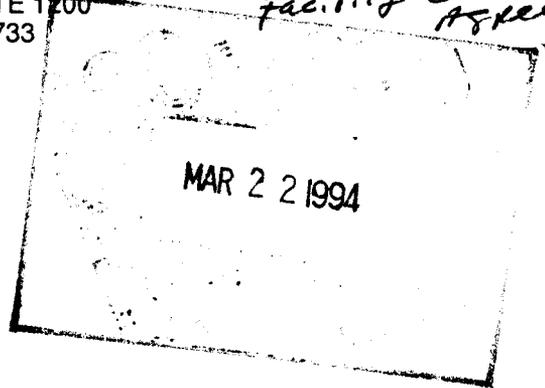




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

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LANL - federal
facility compliance
Agreement*



MAR 15 1994

Ms. Judith M. Espinosa, Secretary
New Mexico Environment Department
Harold Runnels Building
P.O. Box 26110
Santa Fe, New Mexico 87502

Re: Transmittal of the Los Alamos National Laboratory
Federal Facility Compliance Agreement

Dear Ms. Espinosa:

Enclosed is a copy of the Los Alamos National Laboratory (LANL) Federal Facility Compliance Agreement (FFCA) issued by Region 6 on this date. (We are sending our Response to Comments under separate cover.) Please note that the FFCA became effective on the date it was signed.

We appreciate your involvement in the development of this document. It is the Region's highest priority that we support the State and that our separate actions complement one another.

If you have any questions or require further information, please contact me, or have your staff contact Joel Dougherty of my staff at (214) 655-2281.

Sincerely yours,

Allyn M Davis

Allyn M. Davis, Director
Hazardous Waste Management Division

Enclosure

cc: Susan McMichael, Assistant General Counsel
w/encl Office of General Counsel

Benito Garcia, Chief
Hazardous and Radioactive Materials Bureau



1684

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 6
AND
U.S. DEPARTMENT OF ENERGY
LOS ALAMOS AREA OFFICE

FEDERAL FACILITY COMPLIANCE AGREEMENT
REGARDING
LAND DISPOSAL RESTRICTION REQUIREMENTS
AT THE
LOS ALAMOS NATIONAL LABORATORY

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U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 6

In the Matter of:)
)
U.S. DEPARTMENT OF ENERGY) FEDERAL FACILITY
Los Alamos Area Office) COMPLIANCE AGREEMENT
Los Alamos, New Mexico)
_____)

I. INTRODUCTION

1. Region 6 of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE), Los Alamos Area Office (LAAO), are the parties to this Federal Facility Compliance Agreement (FFCA or Agreement), entered into pursuant to Executive Order 12088, October 13, 1978, (43 Fed. Reg. 47707) and the Solid Waste Disposal Act (SWDA), as amended by the Resource Conservation and Recovery Act of 1976 (RCRA or the Act), the Hazardous and Solid Waste Amendments of 1984 (HSWA), 42 U.S.C. § 6901 et seq., and the Federal Facility Compliance Act of 1992 (FFC Act), Public Law 102-386.

2. This Agreement is entered into by the parties to resolve issues of noncompliance described in the notice of noncompliance issued to DOE by EPA effective September 30, 1992, and to assure compliance by DOE with Subtitle C of RCRA, 42 U.S.C. § 6921, et seq., and its implementing regulations regarding the matters covered by this Agreement.

3. Executive Order 12088 was promulgated to ensure federal compliance with applicable pollution control standards and to provide a means to achieve and maintain compliance with these standards. The Office of Management and Budget and the

Department of Justice will be notified of this Agreement pursuant to their respective duties to assure compliance with the environmental laws under RCRA and Executive Order 12088. The authority to enter into this Agreement has been delegated by the EPA Administrator to the Regional Administrator of EPA, Region 6, and subsequently to the Director, Waste Management Division, Region 6.

4. Section 6001 of RCRA provides that each department, agency, and instrumentality of the Executive Branch of the Federal Government having jurisdiction over any solid waste management facility or disposal site, or engaged in any activity resulting in, or which may result in, the disposal or management of solid or hazardous waste shall be subject to, and comply with all federal, state, interstate, and local requirements, both substantive and procedural, respecting control and abatement of solid waste or hazardous waste disposal in the same manner, and to the same extent, as any person is subject to such requirements.

5. DOE recognizes its obligations to comply with RCRA, its implementing regulations, the New Mexico Hazardous Waste Act, the New Mexico Hazardous Waste Management Regulations, and Executive Order 12088, Section 1-3, which authorizes EPA to monitor federal compliance with applicable pollution control standards. EPA and DOE have reached agreement as to the steps that DOE/LAAO must take to achieve compliance and to resolve those matters related herein. This Agreement covers only RCRA compliance violations as

noted in the Notice of Noncompliance issued by EPA to DOE effective September 30, 1992, and those wastes specified in Section V (Covered Matters) of this Agreement.

6. This Agreement is not and shall not be construed as a permit and in no way affects requirements for DOE to obtain any applicable federal, state or local hazardous waste management permits. DOE shall expeditiously obtain all federal, state, or local permits necessary to carry out this Agreement. This Agreement does not relieve DOE of any legal obligations under RCRA.

7. DOE consents to jurisdiction for purposes of entry and enforcement of this Agreement by EPA, provided however, that DOE does not admit, accept, concede, or acknowledge the determinations, allegations, statements of fact, and conclusions of law set forth in this Agreement and specifically reserves the right to contest any such determinations, allegations, statements of fact, and conclusions of law in any proceeding other than actions brought by EPA to enforce this Agreement.

8. With the passage of the FFC Act, DOE is now required to develop a site treatment plan for mixed waste at LANL, which will be submitted to the State of New Mexico. DOE has published in the Federal Register a notice of the schedule for submitting site treatment plans for DOE facilities including LANL (58 Fed. Reg. 17874, April 6, 1993). The notice commits DOE to prepare a Conceptual, Draft, and a Final Site Treatment Plan to afford affected states an opportunity for adequate review during the

planning process and to consult and solicit comments regarding the issues presented. This Agreement is not a substitute for the requirement of the FFC Act for DOE to submit a site treatment plan to the State of New Mexico or to enter into an agreement with the State addressing the treatment of mixed waste at LANL. DOE acknowledges that New Mexico is a State (a) with authority under State law to prohibit land disposal of mixed waste until the waste has been treated and (b) with both authority under State law to regulate the hazardous components of mixed waste and authorization from the EPA under 42 U.S.C. § 6926 to regulate the hazardous components of mixed waste. DOE further acknowledges that the exception to the waiver of sovereign immunity referred to in Section 102(c)(3)(A) of the FFC Act shall not apply after October 6, 1995, unless DOE is in compliance with a plan that has been submitted to and approved by the State, or an agreement entered into between DOE and the State pursuant to 42 U.S.C. § 6939c(b), and an order requiring compliance with such plan or agreement which has been issued by the State pursuant to 42 U.S.C. § 6939c(b). DOE further acknowledges that the terms of this Agreement shall not restrict in any manner the content of such plan or agreement and cannot be relied upon by DOE as having any precedential effect in negotiations with the State regarding such plan or agreement.

