

**SANDIA NATIONAL LABORATORIES**

**MIXED WASTE SITE TREATMENT  
PLAN**

**COMPLIANCE PLAN VOLUME (CPV)**

**BACKGROUND VOLUME**

REVISION 14

December 2014

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## **1.0 PURPOSE AND SCOPE OF THE COMPLIANCE PLAN VOLUME**

### **1.1 INTRODUCTION**

On October 6, 1992, Congress passed the Federal Facility Compliance Act (FFC Act) to address compliance by the United States Department of Energy (DOE) with the land disposal restrictions (LDR) for the storage of mixed waste set forth in Section 3004(j) of the Resource Conservation and Recovery Act (RCRA). The FFC Act required the DOE to submit a Site Treatment Plan (STP) for developing treatment capacities and technologies to treat all of the facility's mixed waste, regardless of the time generated, to the standards promulgated pursuant to Section 3004 (m) of RCRA. The FFC Act provided that the appropriate regulatory authority, the New Mexico Environment Department (NMED), may approve, approve with modifications or disapprove the STP. Prior to making such a determination, NMED is required by the FFC Act to provide public notice, consider public comments, and consult with the Environmental Protection Agency (EPA) and any other state in which a facility affected by the STP is located.

On March 31, 1995, DOE submitted its proposed STP to NMED for mixed waste at Sandia National Laboratories (SNL/NM). On April 17, 1995, the public was given notice of and an opportunity to comment to NMED on the draft STP submitted by DOE. After considering public comment and otherwise complying with the FFC Act, the NMED determined to approve the draft STP with modifications as provided in this document. The STP was fully implemented by a Federal Facility Compliance Order (FFCO) issued by NMED on October 4, 1995.

The STP is intended to fulfill the requirements of the FFC Act and establish an enforceable framework to allow the DOE/National Nuclear Security Administration (NNSA) and Sandia Corporation (Sandia), collectively termed Respondents, to achieve full compliance with LDR requirements under the New Mexico Hazardous Waste Act (HWA) and RCRA. The compliance dates set forth herein are enforceable time periods in which Respondents will be required to develop treatment capacities and technologies; and treat or otherwise meet the requirements set forth for LDR under the HWA and RCRA. Wastes that are subject to the FFCO and STP are defined in Section V.A *Covered Waste* of the FFCO.

### **1.2 CONTENTS**

The STP contains two volumes and is intended to bring Respondents into compliance with LDR storage prohibitions under the HWA and RCRA. The Compliance Plan Volume (CPV) of the STP provides overall schedules, including compliance dates for achieving compliance with LDR storage and treatment requirements for mixed waste at SNL/NM. The CPV includes a schedule for the submittal of applications for permits, construction of treatment facilities, technology development, off-site transportation for treatment, and the treatment of mixed wastes in full compliance with the HWA and the implementing regulation at 20 NMAC 4.1, which incorporates by reference 40 CFR Parts 260 through 270. The Background Volume of the STP contains progress reports as required in the FFCO. Respondents shall carry out the activities described in the STP, including the CPV of the STP, in accordance with the schedules and requirements set forth in the STP and the FFCO.

## 2.0 COMPLIANCE SCHEDULE

The STP provides overall schedules for achieving compliance with LDR requirements for mixed waste at SNL/NM. The schedules include those activities required to bring existing waste treatment technologies into operation, process backlogged and currently generated waste, and overall time frames for achieving compliance with the LDR requirements under the HWA and 20 NMAC 4.1.

### 2.1 CATEGORIES OF ACTIVITIES FOR COMPLIANCE DATES

The categories of activities for which compliance dates will be provided for different types of treatment approaches in the STP are listed in the Tables 2-1 through 2-6 below. The categories of activities are based on section 3021(b)(1)(B)(I), (ii) and (iii) of RCRA, to the extent appropriate.

#### 2.1.1 Plans Where Treatment Technology Exists

For most of the mixed waste, treatment technologies have been identified and developed. For the waste that will be treated on-site, the categories of compliance dates identified in Table 2-1, "Schedule For Mixed Waste With Existing Treatment Technologies," shall apply. Compliance dates for the activities identified in Table 2-1 may be found in Section 3.1.

**Table 2-1 Categories of Activities for Compliance Dates for Mixed Waste With Existing Treatment Technologies**

A.	Submit permit applications to NMED.
B.	Initiate construction as specified in the NMED permit.
C.	Complete Systems testing and commence operation.
D.	Begin treating mixed waste.
E.	Complete treatment of existing wastes to applicable regulatory standards.

