030/9031              |
| Vapor Pressure  | ACD-184102,03,07              |
| Corrosivity (mm/yr)                                     | EPA - 1110                    |
| Viscosity (centipose)                                   | ASTM D445, ASTM D2983-87      |

### 5.7 Analytical Methods

Analytical requirements are based on quality control standards outlined in EPA SW-846 for the base methods that will be used to analyze this waste (EPA 1994). ASTM or industry standard methods shall be used for nonregulated analytes where applicable. The various base methods are provided in the previous tables.

## 6.0 ANALYTICAL QUALITY CONTROL

Quality control requirements for RFETS laboratories supporting waste analysis are summarized in the WSRIC PD. These analytical control criteria shall be used to verify that analytical results for organic and inorganic analyses are of a documented precision and accuracy. The laboratories shall analyze calibration standards, interference check samples, blanks, duplicates, and matrix spikes to demonstrate the control criteria have been met. The WSRIC PD provides the type of quality control samples, the frequency at which they are analyzed, and the program criteria for the following analyses:

- Metals by inductively coupled plasma spectrometry and atomic absorption spectroscopy
- Volatile organic compounds by gas chromatography/mass spectroscopy
- Semivolatile organic compounds by gas chromatography/mass spectroscopy
- Polychlorinated Biphenyls by gas chromatography

## 7.0 REFERENCES

Code of Colorado Regulations, Title 6, Part 1007-3. *Rules and Regulations Pertaining to Hazardous Waste.*

Code of Federal Regulations, Title 40, Part 261. *Identification and Listing of Hazardous Waste.*

\_\_\_\_. Title 40, Part 268. *Land Disposal Restrictions.*

\_\_\_\_. Title 40, Part 761. *Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.*

\_\_\_\_. Title 49, Parts 100-180. *Transportation.*

EG&G Rocky Flats, Inc. 1994. *Backlog Waste Reassessment Baseline Book.*

\_\_\_\_. 1994. *Sample Size Requirements for SW846 Criteria.* Prepared by D. Weier, Statistical Applications.

\_\_\_\_. 1994. *Cahin of Custody, L-3004.*

\_\_\_\_. 1993. *Waste Stream and Residue Identification and Characterization Program Description.* Prepared by WASTREN, Inc.

\_\_\_\_\_. 1991. *Waste Characterization Sampling Procedure Inside the Protected Area*. L-3306.

EPA. 1994. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods*. SW-846, Third Edition.

\_\_\_\_\_. TSCA-WCS-RQT-2003, Rev. 3., K-25 Site, Waste Acceptance Plan

ATTACHMENT 2

Rocky Flats Environmental Technology Site (RFETS)  
Residuals Management Contingency Plan For  
K-25 TSCA Incinerator Residues

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (RFETS)  
RESIDUALS MANAGEMENT CONTINGENCY PLAN FOR  
K-25 TSCA INCINERATOR RESIDUES

Introduction

The Tennessee Department of Environment and Conservation (TDEC) has outlined its concerns regarding temporary storage of treatment residues from out-of-state wastes treated at the K-25 TSCA Incinerator. All residues are subject to the K-25 TSCA Incinerator Residuals Management Plan and may be stored temporarily pending final disposal. A primary disposal facility contract is in place, however, TDEC also requires a contingency or back-up plan. The RFETS Residuals Management Contingency Plan establishes the course of action in the event the primary disposal option becomes unavailable.

The RFETS Residuals Management Contingency Plan acknowledges the possible return of incinerator residues from the treatment of wastes. The plan also acknowledges that wastes treated at the K-25 Incinerator may be blended with wastes from other DOE facilities. The resulting residuals from incineration may contain EPA waste codes and radioactive isotopes in the residues which would be in addition to the waste codes and isotopes identified in the RFETS wastes prior to treatment.

This plan is acknowledged by, but not limited to:

- The Environmental Protection Agency (EPA) Regions IV and VIII
- The Tennessee Department of Environment and Conservation (TDEC)
- The Colorado Department of Public Health and Environment (CDPH&E)
- The Department of Energy/Headquarters (DOE/HQ); The Department of Energy Oak Ridge Operations (DOE/ORO); and the Department of Energy Rocky Flats Field Office (DOE/RFFO)
- Lockheed-Martin Energy Systems (LMES)
- The Kaiser-Hill Company, L.L.C. (KH)
- Rocky Mountain Remediation Services, L.L.C. (RMRS)

Notification Requirements:

On or about October of every year the DOE/ORO shall issue a notice to RFETS indicating the disposition of the residues generated during the processing of RFETS wastes. This notice should include either documentation of the shipment to the primary disposal facility, documentation of the RFETS share (by weight and volume) of the residues still in storage, or documentation for both if applicable. If residues are in temporary storage at ORO, the notice shall indicate whether RFETS should initiate its contingency plan. Initiation of the contingency plan will be warranted if the following conditions are met:

- The primary disposal facility becomes permanently unavailable to DOE/ORO; and
- The RFETS incineration residue has been fully characterized by DOE/ORO regarding its radioactivity and hazardous constituents.