9. DOE has entered into Accords with the Pueblos of San Ildefonso, Santa Clara, Jemez, and Cochiti pursuant to which DOE has agreed to consult with the Pueblos to assure that tribal

rights, responsibilities, and concerns are addressed prior to DOE taking actions, making decisions, or implementing programs that may affect the Pueblos or their cultural, religious, and environmental resources. Nothing in this Agreement shall be construed to interfere with DOE's obligations under the Accords and DOE assures that it intends to consult with the Pueblos concerning the effects on the Pueblos of the decisions and programs which are required as a result of this Agreement.

II. PUBLIC COMMENT

1. The public was given notice of and an opportunity to comment to EPA on this Agreement in draft before it was executed.

2. DOE provided a notice, satisfactory to EPA, of the availability of the draft Agreement for public review and of the opportunity of the public to comment on the Agreement by mailing the notice to all addressees on the LANL Federal Facility Mailing List and by placing the notice in the Albuquerque Journal, a newspaper of statewide circulation, the Los Alamos Monitor, and at least two other newspapers serving the area in and around Los Alamos, New Mexico.

3. Prior to publishing the notice and during the period for public comment, DOE placed the draft Agreement at several locations, satisfactory to EPA, which assured the draft Agreement was reasonably available to members of the public who might wish to review it. The notice provided a period of 30 days for

submission of comments. At the request of several groups, EPA extended the comment period for an additional ten days.

4. EPA considered as expeditiously as possible all public comments which were submitted within the extended comment period and determined whether such comments warranted any changes to the draft Agreement. Comments warranting revision of the draft Agreement were discussed with DOE and incorporated into the Agreement pursuant to negotiations between the parties.

III. ENFORCEABILITY

1. For purposes of this Agreement, DOE admits that EPA has jurisdiction over the matters resolved in this Agreement and DOE recognizes its obligation to comply with RCRA as set forth in Section 6001 of RCRA.

2. The provisions of this Agreement, including those related to statutory requirements, regulations, or permits, including recordkeeping, reporting and the appendices to this Agreement, shall be enforceable under citizen suits pursuant to § 7002(a)(1)(A) of RCRA, including actions or suits by the State of New Mexico and its agencies. DOE agrees the State and its agencies are "persons" within the meaning of Sections 1004(15) and 7002(a) of RCRA.

3. In the event of any action filed under Section 7002(a) of RCRA, alleging any violation of any such requirement of this Agreement, it shall be presumed that the provisions of this Agreement, including those provisions which address

recordkeeping, reporting, and the appendices to this Agreement, are related to statutory requirements, regulations, or permits, and are thus enforceable under § 7002(a) of RCRA.

IV. DEFINITIONS

1. Except as provided below or otherwise explicitly stated herein, the definitions provided in RCRA and its implementing regulations shall control the meaning of the terms used in this Agreement.

2. Agreement means this Federal Facility Compliance Agreement and all appendices, modifications, and EPA-approved deliverables.

3. AEA means the Atomic Energy Act of 1954, as amended, 42 U.S.C. § 2011 et seq.

4. Days means calendar days, unless otherwise specified. Any notice, deliverable, or other requirement that under the terms of this Agreement would be due on a Saturday, Sunday, or federal holiday shall be due on the first day following the Sunday or federal holiday.

5. Deliverable means any document generated pursuant to this Agreement which is listed in Appendix C, List of Deliverables, or is subsequently included in Appendix C pursuant to the terms of this Agreement.

6. DOE means the United States Department of Energy, including the Los Alamos Area Office, and its authorized representatives, but does not include the University.

7. EPA means the United States Environmental Protection Agency and its authorized representatives.

8. Hazardous Waste shall have the meaning set forth in § 1004(5) of RCRA, 40 CFR Parts 260 and 261, and New Mexico HWMR-6.

9. LANL means the Los Alamos National Laboratory, a federal facility under the administrative control of DOE.

10. LDR and land disposal restrictions mean the Land Disposal Restrictions as set forth in 40 CFR Part 268.

11. Mixed Waste means waste that contains both a hazardous waste component regulated under Subtitle C of RCRA and (a) a radioactive component consisting of source, special nuclear, or byproduct material regulated under the AEA or, for purposes of this Agreement only, (b) a radioactive component derived from neutron or other subatomic particle activation from the use of radioactive materials used in biomedical research or from radionuclides not regulated under the AEA.

12. NMED means the New Mexico Environment Department and its predecessor agency, the New Mexico Health and Environment Department, Environmental Improvement Division. Pursuant to the New Mexico Environmental Improvement Act, Section 74-1-7 (NMSA 1978), NMED is the authorized agency for the State of New Mexico for the purpose of maintaining, developing, and enforcing regulations and standards under the New Mexico Hazardous Waste Act.

13. RCRA means the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 et seq., and the Hazardous and Solid Waste Amendments of 1984 (HSWA), Pub. L. 98-616, and as further amended by the Federal Facility Compliance Act of 1992, Pub. L. 102-386, and the implementing regulations.

14. Solid Waste shall have the meaning set forth by Section 1004(27) of RCRA and 40 CFR § 261.2.

15. Storage means the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere as defined in 40 CFR § 260.10.

16. The University means The Regents of the University of California.

V. COVERED MATTERS

1. This Agreement shall apply to waste at LANL, as described in Paragraphs 2, 3, and 4 of this Section, which is subject to 40 CFR § 268.50(a), or which becomes subject to this requirement during the term of this Agreement.

2. This Agreement shall apply to all categories of wastes identified in the waste categories listed in Appendix A and Attachment B to Appendix B, which are attached to and incorporated into this Agreement.

3. This Agreement shall apply to all mixed waste which is currently in TRU-waste Storage Pads 1, 2, and 4, TA-54, Area G,

which has not been characterized sufficiently to determine whether it falls within the categories of wastes listed in Appendix A.