#### 2.1.2 Plans Where Treatment Technology Must Be Developed

For some mixed waste, no treatment technologies have been identified and developed, or treatment technology must be modified or adapted to be made applicable for mixed waste. For this waste which will be treated on-site, the categories of compliance dates identified in Table 2-2, "Schedule for Mixed Waste Without Existing Treatment Technologies," shall apply. Compliance dates for the activities identified in Table 2-2 may be found in Section 3.2.

**Table 2-2 Categories of Activities for Compliance Dates for Mixed Waste Without Existing Treatment Technologies**

A.	Identify and develop technology.
B.	Submit permit application to NMED; or
C.	Submit a Notification of Intent to perform treatability study to the NMED a minimum of 45 days prior to commencement of the study.
D.	Initiate construction as specified in the NMED permit.
E.	Commence systems testing.

- |    |   |
|----|---|
| F. | Begin treating mixed wastes.  |
| G. | Complete treatment of existing wastes to applicable regulatory standards. |

### 2.1.3 Requirements Pertaining to Radionuclide Separation

The FFC Act sets additional requirements in cases where the DOE/NNSA intends to conduct radionuclide separation of mixed waste. Should the DOE/NNSA determine to conduct radionuclide separation of such mixed waste, the DOE/NNSA will schedule specific compliance dates based on category activities identified in Table 2-3, Schedule for Radionuclide Separation of Mixed Waste. "Radionuclide separation" shall mean the segregation of the radioactive portion of the mixed waste from the hazardous portion of the mixed waste. Compliance activities identified in Table 2-3 have been completed and therefore compliance dates are no longer applicable.

**Table 2-3 Categories of Activities  
for Radionuclide Separation of Mixed Waste**

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|----|---|
| A. | Complete an estimate of the volume of waste generated by each case of radionuclide separation.  |
| B. | Complete an estimate of the volume of waste that would exist or be generated without radionuclide separation.   |
| C. | Complete an estimate of the costs of waste treatment and disposal if radionuclide separation is used compared to the estimated costs if it is not used. |
| D. | Provide the assumptions underlying such waste volume and cost estimates.  |
| E. | Provide characterization methodologies for determining waste types.   |
| F. | Submit a plan for treatment or management of hazardous waste residues accompanied by NMED permit application.   |

### 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment

In lieu of plans to treat mixed-waste on-site, DOE/NNSA may send waste to an off-site facility for treatment at either a commercial or non-commercial mixed waste treatment facility. Any and all requirements imposed by the off-site facility and state regulatory, federal regulatory or other regulatory requirements applicable to Respondents at the treatment site shall be met by the Respondents.

#### 2.1.4.1 Requirements for Commercial Treatment Facilities

Should DOE/NNSA decide to send waste to a commercial off-site facility for treatment, DOE/NNSA will notify the NMED Project Manager in writing as soon as possible and in any event within forty-five (45) working days of receipt of waste at the treatment facility.

Activities for mixed waste to be shipped off-site for treatment at a commercial facility are identified in Table 2-4.

**Table 2-4. Activities for Mixed Waste to be Shipped Off-Site for Treatment at a Commercial Facility**

- |    |  |
|----|--|
| A. | Meet all regulatory requirements for off-site shipment.  |
| B. | Provide documentation to NMED that each waste shipment has been received at an off-site facility for treatment within 45 working days of receipt of waste at the treatment facility. |

**2.1.4.2 Requirements for Non-commercial Treatment Facilities**

DOE/NNSA shall notify the NMED Project Manager in writing as soon as possible if mixed waste is planned to be sent to a non-commercial facility. Notification should be made if possible when DOE/NNSA is first considering such an option to allow NMED and the state to address any state issues or concerns with other states. Documentation shall be provided to NMED of confirmation of shipment date within fourteen (14) working days prior to sending waste to an off-site facility for treatment, disposal or storage pending treatment or disposal. The NMED Project Manager shall approve in writing the off-site non-commercial treatment option proposed by DOE/NNSA for each treatability group prior to any shipment by DOE/NNSA. DOE/NNSA will notify the NMED Project Manager in writing as soon as possible and in any event within forty-five (45) working days of receipt of waste at the treatment facility.

Activities for mixed waste to be shipped off-site for treatment at a non-commercial facility are identified in Table 2-5.