Implementation of the contingency plan includes, but is not limited to the following:

- RFETS shall provide written notification to CDPH&E and TDEC of the implementation of this plan;

- RFETS shall develop a schedule for submittal of a permit modification or other regulatory approvals, as necessary, for storage of residues. This schedule will target six months from the date of the ORO notice referenced above for shipment of residues back to RFETS. This target date is contingent upon regulatory review and approvals.
- RFETS will explore other options for disposal of the residues

#### Sources of Treatment Residuals:

RFETS does not anticipate receiving residues back from the treatment of wastes sent to the K-25 TSCA Incinerator. However, if this situation should change due to the reasons stated above, the residues would be accepted under the conditions of this Residuals Management Contingency Plan.

The K-25 incinerator process, process configuration, and storage of post process residuals does not allow for dedicated batching or batch segregation from individual DOE sites. The resulting residuals from this treatment process could potentially contain EPA waste codes not identified in the RFETS RCRA Part B Permit. In addition the residuals could also contain radioactive isotopes previously not identified in the RFETS wastes. All residuals resulting from incineration of RFETS wastes which would be returned under this plan would require prior notification to CDPH&E, and DOE/RFFO.

An annual burn plan is formulated for the incineration of all mixed waste liquids at the TSCA Incinerator. This burn plan allots a pre-determined percentage of the total mixed waste liquid capacity of the TSCA incinerator to the RFETS for incineration of RFETS wastes. The total maximum quantity of treatment residuals that could be returned to RFETS would be based on the actual percentage of mixed wastes contributed by RFETS. For example, if RFETS contributed one-third of all mixed liquid waste incinerated at the TSCA incinerator, the residues returned would be no more than one-third of the total residues generated.

#### Receipt and Management of Treatment Residuals:

RFETS will request waste characterization data for each waste stream of treatment residues to be shipped to RFETS from the Oak Ridge treatment facility. The treatment facility will provide the data and level of detail that is required to characterize the waste generated at RFETS prior to shipment of the waste so that RFETS personnel can review the data and confirm that the waste meets RFETS waste acceptance criteria. The treatment facility will furnish information for each waste stream such as:

- Physical parameters such as pH, color, physical state, flash point, particle size, specific gravity, density, viscosity, liquid content, compatibility;
- TCLP analytical results for toxicity characteristic constituents;
- RCRA waste code(s) with analytical data if the codes have been determined on the basis of analytical information;
- Analytical data for all radioactive isotopes;
- Land disposal restriction information such as total organic carbon, suspended solids, constituent specific organic scans as necessary; and
- Generator certifications that the information for each waste stream is complete and accurate.

Results from the analyses will be reviewed by RFETS personnel to determine whether the waste can be accepted at RFETS. If it is determined that the waste can be accepted, the

treatment facility will be notified to schedule shipment of the waste. If it is determined that the waste cannot be accepted, the treatment facility will be notified in writing and a coordinated effort between RFETS and Oak Ridge will begin to take actions necessary to return the waste to RFETS.

When the treatment residues arrive at RFETS, acceptance verification will be initiated by RFETS personnel. Areas to be examined, but not limited to, include:

- Documentation;
- Manifest and land disposal notification/certification;
- Verification of manifest information including container count, weight, waste codes, etc.;
- Container condition and labeling;
- Fingerprint analysis of the waste as specified in the RFETS RCRA Part B Permit.
- Absent or incomplete receiving/shipping information that must be corrected or completed prior to acceptance of the waste.

After verification of container condition and proper labeling, the contents of the container will be examined to verify the physical state of the waste. RFETS will sign the manifest in accordance with the RFETS Transportation Safety Manual. The Oak Ridge treatment facility will be contacted immediately by phone if any discrepancies or other problems are discovered in documentation, condition of containers, or identification of treatment residues. If discrepancies cannot be resolved, the treatment facility will be notified that RFETS has rejected the shipment and will return the wastes to the treatment facility. RFETS will send a letter describing the discrepancy and the attempts to resolve the discrepancy to the CDPH&E and the TDEC if the discrepancy is not resolved within 15 days of hazardous waste receipt.

RFETS will perform fingerprint sampling and analysis on all incoming shipments of waste treatment residues based on knowledge of the waste in accordance with the requirements of the Rocky Flats RCRA Part B Permit. Additional analyses will be performed and repeated for wastes to be received under any of the following conditions:

- Before the first shipment and annually thereafter;
- Whenever the treatment process generating the waste changes;
- Fingerprint results do not match the manifested waste pre-acceptance ranges and the discrepancy cannot be resolved with the generator.

Test methods specified in "Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods" (EPA Office of Solid Waste and Emergency Response, SW-846, latest edition), or other EPA approved methods will be used in analyzing treatment residues.