4. This Agreement shall apply to mixed waste generated as a result of sampling, characterization and remediation activities carried out to fulfill the requirements of Module 8 of the Hazardous and Solid Waste Amendments (HSWA) portion of LANL's RCRA permit issued by EPA in March 1990, to the extent that the waste is not included in the categories of wastes listed in Appendix A. Nothing in this Agreement shall affect DOE's or the University's obligations under Module 8, the HSWA portion, of LANL's RCRA permit.

5. This Agreement does not address RCRA compliance issues other than those issues specifically described in this Section or in the Compliance Plan. Therefore, the parties acknowledge that this Agreement does not affect the rights of EPA to take any appropriate action under any of its authorities to address any RCRA violations which exist or may exist at LANL, which are not specifically covered by this Agreement.

6. On January 28, 1993, NMED issued Compliance Orders against DOE and the University for violations of the New Mexico Hazardous Waste Act at Pads 1, 2, and 4, Technical Area 54, Area G, at LANL. Nothing in this Agreement shall, or be construed to, alter, interfere or be inconsistent with the enforcement actions taken by the State of New Mexico in connection with the January 28, 1993 Compliance Orders, including any Consent Agreement

entered into or any Final Order issued by the State to require compliance with the Consent Agreement.

VI. STATEMENTS OF FACT AND CONCLUSIONS OF LAW

On September 30, 1992, EPA Region 6 issued a Notice of Noncompliance against DOE at its Los Alamos National Laboratory concerning its violation of the Land Disposal Restrictions storage prohibition. The following Statements of Fact and Conclusions of Law are based upon that Notice of Noncompliance.

1. DOE is a department, agency or instrumentality of the Executive Branch of the Federal Government and must comply with the requirements of Section 6001 of RCRA.

2. LANL is located principally in Los Alamos County, New Mexico, approximately 60 miles northeast of Albuquerque and 25 miles northwest of Santa Fe. The site encompasses approximately 43 square miles.

3. Los Alamos was chosen in 1942 as the site for "Project Y," a secret project for the wartime development of the atomic bomb. The area was established as a military reservation, and operations began in 1943. Activities at LANL include research and development of nuclear and non-nuclear weapons and energy and other research.

4. The United States, acting through DOE, is the owner and DOE is a co-operator of LANL. The University is the management and operating contractor for LANL pursuant to a contract with DOE, and is a co-operator of LANL.

5. DOE is a "generator" of hazardous waste at LANL as that term is defined in 40 CFR § 260.10.

6. LANL is a "facility" as that term is defined at 40 CFR § 260.10.

7. On January 25, 1985, EPA granted the State of New Mexico final authority to administer a hazardous waste program equivalent to the federal program.

8. In November 1989, NMED issued a hazardous waste facility operating permit for LANL.

9. In March 1990, EPA issued Module 8 to the hazardous waste facility operating permit for LANL.

10. On July 25, 1990, EPA granted final authorization to the State of New Mexico to regulate mixed waste.

11. On January 25, 1991, DOE submitted "Part A" of its mixed waste management permit application to NMED.

12. DOE generates solvent and "California list" mixed wastes which were placed in storage at LANL after the effective date of the applicable land disposal restrictions.

13. DOE generates pentachlorophenol (FO27) and certain mercury compounds (D009), which are both listed hazardous wastes, and which were placed in storage at LANL after the effective date of the applicable land disposal restrictions.

14. Since expiration of the national capacity variance for third ("thirds") mixed wastes on May 8, 1992, thirds mixed wastes were placed in storage at LANL.

15. Some mixed wastes located at TA-54, Area G, Pad 4, were placed there after the effective date of the applicable land disposal restrictions.

16. Storage of the wastes described in Paragraphs 12, 13, 14, and 15 above is for purposes other than accumulating quantities necessary to facilitate proper recovery, treatment, or disposal.

17. In a letter dated May 13, 1992, DOE notified EPA that it was storing at LANL mixed and hazardous waste subject to 40 CFR § 268.50 not for the purpose of accumulating quantities necessary to facilitate proper recovery, treatment, or disposal of such waste and, therefore, not in compliance with 40 CFR § 268.50.

18. DOE is in violation of 40 CFR § 268.50 (a) and (b) for the storage of mixed and hazardous waste, which is restricted from land disposal, for other than the purpose of accumulation to facilitate proper recovery, treatment, or disposal.

19. The mixed waste on Pad 4 described in Paragraph 15 above as well as mixed waste located on two other soil-covered pads (Pads 1 and 2) at TA-54, Area G, and the pads themselves are included in the mixed waste Part A submitted to NMED in January 1991. DOE is in consultation with NMED to develop a plan to ensure that these wastes are stored in compliance with RCRA storage requirements.

20. Waste stored on these pads cannot be properly inventoried, identified, or assessed for compliance with applicable RCRA storage requirements.

21. DOE will be engaging in remediation activities at these pads regarding mixed waste placed there prior to the effective dates of applicable land disposal restrictions. These remediation activities may subject these mixed wastes to 40 CFR § 268.50(a) during the term of this Agreement.

VII. COMPLIANCE PLAN

The Compliance Plan for the LANL facility is intended to bring LANL into compliance as soon as practicable with LDR storage prohibitions, as required by Section 1-601 of Executive Order 12088. The Compliance Plan is set forth in Appendix B, which is attached to and incorporated into this Agreement. Whenever reasonably possible, DOE will expedite the schedule in the Compliance Plan.

VIII. SCHEDULES, MILESTONES, AND TARGET TIMELINES

1. The Compliance Plan, Appendix B to this Agreement, establishes overall schedules for achieving compliance with LDR requirements at LANL based on milestones and target timelines for the completion of various activities and the submittal of various deliverables.

2. A "milestone," for purposes of this Agreement, is a specific date on or before which or time frame on or before the end of which an activity must be completed or a deliverable submitted. Milestones are fixed and enforceable unless modified pursuant to other provisions of this Agreement such as Section XIV (Modifications) or Section XIII (Extensions).

3. A "target timeline," for purposes of this Agreement, is an estimated, projected and nonenforceable time for completion of an activity or submittal of a deliverable. Target timelines shall be converted into milestones as provided in the schedules, including upon the approval of a deliverable or the occurrence of an event which makes it possible to establish subsequent events on a fixed basis.