Prior to shipment, the non-commercial treatment facility and their appropriate regulatory agency shall be notified of any pending waste shipments should DOE/NNSA ship mixed waste. Proper procedures including additional approvals (if necessary) and documentation shall be completed prior to the shipment of wastes. Management of post-treatment waste residuals or newly generated waste streams considered hazardous will be in accordance with all applicable local, state, and federal requirements. The RCRA permit for SNL/NM must provide for the return of wastes and/or residuals to SNL/NM prior to any such return of wastes and/or residuals to SNL/NM. If a permit modification is required, such modification must be approved by NMED prior to shipment of covered wastes to the off-site facility. DOE/NNSA will notify the NMED Project Manager in writing as soon as possible, and in any event within thirty (30) working days after receipt of shipment of treatment residuals or newly generated waste streams.

**Table 2-5. Activities for Mixed Waste to be Shipped Off-Site for Treatment at a Non-commercial Facility**

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|----|--|
| A. | Request necessary approval from NMED for shipment of mixed waste by treatment group before shipping.   |
| B. | Meet <u>all</u> regulatory requirements for off-site shipment.   |
| C. | Provide documentation to NMED of confirmation of shipment date within 14 working days prior to sending mixed waste to an off-site facility for treatment, disposal or storage pending treatment or disposal. |
| D. | Provide documentation to NMED that mixed waste has been received at an off-site facility for treatment within 45 working days of receipt of waste at the treatment facility.                                 |
| E. | Meet all regulatory requirements to include RCRA Permit modifications for receipt of residual or newly generated mixed waste streams after treatment that meet the definition of a hazardous waste.          |

- |    |  |
|----|--|
| F. | Provide documentation to NMED within 30 working days after receipt of residual or newly generated waste streams upon return to SNL/NM. |
|----|--|

### 2.1.5 Plans for Recycling

Recycling is a parallel preferred option for each preferred treatment technology. Should the DOE/NNSA decide to recycle covered waste, DOE/NNSA will notify the NMED Project Manager in writing as soon as possible and in any event within forty-five (45) working days of receipt of the waste at the recycling facility or by the recycler. Activities for mixed waste recycling are identified in Table 2-6. Once a covered waste volume has been recycled or re-used, the DOE/NNSA and Sandia will request a deletion for the covered waste volume.

**Table 2-6. Activities for Mixed Waste Recycling**

- |    |  |
|----|--|
| A. | Meet all regulatory requirements for off-site shipment, if applicable.   |
| B. | Provide documentation to NMED that each waste shipment has been received for recycling within 45 working days of receipt of waste by the recycler. |

Should the DOE/NNSA decide to re-use material included in the covered waste inventory, the DOE/NNSA and Sandia will request a deletion for the covered waste volume.

### 2.1.6 Plans Related to Other Mixed Waste Activities

Activities other than the types of activities specifically called out in the FFC Act as requiring schedules are described in the STP. Some of these activities may be associated with schedules that may contain information related to treatment of the DOE/NNSA's mixed waste, such as:

For mixed waste which is not sufficiently characterized to allow identification of appropriate treatment, notification of the characterization of such waste shall be in accordance with the annual update process as pursuant to the FFCO. If such characterization results in the addition or deletion of a treatability group or an increase in volume in a treatability group, a revision would be required pursuant to Section X (Revisions) of the FFCO.

## **3.0 MIXED WASTE TREATMENT PLAN AND SCHEDULES**

### **3.1 MIXED WASTE FOR WHICH TECHNOLOGY EXISTS**

It is expected that the preferred treatment technology identified in this section as an on-site treatment will be implemented at the SNL/NM Radioactive and Mixed Waste Management Unit or other appropriate on-site RCRA permitted units. All on-site treatment of covered wastes will be performed in accordance with applicable regulations and applicable requirements of any RCRA permit for treatment of hazardous or mixed wastes at SNL/NM. On-site mixed waste treatment capabilities do not currently adequately address the preferred treatment technologies for some of SNL/NM's specific waste types; off-site treatment is the preferred option for such wastes

#### **3.1.1 Compliance Dates for Treatability Groups**

The activities that require schedules are shown in Tables 2-1 through 2-5. Below are listed each SNL/NM treatability group and the schedule for these activities. Treatability groups with the same treatment and schedule are presented together.