IX. SUBMITTAL, REVIEW, AND APPROVAL OF DELIVERABLES

1. Unless otherwise noted, all deliverables developed by DOE pursuant to this Agreement shall be submitted by DOE to both EPA and NMED. DOE shall complete and transmit each deliverable required by this Agreement in accordance with the schedules established pursuant to this Agreement for completion of each such deliverable. Appendix C contains a list of all deliverables required by this Agreement.

2. Unless otherwise noted, each deliverable shall be transmitted directly to the Project Managers responsible for implementation of this Agreement in accordance with Section XI (Notification). A transmittal letter will accompany each

deliverable specifying the section of the Compliance Plan requiring submittal of that deliverable. A copy of the transmittal letter will be provided to the EPA Region 6 Section Chief for ALONM, Hazardous Waste Division.

3. EPA will promptly review each deliverable submitted by DOE pursuant to this Agreement. In the course of this review, EPA may consult with DOE regarding the adequacy of each deliverable and will provide the State an opportunity to comment to EPA on each deliverable.

4. Even though EPA has no stated deadlines or timeframes for its review of the deliverables, DOE will notify EPA in its transmittal letter accompanying the deliverable whether any schedules will be affected by a delay in reviewing the deliverable and, if so, which schedules will be affected.

5. After review, and any appropriate consultation, of any deliverable, EPA shall: (a) approve or disapprove the deliverable in its entirety; or (b) approve the deliverable in part and disapprove the deliverable in part, directing DOE to modify those portions of the deliverable which are not approved. Whenever EPA disapproves a deliverable in whole or in part, EPA will provide written comments regarding the disapproval sufficient to allow DOE to make appropriate and acceptable revisions to the deliverable. In addition, when the disapproval is in part, EPA shall make clear which parts of the deliverable are disapproved.

6. Upon receipt of a notice of disapproval, in whole or in part, DOE shall, within such reasonable time, consistent with the

nature and extent of EPA's comments, as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. Notwithstanding the receipt of a notice of disapproval, DOE shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission.

7. In the event that a resubmitted deliverable, or portion thereof, is disapproved by EPA, EPA may again require DOE to correct the deficiencies in accordance with the preceding paragraphs. EPA also reserves the right to amend or develop a resubmitted deliverable which is deficient. DOE shall implement any such deliverable as amended or developed by EPA, subject only to DOE's right to invoke the procedures set forth in Section XII (Dispute Resolution).

8. All deliverables must be approved by EPA in writing to satisfy the requirements of this Agreement.

9. Upon approval of a deliverable by EPA, any requirements, obligations, or milestones set forth in the deliverable shall be considered requirements of this Agreement. Therefore, upon approval of a deliverable by EPA, DOE shall implement the deliverable as approved; provided however, DOE shall not proceed to implement any deliverable prior to EPA approval. Approval of a deliverable by EPA does not constitute approval by NMED, and DOE understands that any plan approved by NMED or agreement reached between DOE and NMED addressing mixed

waste at LANL under the FFC Act may impose different or additional requirements and schedules on DOE.

X. SUBMITTAL OF OTHER DOCUMENTATION

1. The Compliance Plan requires, and future approved deliverables will require, the performance of a number of activities and the preparation of a number of documents which do not constitute deliverables under this Agreement. Notice of the completion of required activities and submission of documents other than deliverables, when required, shall be in accordance with this Section.

2. DOE shall as expeditiously as possible, but in no event more than five business days after the milestone due date, notify EPA in writing of the completion of an activity. For purposes of this paragraph, an activity includes, but is not limited to, such items of work as the start of and the completion of construction.

3. When the Compliance Plan requires that a document or report, which is not a deliverable, be submitted to EPA, DOE shall submit the document or report to EPA on or before the milestone due date; provided, however, that when the Compliance Plan requires that the document, such as a Part B or other permit application, be submitted to the State by the milestone due date, such document or report shall be submitted to EPA on the same date it is submitted to the State. The documents and reports referred to in this paragraph include, but are not limited to, certain annual reports, permit applications, and final permits.

4. When the Compliance Plan does not require that a document or report be submitted to EPA, DOE shall as expeditiously as possible, but in no event more than five business days after the milestone due date, notify EPA in writing of the completion of the document or report. The documents and reports referred to in this paragraph include, but are not limited to, conceptual design reports, preliminary design reports, and solicitation documents.

XI. NOTIFICATION

1. Consistent with the requirements of Section IX (Submittal, Review, and Approval of Deliverables), Section X (Submittal of other Documentation), and Section XII (Dispute Resolution), all deliverables, correspondence, approvals, disapprovals, notices or other submissions relating to or required under this Agreement shall be in writing and may be sent by facsimile if followed within 24 hours by mailing by certified mail, return receipt requested.

2. The documents referred to in Paragraph 1 of this Section will be considered to be timely submitted by DOE if they are received by EPA on or before the applicable due date.

3. All documents to be submitted to EPA should be sent to the LANL Project Manager, Hazardous Waste Management Division, RCRA Enforcement Branch (ALONM), U. S. Environmental Protection Agency, Region 6, 1445 Ross Avenue, Dallas, Texas 75202.

4. All documents required to be submitted to NMED should be sent to: Bureau Chief, Hazardous and Radioactive Materials Bureau, New Mexico Environment Department, P. O. Box 26110, 525 Camino de los Marquez, Santa Fe, New Mexico 87502.

5. All documents to be submitted to DOE should be sent to the Chief, Environment, Safety and Health Branch, Department of Energy, Los Alamos Area Office, 528 35th Street, Los Alamos, New Mexico 87544.

XII. DISPUTE RESOLUTION

1. Except as specifically set forth elsewhere in this Agreement, if a dispute arises among the parties to this Agreement, the procedures of this Section shall apply.

2. Copies of all notices and statements required by this Section shall be furnished to the Office of Regional Counsel, EPA Region 6, if originated by DOE, and to the DOE Los Alamos Area Office Counsel, if originated by EPA.

3. If a dispute arises, the disputing party shall engage the other party in informal dispute resolution. This informal dispute resolution shall be for a period of thirty days, during which time EPA and DOE shall meet as many times as necessary to discuss and attempt resolution of the dispute. EPA and DOE shall make all reasonable efforts to informally resolve disputes at the Project Manager or immediate supervisor level.

4. If the informal dispute resolution process is unsuccessful, within ten days after the expiration of the 30-day

informal dispute resolution period, the disputing party shall submit to the other party a written statement of dispute setting forth the nature of the dispute, the work affected by the dispute, the disputing party's position with respect to the dispute, and the information which the disputing party is relying upon to support its position.