- The schedules for the activities appropriate to SNL/NM from those listed in Table 2-1 for "Categories of Activities for Compliance Dates for Mixed Waste With Existing Treatment Technology, are presented for TGs 1, 2, 3, 4, 5, 6, 8, 9, 12, 13, 14, 15, 16, 17, 19, 20, 21, 23, 24, 26, and 27;
- The schedules for the activities appropriate to SNL/NM from those listed in Table 2-2 for "Categories of Activities for Compliance Dates for Mixed Waste Without Existing Treatment Technology" are presented for TG 11;
- The schedules for the activities appropriate to SNL/NM from those listed in Table 2-3 for "Categories of Activities for Compliance Dates for Radionuclide Separation of Mixed Waste" are presented for neutron generators in TG 1;
- The schedules for the activities appropriate to SNL/NM from those listed in Table 2-4 and 2-5 for "Activities for Mixed Waste To Be Shipped Off-Site For Treatment" are presented for TGs 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, and 27.
- The schedules for the activities appropriate to SNL/NM from those listed in Table 2-6 for "Activities for Mixed Waste Recycling" are presented for TGs 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, and 26.
- Other activities are presented with planning schedules for informational purposes for management of TG 10 and Suspect TRU Mixed Waste.

### 3.1.1.1 Deactivation (On-Site by SNL/NM/Off-Site Treatment/Recycling)

**TG 1 - Inorganic Debris with Explosive (0 m<sup>3</sup>)**

**TG 2- Inorganic Debris with Water Reactive (0 m<sup>3</sup>)**

**TG 3- Reactive Metals (0 m<sup>3</sup>)**

The preferred treatment technology for these treatability groups is Deactivation. The neutron generator portion of Treatability Group 1 was disassembled to remove the explosive, which was managed as hazardous waste. The remaining portion was managed as radioactive waste or as mixed waste. Planning schedules for activities related to the neutron generators are presented in Section 3.3. Shipment off-site for treatment is a parallel preferred option for Deactivation. Should DOE/NNSA decide to send waste to an off-site facility for treatment in lieu of plans to treat such waste on-site, the DOE/NNSA shall act in accordance with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

#### Deactivation Schedule

Activity	Compliance Date
A. Submit permit application, amendment or modification to NMED	Completed
B. Initiate set-up of laboratory operation.	Completed
C. Complete system testing and commence operation and begin treating mixed waste.	Completed
D. Complete recycling/treatment of mixed wastes to applicable regulatory standards or,	December 31, 2016
E. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
F. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

### 3.1.1.2 Macroencapsulation (On-site by SNL/NM/Off-Site Treatment/Recycling)

**TG 4 - Elemental Lead (0 m3)**

**TG 9 - Inorganic Debris with TCLP Metals (0 m3)**

**TG 12 - Organic Debris with TCLP Metals (0 m3)**

The preferred treatment technology for each of these treatability groups is Macroencapsulation. Shipment off-site for treatment is a parallel preferred option. Should DOE/NNSA decide to send waste at an off-site facility for treatment in lieu of plans to treat such waste on-site, the DOE/NNSA shall act in accordance with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

### Macroencapsulation Schedule

Activity	Compliance Date
A. Submit permit application, amendment, or modification to NMED	Completed
B. Complete recycling/treatment of mixed waste to applicable regulatory standards or,	December 31, 2016
C. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
D. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

#### 3.1.1.3 Neutralization followed-by Stabilization (On-Site by SNL/NM/Off-Site Treatment/Recycling)

##### TG 5 - Aqueous Liquids (0 m<sup>3</sup>)

The preferred treatment technology for this treatability group is Neutralization followed by Stabilization. Shipment off-site for treatment is a parallel preferred option. Should DOE/NNSA decide to send waste to an off-site facility for treatment in lieu of plans to treat such waste on-site, the DOE/NNSA shall act in accordance with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

#### Neutralization followed by Stabilization Schedule

Activity	Compliance Date
A. Submit permit application, amendment or modification to NMED	Completed
B. Initiate set-up of laboratory operation.	Completed
C. Complete system testing and commence operation and begin treating mixed waste.	Completed
D. Complete recycling/treatment of mixed wastes to applicable regulatory standards or,	December 31, 2016
E. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
F. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

#### 3.1.1.4 Amalgamation (On-Site by SNL/NM/Off-Site Treatment/Recycling)

##### TG 6 - Elemental Mercury (0 m<sup>3</sup>)

The Mercury Export Ban Act (Public Law 110-414) amended the Toxic Substances Control Act (TSCA) in 15 United States Code (USC) 2605(f) and prohibits Federal agencies from transferring elemental

mercury. As long as this prohibition exists, the DOE/NNSA and Sandia will store this waste on-site. However, compliance dates for treatment or shipment activities are included should the prohibition be clarified, modified, or lifted. The preferred treatment technology for this treatability group is Amalgamation. Shipment off-site for treatment is a parallel preferred option. Should DOE/NNSA decide to send waste to an off-site facility for treatment in lieu of plans to treat such waste on-site, the DOE/NNSA shall act in accordance with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment.**