5. The disputing party shall forward the written statement of dispute to the Dispute Resolution Committee (DRC) for resolution. Upon submission of a dispute to the DRC, the other party shall, within 14 days, submit a written statement formally establishing its position on the dispute.

6. The DRC shall be composed of the Hazardous Waste Management Division Director of EPA Region 6 and the Area Manager of the DOE Los Alamos Area Office. If any delegation of this DRC responsibility is made by a designated DRC representative, notification of such delegation shall be supplied to the other party.

7. Following submission of a dispute to the DRC, the DRC shall have 21 days to unanimously resolve the dispute and issue a written position. If the DRC is unable to unanimously resolve the dispute within this 21-day period, the EPA DRC representative shall issue a written position on the dispute by the thirty-fifth day following submittal. Within 14 days after receipt of the EPA DRC representative's written position, DOE may submit a written notice of dispute to the Senior Executive Committee (SEC) for resolution. In the event that the dispute is not submitted to

the SEC within the designated 14-day period, DOE shall be deemed to have agreed with the EPA DRC representative's position with respect to the dispute and such position shall constitute the final determination on the dispute.

8. The SEC shall serve as the forum for resolution of disputes which are not resolved by the DRC and shall be composed of the Regional Administrator of EPA Region 6 and the Manager of the DOE Albuquerque Operations Office. The SEC shall confer and use its best efforts to resolve the dispute and issue a written decision. If unanimous resolution of the dispute is not reached within 21 days, the Regional Administrator shall issue a written position on the dispute within 14 days following the 21-day resolution process.

9. The Manager, DOE Albuquerque Operations Office, after consultation with the appropriate DOE Assistant Secretary(ies) and within 14 days of the receipt of the Regional Administrator's written position, may issue a written notice submitting the dispute to the Administrator of EPA for resolution in accordance with all applicable laws and procedures. The written notice shall contain a statement that consultation with the appropriate DOE Assistant Secretary(ies) has taken place. If DOE does not submit the dispute to the Administrator of EPA within the time frame designated, DOE shall be deemed to have agreed with the Regional Administrator's written position with respect to the dispute and such position shall constitute the final determination on the dispute.

10. Upon submission of a dispute to the EPA Administrator pursuant to this Section, the EPA Administrator or her designee will review and resolve such dispute within 21 days. Upon request by DOE, and prior to resolving the dispute, the EPA Administrator or her designee shall meet and confer with the Secretary of Energy or her designee regarding the issue(s) in dispute. Upon resolution, the EPA Administrator or her designee shall provide DOE with a written final decision setting forth resolution of the dispute.

11. The pendency of any dispute under this Section shall not affect the parties' timely performance of their respective responsibilities pursuant to this Agreement, except that the time period for completion of work affected by such dispute shall be extended for a period of time not to exceed the actual time taken to resolve any good faith dispute in accordance with the procedures specified herein. All elements of the work required by this Agreement, which are not affected by the dispute, shall continue and be completed in accordance with the applicable schedule. The determination of elements of work, deliverables, notices, or actions affected by the dispute shall be determined by EPA pending final resolution of the dispute.

12. Upon resolution of a dispute pursuant to this Section, the resolution and final determination will be appropriately incorporated into this Agreement. DOE will implement this Agreement accordingly.

13. Resolution of a dispute pursuant to this Section shall be in accordance with all applicable laws and regulations. The parties shall abide by all terms and conditions of any final determination of a dispute made pursuant to this Section.

14. Any written position issued pursuant to this Section shall contain a finding as to whether the invocation of the disputes procedure in this Section was made in good faith.

XIII. EXTENSIONS

1. DOE agrees to implement this Agreement in accordance with the schedules set forth herein, as well as schedules developed pursuant to this Agreement. DOE further agrees to adopt all reasonable measures to avoid or minimize any delays in the implementation of this Agreement.

2. A milestone shall be extended upon receipt of a timely request for extension where good cause exists for the requested extension. Any request for an extension of 30 days or more for a milestone shall be made in writing and received by EPA at least 30 days prior to the scheduled milestone. EPA will render its decision within 21 days of receipt of the extension request. Any request for an extension of a milestone of less than 30 days shall be made in writing, at least seven days prior to the scheduled milestone. EPA will respond to the request prior to the due date for the milestone either in writing or orally with written confirmation within 24 hours.

3. Any request for an extension shall be provided to EPA in accordance with Section XI (Notification). The request shall specify:

- a. The milestone that is sought to be extended;
- b. The length of the extension sought;
- c. The good cause(s) for the extension; and
- d. Any related milestones that will be affected if the extension is or is not granted.

4. Good cause exists for an extension when sought in good faith in regard to:

- a. An event of force majeure, which is any event arising from causes which are beyond the control of DOE or entities controlled by DOE including, but not limited to contractors and subcontractors, and which could not have been overcome by the due diligence of DOE. DOE shall bear the burden of proof that a particular event constitutes an event of force majeure; that any delay is due to an event of force majeure; and the length of any delay caused by such an event. Notwithstanding the provisions of Paragraph 2 above, DOE shall notify EPA of the event in writing within three business days of the time DOE becomes aware of an event of force majeure which it believes will necessitate the extension of a milestone. The notification shall describe the event of force majeure, the duration of the anticipated delay, measures taken or to be taken to mitigate

the delay, and the schedule for implementation of mitigation measures.

b. A delay caused by the good faith invocation of dispute resolution or administrative or judicial action by EPA which results in an order not to proceed with the work required by this Agreement.

c. A delay caused, or which is likely to be caused, by the grant of an extension in regard to another milestone. DOE shall bear the burden of proof that the grant of an extension of a milestone will result in the delay of another milestone.

d. A delay caused by any other circumstances which the parties agree constitutes good cause.

5. If EPA determines that DOE has not demonstrated that good cause exists for all or part of a requested extension, EPA may grant an extension for a lesser time or may deny the request subject to a determination resulting from the dispute resolution process. DOE may seek a determination pursuant to the provisions of Section XII (Dispute Resolution) within 14 days of EPA's decision on the extension request. If DOE fails to invoke dispute resolution within the 14-day period, DOE is deemed to accept EPA's position or decision and the existing schedule.

6. If EPA determines that the requested extension is warranted, the parties shall extend the affected milestone(s) accordingly, and EPA may take enforcement action only to compel compliance with the milestone as most recently extended.