#### **Amalgamation Schedule**

<b>Activity</b>	<b>Compliance Date</b>
A. Submit permit application, amendment or modification to NMED	Completed
B. Complete recycling/treatment of mixed wastes to applicable regulatory standards or,	December 31, 2016
C. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
D. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

#### **3.1.1.5 Incineration (Off-Site by Treatment Facility/Recycling)**

##### **TG 7 - Organic Liquids I (0 m<sup>3</sup>)**

##### **TG 18 - Particulates and Soils with Organic Contaminants (0 m<sup>3</sup>)**

The preferred treatment technology for these treatability groups is Incineration at an off-site facility. Should DOE/NNSA decide to send waste to an off-site facility for treatment, the DOE/NNSA shall act in accordance with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment.** Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling.**

#### **Incineration Schedule**

<b>Activity</b>	<b>Compliance Date</b>
A. Complete shipping of wastes to an off-site treatment/recycling facility.	December 31, 2016
B. Provide documentation to NMED that waste was received at off-site facility	Within 45 working days of receipt of waste at treatment/recycling facility

#### **3.1.1.6 Thermal Desorption (Off-Site Treatment/Recycling)**

##### **TG 8 - Organic Debris (0 m<sup>3</sup>)**

The preferred treatment technology for this treatability group is Thermal Desorption. Shipment off-site for treatment is a parallel preferred option. Should DOE/NNSA decide to send waste to an off-site facility for treatment in lieu of plans to treat such waste on-site, the DOE/NNSA shall act in accordance

with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

#### Thermal Desorption Schedule

Activity	Compliance Date
A. Submit permit application, amendment or modification to NMED	Completed
B. Complete shipping of wastes to an off-site treatment/recycling facility	December 31, 2016
C. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

#### 3.1.1.7 Deactivation followed by Stabilization (On-Site by SNL/NM/Off-Site Treatment/Recycling)

**TG 13 - Oxidizers (0 m<sup>3</sup>)**

**TG 20 - Propellant with TCLP Metals (0 m<sup>3</sup>)**

The preferred treatment technology for this treatability group is Deactivation followed by Stabilization. Shipment off-site for treatment is a parallel preferred option. Should DOE/NNSA decide to send waste to an off-site facility for treatment in lieu of plans to treat such waste on-site, the DOE/NNSA shall act in accordance with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

#### Deactivation followed by Stabilization Schedule

Activity	Compliance Date
A. Submit permit application, amendment or modification to NMED	Completed
B. Initiate set-up of laboratory operation.	Completed
C. Complete system testing and commence operation and begin treating mixed waste.	Completed
D. Complete recycling/treatment to applicable regulatory standards, or shipping of wastes to an off-site treatment/recycling facility	December 31, 2016
E. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

#### 3.1.1.8 Evaporative Oxidation (Off-Site Treatment/Recycling)

**TG 14 - Aqueous Liquids with Organic Contaminants (0 m<sup>3</sup>)**

The preferred treatment technology for this treatability group is Evaporative Oxidation. Shipment off-site for treatment is a parallel preferred option. Should DOE/NNSA decide to send waste to an off-site

facility for treatment in lieu of plans to treat such waste on-site, the DOE/NNSA shall act in accordance with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

#### Evaporative Oxidation Schedule

Activity	Compliance Date
A. Submit permit application, amendment or modification to NMED	Completed
B. Complete recycling/treatment of mixed wastes to applicable regulatory standards or,	December 31, 2016
C. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
D. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

#### 3.1.1.9 Stabilization (On-Site by SNL/NM/Off-Site Treatment/Recycling)

**TG 15 - Soils <50% Debris & Particulates with TCLP Metals (0 m<sup>3</sup>)**

**TG 19 - Liquids with Metals (0 m<sup>3</sup>)**

The preferred treatment technology for this treatability group is Stabilization. Shipment off-site for treatment is a parallel preferred option. Should DOE/NNSA decide to send waste to an off-site facility for treatment in lieu of plans to treat such waste on-site, the shipments shall be managed in accordance with **Section 2.1.4, Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

#### Stabilization Schedule

Activity	Compliance Date
A. Initiate set-up of laboratory operation	Obtain new permit or modify or amend existing NMED permit if required
B. Complete systems testing and commence operation and begin treating mixed waste.	Completed
C. Complete recycling/treatment of mixed wastes to applicable regulatory standards or,	December 31, 2016
D. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
E. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