7. When a timely request for an extension is made and EPA fails to render a decision on the request by the affected milestone due date, EPA shall refrain from taking any enforcement action against DOE regarding the affected milestone until a decision is reached on whether the requested extension will be approved.

XIV. MODIFICATION

1. This Agreement may be modified only by agreement of the parties. All modifications shall be in writing and shall be effective when signed by both parties. EPA shall be the last signatory on any modifications to this Agreement. Each party agrees that it will give reasonable consideration to a request for modification by the other party.

2. The parties agree, subject to relevant considerations, including the facts, circumstances, and status of DOE's compliance with this Agreement, to meet and negotiate in good faith any modification of this Agreement to incorporate wastes not addressed in Section V (Covered Matters), including wastes which become subject to LDR regulations subsequent to the execution of this Agreement.

3. EPA may request that this Agreement be modified to require that DOE conduct investigations or engineering evaluations when EPA determines that such investigations or evaluations are necessary to accomplish the purposes of this Agreement.

4. Modifications shall be governed by Executive Order 12088 and the provisions of this Agreement. During the negotiation of any modification, the Compliance Plan, to the extent that it does not conflict with statutory or regulatory changes, shall remain in effect unless specifically waived by EPA Region 6.

XV. TERMINATION

1. Except as otherwise set forth herein, this Agreement shall terminate upon determination by EPA that all the requirements and activities established in this Agreement have been completed. When DOE believes it has fulfilled all the requirements and activities of this Agreement, DOE shall notify EPA in writing in accordance with the Certification requirements in the Compliance Plan. Upon receipt of DOE's notice, EPA shall review the notice from DOE and shall notify DOE in writing of EPA's determination that all the requirements and activities of the Agreement have been fulfilled.

2. This Agreement may be terminated at any time upon mutual agreement of the parties.

3. This Agreement will terminate when the State of New Mexico has issued an order requiring DOE compliance with either a plan for the treatment of mixed waste at LANL which has been approved pursuant to Section 3021(b)(2) of the SWDA, as amended by the FFC Act, or an agreement entered into between DOE and the

State pursuant to section 3021(b)(5) of the SWDA, as amended by the FFC Act.

4. In the event that DOE fails to comply with the schedules set forth herein, subject to the Funding, Modification, Extensions and Dispute Resolution Sections of this Agreement, the parties agree that EPA shall have the right to terminate this Agreement by written notice to the parties.

XVI. PROJECT MANAGERS

1. Within 10 days of the effective date of this Agreement, EPA and DOE shall each designate a Project Manager who will be responsible for overseeing the implementation of this Agreement. DOE and EPA shall notify each other in writing of the person selected as Project Manager.

2. The Parties agree to provide at least 10 days written notice prior to changing Project Managers.

XVII. ACCESS/DATA/DOCUMENT AVAILABILITY

1. EPA will be permitted to enter all areas of LANL which handle hazardous waste or which contain information referred to in this Section. EPA will be permitted to inspect records, logs, and other documents relevant to implementation of this Agreement, other than attorney-work product or attorney-client privileged material; verify compliance by DOE with this Agreement; review the progress of DOE, its contractors, and lessees in carrying out the activities under this Agreement; conduct tests which EPA

deems necessary; and verify data submitted to EPA by DOE. DOE shall honor all requests for access to LANL made by EPA, so long as the provisions of this Section are fulfilled. When on site, EPA shall comply with reasonable LANL site-specific health and safety requirements. However, if requirements are imposed solely for purpose of delaying EPA's access to the site, EPA shall consider such requirements to be a denial of access to the site.

2. Any information or documents produced under the terms of this Agreement by EPA and DOE shall be available to the public except:

a. those identified to EPA by DOE as classified, or unclassified but controlled, within the meaning of and in accordance with the AEA;

b. those that could otherwise be withheld pursuant to the Freedom of Information Act or the Privacy Act, unless expressly authorized for release by the originating agency;

c. those clearly identified as draft documents; or

d. those subject to business confidentiality claims as identified and submitted in accordance with the requirements of 40 CFR Part 2.

Documents or information so identified shall be handled in accordance with any applicable regulations. No document marked draft may be made available to the public without prior written approval of the generating party. Unless otherwise restricted by subparagraphs a and b, if the document is draft final (pending public review) or final and no confidentiality claim under

subparagraph d accompanies information which is submitted to any party, then the information may be made available to the public without further notice to the originating party.

3. Notwithstanding any provisions of this Agreement, all requirements of the AEA and all Executive Orders concerning the handling of unclassified controlled nuclear information, restricted data, and national security information, including "need to know" requirements, shall be applicable to any access to information or facilities covered under the provisions of this Agreement.

4. Nothing in this Agreement affects or inhibits EPA's statutory authority to obtain access or gather information at LANL regardless of whether such access or information gathering is related to enforcement of this Agreement.

XVIII. CREATION OF DANGER

1. If EPA determines that activities set forth in the Compliance Plan, even though carried out in compliance with this Agreement, have caused or may cause a release of hazardous waste, hazardous constituents, or a pollutant or contaminant, or a threat to public health or to the environment, EPA may direct DOE to stop further implementation of this Agreement as it relates to the activities creating the danger for such period of time as may be needed to abate any such release or threat or to undertake any

action which EPA determines is necessary to abate such release or threat.

2. In the event that DOE determines that any on-site activities or work being implemented under this Agreement have caused or may cause a release of hazardous waste, hazardous constituents, or a pollutant or contaminant, or a threat to public health or to the environment, it may stop any such work or activities for such time as needed to respond to or abate the danger.

3. In the event that DOE makes a determination to stop work under this Section, it shall notify EPA as soon as possible, but in no event later than 24 hours after the determination is made. DOE shall submit a written summary of events to EPA within five working days of making a determination under this Section.

4. Following a stoppage of work pursuant to this Section, the Parties shall meet to discuss the resumption of activities and any modifications to this Agreement necessary as a result of the stoppage of work. EPA agrees that any milestones dependent on activities which were stopped pursuant to an EPA directive, or pursuant to a DOE directive which EPA determines was done in good faith, shall be extended for a period equal to the period during which the work was stopped plus a reasonable amount of time to resume activities.

XIX. ENFORCEMENT ACTIONS AND RESERVATION OF RIGHTS

1. EPA recognizes that DOE is currently storing and will continue to generate and store the wastes which are described in Section V (Covered Matters) of this Agreement; that DOE has agreed to address the continued storage of covered LDR wastes subject to Section 3004(j) of RCRA as set forth in this Agreement; and that the Parties intend that DOE will request and obtain funding necessary for DOE to address all compliance matters at LANL as set forth in this Agreement.