### 3.1.1.10 Oxidation (On-Site by SNL/NM/Off-Site Treatment/Recycling)

#### TG 16 - Cyanide Waste (0 m<sup>3</sup>)

The preferred treatment technology for this treatability group is Oxidation. Shipment off-site for treatment is a parallel preferred option. Should DOE/NNSA decide to send waste to an off-site facility for treatment in lieu of plans to treat such waste on-site, the DOE/NNSA shall act in accordance with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

#### Oxidation Schedule

Activity	Compliance Date
A. Submit permit application, amendment or modification to NMED	Completed
B. Complete recycling/treatment of mixed wastes to applicable regulatory standards or,	December 31, 2016
C. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
D. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

### 3.1.1.11 Incineration followed by Stabilization (Off-Site Treatment/Recycling)

#### TG 17 - Liquid/Solid with Organic and/or Metal Contaminants (0 m<sup>3</sup>)

The preferred treatment technology for this treatability group is Incineration followed by Stabilization, as required, at an off-site treatment facility. Stabilization is required for the treatment of waste that contains metals contamination. Prior to sending waste to an off-site facility for treatment, the DOE/NNSA shall act in compliance with **Section 2.1.4, Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

#### Incineration/Stabilization Schedule

Activity	Compliance Date
A. Complete treatment to applicable regulatory standards or shipping of wastes to an off-site treatment/recycling facility	December 31, 2016
B. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

### 3.1.1.12 Off-Site Shipment / On-Site Macroencapsulation

#### TG 21 - Sealed Sources with TCLP Metals (0 m<sup>3</sup>)

#### TG 24 - Spark Gap Tubes with TCLP Metals (0 m<sup>3</sup>)

#### TG 26 - Debris Items with Reactive Compounds and TCLP Metals (0 m<sup>3</sup>)

The preferred treatment technology for this treatability group is shipment to an off-site facility for treatment and disposal. Prior to sending waste to an off-site facility for treatment, the DOE/NNSA shall act in compliance with **Section 2.1.4, Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

A parallel treatment option is on-site macroencapsulation followed either by shipment to an off-site facility for disposal, or by storage pending development of further treatment and disposal options. On June 3, 2004, the NMED approved a site-specific treatment variance to allow for macroencapsulation of less than debris sized manufactured items exhibiting the toxicity characteristic for metal(s), containing radioactive material, and potentially externally contaminated with radioactive materials. These items include radioactive sources (TG 21) and radioactive materials such as various gap tubes (TG 24).

#### Off-site Shipment / Macroencapsulation Schedule

Activity	Compliance Date
A. Provide progress report of current status and availability of treatment and/or disposal options	Completed
B. Complete on-site macroencapsulation of waste , or	December 31, 2016
C. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
D. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

### 3.1.1.13 Size Reduction followed by Stabilization/Deactivation followed by Macroencapsulation

#### TG 23 - Thermal Batteries (0 m<sup>3</sup>)

The preferred treatment technology for this treatability group is stabilization at an off-site treatment facility. Deactivation followed by macroencapsulation is a parallel preferred option. Prior to sending waste to an off-site facility for treatment, the DOE/NNSA shall act in compliance with **Section 2.1.4, Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

#### Stabilization Schedule

Activity	Compliance Date
A. Render existing thermal batteries non-reactive	Completed

Activity	Compliance Date
B. Provide progress report of current status and availability of treatment and/or disposal options	Completed
C. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
D. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

### 3.2 MIXED WASTE FOR WHICH TECHNOLOGY MUST BE DEVELOPED

SNL/NM has treatability groups for which the preferred treatment option is a treatment technology that requires adaptation in order to treat hazardous waste that is radioactive and may contain PCBs or high levels of mercury.

#### 3.2.1 Hydrothermal Processing (On-Site by SNL/NM/Off-Site Treatment/Recycling)

##### TG 11 - Organic Liquids II (0 m<sup>3</sup>)

Hydrothermal processing was identified in the STP as the preferred treatment technology for TG 11 Organic Liquids II. Development of this treatment technology is on indefinite hold. As required by the CPV, respondents submitted treatment schedules and options for the NMED's approval prior to the compliance date of November 30, 1998. The treatment schedule submitted reflected the approval by the NMED for off-site shipment (Revision No. 1) and the approval of February 28, 2001, as an initial compliance date for shipments (Revision No. 2).