2. Based on the facts and circumstances set forth in Paragraph 1 above and other facts and circumstances known to EPA as of the effective date of this Agreement and set forth in this Agreement, EPA agrees not to initiate any civil administrative enforcement action or to refer a civil judicial enforcement action to the Department of Justice for violation of RCRA Section 3004(j) arising from the storage of the waste described in Section V (Covered Matters) at LANL for so long as this Agreement is in effect and DOE is in compliance with the requirements of this Agreement.

3. However, in the event that DOE is delayed in fulfilling its obligations as set forth in this Agreement as a result of insufficient availability of funding, and the parties are unable to reach agreement on modifying this Agreement to resolve this issue, the covenant set forth in Paragraph 2 above shall no

longer be in effect and EPA may exercise any or all of its applicable statutory or regulatory authority.

4. Further, nothing herein shall preclude any actions by EPA to enforce the terms of this Agreement, or to address or bring any enforcement actions for (a) any pre-existing, current or future violations or conditions at LANL not specifically listed in Section V (Covered Matters), or (b) any emergency condition or imminent hazard that may exist or arise at LANL.

5. By entering into this Agreement, DOE does not waive any claim of sovereign immunity it may have under federal law that is not expressly waived by statute; nor does it waive any immunity from payment of fines or penalties or any claim of jurisdiction over matters reserved to it under the AEA.

6. This Agreement is fully enforceable under the terms of the FFC Act. Nothing in this Agreement, however, shall be considered to be a substitute for or in lieu of the requirements of that Act for DOE to submit a plan for the treatment of mixed waste to the State of New Mexico or to enter into an agreement with the State that addresses LDR compliance and for DOE to become subject to a State order to comply with such plan or agreement.

XX. FUNDING

1. It is the expectation of the parties that all obligations and commitments established by this Agreement will be

fully funded by DOE. DOE shall take all necessary steps and use its best efforts to obtain timely and sufficient funding to meet its obligations and commitments under this Agreement, including but not limited to the submission of timely budget requests. Nothing herein shall affect DOE's authority over its budget and funding level submissions. Section 1-5 of Executive Order 12088 states that "[t]he head of each executive agency shall ensure that sufficient funds for compliance with applicable pollution control standards are requested in the Agency budget." Any requirement for the payment or obligation of funds by DOE established by the terms of this Agreement shall be subject to the availability of appropriated funds, and no provision herein shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341, as amended. In cases where payment or obligation of funds would constitute a violation of the Anti-Deficiency Act, the dates established requiring the payment or obligation of such funds shall be appropriately adjusted.

2. Failure to obtain adequate funds or appropriations from Congress does not in any way release DOE from its ultimate obligation to comply with RCRA. If appropriated funds are not available to fulfill DOE's obligations under this Agreement, EPA may exercise any or all of its applicable statutory and regulatory authority.

XXI. STIPULATED PENALTIES AND OTHER SANCTIONS

1. DOE shall be subject to the following stipulated penalties for each failure to comply with the terms or provisions of this Agreement and its Appendices:

a. For failure to adequately and timely submit any deliverable or revised deliverable required pursuant to the Agreement and its Appendices, DOE shall pay stipulated penalties in the following amounts for each day during which each violation continues:

Period of Failure To Comply	Penalty Per Violation
1st through 15th day	\$ 2,000
16th through 30th day	\$ 5,000
31st day and beyond	\$20,000

If the period of failure to comply extends from the 16th through 30th day, the penalty per violation per day shall be \$5,000 for each day of violation from day 1. If the period of failure to comply extends from the 31st day, the penalty per violation per day shall be \$20,000 for each day of violation from day 1.

b. For failure to adequately and timely submit any report or comply with any other term or requirement of this Agreement and its Appendices, DOE shall pay stipulated penalties in the following amounts for each day during which each violation continues:

Period of Failure To Comply	Penalty Per Violation
1st through 15th day	\$ 500.00
16th through 30th day	\$ 1,000.00
31st day and beyond	\$ 5,000.00

If the period of failure to comply extends from the 16th through 30th day, the penalty per violation per day shall be \$1,000 for each day of violation from day 1. If the period for failure to comply extends from the 31st day, the penalty per violation per day shall be \$5,000 for each day of violation from day 1.

2. As soon as it becomes aware of any noncompliance DOE shall notify EPA in writing, in accordance with Section XI (Notification), of such noncompliance and shall immediately take all reasonable steps to minimize or correct any adverse impact on the environment resulting from such noncompliance. EPA reserves the right to assess stipulated penalties upon its own determination that a violation of this Agreement has occurred.

3. All monetary stipulated penalties begin to accrue on the day following the date that performance is due or a violation occurs, and continue to accrue through the final day of all correction of the noncompliance. Nothing herein shall preclude the simultaneous accrual of separate stipulated penalties for separate violations of this Agreement.

4. The stipulated penalties set forth in this Section shall be in addition to the rights reserved to EPA in Section XIX

(Enforcement Actions and Reservation of Rights). EPA specifically reserves the right to seek other remedies or sanctions available to EPA by reason of DOE's failure to comply with the terms and conditions of this Agreement and its Appendices, including, but not limited to, sanctions that EPA may seek under Section 3008 of RCRA or under the FFC Act. However, when a stipulated penalty has been assessed and paid under this Section for a violation of this Agreement, DOE will not be subject to another monetary penalty for the same violation.

5. The payment of stipulated penalties assessed under this Agreement shall be made by mailing a cashier's or certified check payable to the Treasurer of the United States to the following address:

Regional Hearing Clerk (6C)
U. S. EPA, Region 6
P. O. Box 360582M
Pittsburgh, PA 15251

The identifier, "DOCKET NO. RCRA VI-216-H," shall be clearly typed on the check to ensure credit. DOE shall provide notice of such payment, including copies of the check, the EPA individual identified in Section XI (Notification) and to the Office of Regional Counsel, EPA Region 6.

6. If DOE disputes the basis for imposition of stipulated penalties under this Section, the issue shall be resolved under the procedures of Section XII (Dispute Resolution) of this Agreement. Invoking dispute resolution shall not stay the

accrual of stipulated penalties; however, the obligation to pay shall be stayed pending resolution of the dispute.