Shipment off-site for treatment is a parallel preferred option. Should DOE/NNSA decide to send waste to an off-site facility for treatment in lieu of plans to treat such waste on-site, the DOE/NNSA shall act in accordance with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

##### Off-Site Shipment Schedule

Activity	Compliance Date
A. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
B. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

#### 3.2.2 Stabilization of High Mercury Materials (On-site/Off-Site Treatment)

##### TG 27 - High Mercury Solids and Liquids (0 m<sup>3</sup>)

The technology-based treatment standard for high mercury solids and oils is incineration (IMERC) or retorting and recovery (RMERC). These technologies have not been available for mixed waste. The

compliance activities and dates associated with this TG may be impacted by the Mercury Export Ban Act (Public Law 110-414) which amended the TSCA in 15 USC 2605(f) restricting Federal agencies from transferring elemental mercury. As long as this prohibition exists, the DOE/NNSA and Sandia will store this waste on-site. However, compliance dates for treatment or shipment activities are included should the prohibition be clarified, modified, or lifted. The preferred treatment technology for this treatability group is shipment to an off-site treatment facility. Prior to sending waste to an off-site facility for treatment, the DOE/NNSA shall act in compliance with **Section 2.1.4, Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

### High Mercury Solids and Liquids Schedule

Activity	Compliance Date
A. Provide progress report of current status and availability of treatment and/or disposal options	Completed
B. Complete recycling/treatment of wastes to applicable regulatory standards or,	December 31, 2016
C. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
D. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	Within 45 working days of receipt of waste at treatment/recycling facility

### 3.3 OTHER TYPES OF MIXED WASTE ACTIVITIES

This section describes activities that will be performed to reduce the mixed waste in inventory at SNL/NM.

#### 3.3.1 Sorting of Heterogeneous Debris

##### TG 10 - Heterogeneous Debris (0 m<sup>3</sup>)

This treatability group contains a heterogeneous assortment of debris. Therefore, the treatability group requires sorting the waste into, for example, organic and inorganic debris treatability groups (TG8 and TG9), or other treatability groups as appropriate for which preferred treatment options have been selected. The sorting process began on June 30, 1995.

Shipment off-site for treatment is a preferred option. Treatment on-site according to the appropriate treatability group is an alternate preferred option. Should DOE/NNSA decide to send waste to an off-site facility for treatment in lieu of plans to treat such waste on-site, the DOE/NNSA shall act in accordance with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

### Heterogeneous Debris Schedule

Activity	Compliance Date
A. Complete sorting of wastes or	December 31, 2016
B. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016

Activity	Compliance Date
C. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	December 31, 2016

### TG 25 - Classified Items with TCLP Metals (0 m<sup>3</sup>)

This treatability group contains a heterogeneous assortment of classified items and debris. As such, this treatability group requires sorting the waste into other treatability groups as appropriate for which preferred treatment options have been selected. The sorting process may include, but not be limited to, physical sorting, separation, disassembly, and/or de-classification.

Shipment off-site for treatment and/or disposal is the preferred option. The parallel preferred treatment option is on-site treatment by macroencapsulation followed either by shipment to an off-site facility for disposal, or by storage pending the development of further treatment and disposal options. Sorting and/or de-classification activities may be necessary to process the classified mixed waste into items suitable for further treatment on-site or shipment off-site to treatment and/or disposal facilities. Should DOE/NNSA send waste to an off-site facility for treatment, the DOE/NNSA shall act in accordance with **Section 2.1.4 Plans for Mixed Waste to be Shipped Off-site for Treatment**. Should DOE/NNSA decide to recycle waste, the DOE/NNSA shall act in accordance with **Section 2.1.5 Plans for Recycling**.

#### Classified Items with TCLP Metals Schedule

Activity	Compliance Date
A. Complete sorting or on-site treatment of wastes or	December 31, 2016
B. Complete shipping of wastes to an off-site treatment/recycling facility and	December 31, 2016
C. Provide documentation to NMED that waste was received at off-site treatment/recycling facility	December 31, 2016

### 3.3.2 Mixed Waste For Which Radionuclide Separation is Planned

Treatability Group 1, Inorganic Debris with Explosive Component neutron generators. These items will be disassembled to yield an explosive waste stream that is not mixed, and a radioactive portion that may be mixed. The radioactive portion of the assembled items will be physically separated from the explosive portion.

#### Radionuclide Separation Schedule (On-Site by SNL)

Activity	Compliance Date
A. Complete an estimate of the volume of waste generated by each case of radionuclide separation.	Completed
B. Complete an estimate of the volume of waste that would exist or be generated without radionuclide separation.	Completed

<b>Activity</b>	<b>Compliance Date</b>
C. Complete an estimate of the costs of waste treatment and disposal if radionuclide separation is used compared to the estimated costs if it is not used.	Completed
D. Provide the assumptions underlying such waste volume and cost estimates.	Completed
E. Provide characterization methodologies for determining waste types	Completed
F. Submit a plan for treatment or management of hazardous waste residues as appropriate.	Completed

### 3.4 MIXED TRU WASTE (1.1E-5 m<sup>3</sup>)

#### **Treatment Group(s):**

Assorted Mixed Transuranic Waste

#### **Treatment Technology:**

Respondents are required to manage mixed transuranic (MTRU) waste at SNL/NM according to the schedule set forth below:

<b>Activity</b>	<b>Compliance Date</b>
A. Development of treatment technology	Completed
B. Submit permit application amendment, or modification to NMED for treatment of MTRU waste	Completed
C. Complete preparation of existing MTRU wastes for shipment to an off-site certifying facility	<p>Within three (3) years after</p> <ul style="list-style-type: none"> <li>a) the applicable state's approval of the certifying facility's revised RCRA permit allowing them to receive SNL/NM waste</li> <li>b) the certifying facility is certified by WIPP for heterogeneous and/or homogeneous MTRU waste, as applicable, and</li> <li>c) the certifying facility's waste acceptance criteria are met.</li> </ul>
D. Complete shipping of existing MTRU waste to an off-site facility for certification and disposal at the WIPP facility	December 31, 2016
E. Provide documentation to NMED that MTRU waste was received at off-site certifying facility	Within 45 working days of receipt of waste at certifying facility

The above schedule was developed based on the assumption that WIPP would be a disposal option. DOE/NNSA received a variance from treatment standards for land disposal of MTRU waste to be disposed at WIPP (Waste Isolation Pilot Plant Land Withdrawal Act Amendments, Public Law 104-201, Sept. 1996); therefore MTRU wastes to be shipped to WIPP for disposal will be prepared in accordance with the WIPP waste acceptance criteria.

All revisions to compliance dates shall be in accordance with the procedures set forth in the FFCO.

Proposed Revision 14  
Table 1 Summary of Treatability Groups and Associated Volumes

TG and Description		FY12 Annual STP Update Volume <sup>a</sup>
TG 1 Inorganic Debris with Explosive Component		0 m <sup>3</sup>
TG 2 Inorganic Debris with a Water Reactive Component		0 m <sup>3</sup>
TG 3 Reactive Metals		0 m <sup>3</sup>
TG 4 Elemental Lead		0 m <sup>3</sup>
TG 5 Aqueous Liquids (Corrosive)		0 m <sup>3</sup>
TG 6 Elemental Mercury		0 m <sup>3</sup>
TG 7 Organic Liquids I		0 m <sup>3</sup>
TG 8 Organic Debris with Organic Contaminants		0 m <sup>3</sup>
TG 9 Inorganic Debris with TCLP Metals		0 m <sup>3</sup>
TG 10 Heterogeneous Debris		0 m <sup>3</sup>
TG 11 Organic Liquids II		0 m <sup>3</sup>
TG 12 Organic Debris with TCLP Metals		0 m <sup>3</sup>
TG 13 Oxidizers		0 m <sup>3</sup>
TG 14 Aqueous Liquids with Organic Contaminants		0 m <sup>3</sup>

*Continued next page*

Table 1 Summary of Treatability Groups and Associated Volumes (concluded)

TG and Description		FY12 Annual STP Update Volume <sup>a</sup>
TG 15 Soils <50% Debris & Particulates with TCLP Metals		0 m <sup>3</sup>
TG 16 Cyanide Waste		0 m <sup>3</sup>
TG 17 Liquid/Solid with Organic and/or Metal Contaminants		0 m <sup>3</sup>
TG 18 Soils <50% Debris & Particulates with Organic Contaminants		0 m <sup>3</sup>
TG 19 Liquids with Metals		0 m <sup>3</sup>
TG 20 Propellant with TCLP Metals		0 m <sup>3</sup>
TG 21 Sealed Sources with TCLP Metals		0 m <sup>3</sup>
TG 22 Reserved		Not Applicable
TG 23 Thermal Batteries		0 m <sup>3</sup>
TG 24 Spark Gap Tubes with TCLP Metals		0 m <sup>3</sup>
TG 25 Classified Items with TCLP Metals		0 m <sup>3</sup>
TG 26 Debris Items with Reactive Compounds and TCLP Metals		0 m <sup>3</sup>
TG 27 High Mercury Solids and Liquids		0 m <sup>3</sup>
MTRU Mixed Transuranic Waste		1.1E-05 m <sup>3</sup>