XXII. OTHER CLAIMS

Nothing in this Agreement shall constitute or be construed as a release from any other claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from LANL.

XXIII. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Agreement shall be undertaken in accordance with the requirements of all applicable local, state, tribal, and federal laws and regulations. DOE shall obtain or cause its contractors or subcontractors to timely obtain all permits and approvals necessary under such laws and regulations.

XXIV. BINDING EFFECT

The terms of this Agreement shall apply to and be binding upon EPA and DOE. DOE shall notify its agents, employees, and contractors, and all subsequent operating contractors, owners,

operators, management, and lessees of the existence of this Agreement and DOE shall direct them to comply fully with the terms of this Agreement in all contracts and subcontracts entered into to carry out the commitments required by this Agreement.

XXV. SEVERABILITY

If any provision or authority of this Agreement or the application of this Agreement to any party or circumstance is held by any judicial or administrative authority to be invalid, circumstances and the remainder of the Agreement shall remain in force and shall not be affected thereby.

XXVI. EFFECTIVE DATE

This Agreement shall be effective when signed by the last signatory, which shall be EPA, and filed with the Regional Hearing Clerk for Region 6 of EPA.

IT IS SO AGREED:

2-25-94
Date

Jerry L. Bellows
Jerry L. Bellows
Area Manager
Los Alamos Area Office
U.S. Department of Energy

3/15/94
Date

Allyn M. Davis
Allyn M. Davis
Director, Waste Management Division
U.S. Environmental Protection Agency,
Region 6

APPENDIX A

WASTE CATEGORIES

MIXED HAZARDOUS WASTE

Acids
Analytical laboratory wastes
Caustics
Cemented process sludge
Chemical products
Debris
Decontamination wastes
Dewatered treatment sludge
Gas cylinders
Ignitable liquids
Lead stringers
Mercury
Oxidizers
Photographic fixer
Plutonium process residue
Process residue
Reactives
Scrap metal
Shielding
Spent solvents

NON-MIXED HAZARDOUS WASTE

Dioxins
Spent mercury waste (mercurious acetate/chloride)

APPENDIX B
COMPLIANCE PLAN
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APPENDIX B
COMPLIANCE PLAN
U.S. DEPARTMENT OF ENERGY
LOS ALAMOS NATIONAL LABORATORY

I. Introduction

A. Purpose

The purpose of this Compliance Plan is to bring the Los Alamos National Laboratory (LANL) into compliance with the land disposal restrictions (LDR) set forth in the Resource Conservation and Recovery Act (RCRA) and the regulations promulgated at 40 CFR 268.

B. General Overview

Most of the waste generated at LANL is the result of hundreds of bench-scale research and development (R&D) activities. These activities may include the use of exotic compounds and radionuclides. Therefore, although LANL generates a large variety of different types of mixed waste, most volumes are relatively small. The activities generating the largest amounts of hazardous and mixed waste are those related to national security. All mixed waste generated at LANL is currently stored on-site because of lack of available on-site, or offsite commercial or Department of Energy (DOE), treatment and disposal facilities. The lack of available treatment and disposal capacity has led to noncompliance with the LDR storage prohibitions for F-listed solvents and California List waste. Currently, there is also a lack of available treatment and disposal capacity for "thirds" mixed waste.

C. Management of Mixed Waste

An extensive waste management system has been developed at LANL to ensure that mixed waste is properly characterized and managed from "cradle to grave". The responsibility for ensuring waste is properly managed begins with the waste generator. LANL provides specific classroom training to all personnel who generate mixed waste. Waste generators within a line organization are represented by waste management coordinators who have been provided more extensive RCRA and waste management training and who act as liaison between the generator, line organization, and the LANL Environmental Management (EM) Division. Disposition (that is, treatment, storage, and disposal) of mixed waste is the responsibility of a waste management organization within EM Division. Compliance with RCRA and other state and federal laws is monitored by an environmental protection group in EM Division.

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1. Waste Characterization

As required by RCRA (40 CFR Sections 262.11, 264.13, and 265.13), all mixed waste must be properly characterized for hazardous constituents. In addition, the waste is characterized for radioactive constituents. LANL administrative policies require that waste generators complete waste profile forms and sign a certification on the form stating that the information is complete and accurate. The profile form requires the waste generator to make an informed decision, based on chemical analysis or process knowledge, of what hazardous waste constituents and radioactive components may be found in a mixed waste. The information provided by all mixed waste generators is tracked in a readily retrievable database capable of providing complete and current reports on the types and locations of waste generated at LANL.

2. Movement of Mixed Waste

Mixed waste is accumulated at approximately 80 satellite and less-than-90-day accumulation areas throughout LANL. Line organizations are responsible for ensuring that the accumulation limit in 40 CFR Section 262.34 is not exceeded. Waste from these sites is removed by EM Division after a line organization provides proper documentation on the types of waste and containers of waste, including copies of approved waste profiles. Mixed waste is then moved to RCRA-regulated treatment and storage facilities at LANL.

3. Mixed Waste Facilities

LANL is currently operating under interim status for mixed waste. On January 25, 1991 DOE submitted a Part A permit application for all mixed waste treatment, storage, and disposal activities. Included in the application were storage facilities at TAs 3, 16, 21, 50, 54, and 55, treatment facilities at TAs 15, 36, 50, and 55, and a surface impoundment at TA-53. A subsequent Part B permit application was submitted on July 25, 1991, for the TA-53 surface impoundments.

D. Mixed Waste Designations

The two types of mixed waste currently in storage which are affected by the LDR storage prohibition are 1) low-level mixed waste, and 2) transuranic (TRU) mixed waste.

Low-Level Mixed Waste (LLMW) is

- 1) waste containing a hazardous component and a low activity radioactive component derived from source, by-product, or special nuclear material that emits alpha, beta, or gamma radiation, or contains tritium (an isotope of hydrogen).

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This waste varies from low hazard to moderate hazard to high hazard (for example, high tritium contamination); or for the purpose of this agreement

- 2) waste containing a hazardous component and a radioactive component derived from neutron or other subatomic particle activation, from the use of radioactive materials used in biomedical research, or from radionuclides not regulated under the Atomic Energy Act. Waste from neutron or other subatomic particle activation varies from very low hazard to high hazard. Low hazard waste generally contain short-lived radionuclides. High hazard waste has been exposed to high levels of neutron or other subatomic particles and may have induced surrogate, long-lived radionuclides. Waste from biomedical research generally contains very small concentrations of radioactive materials used as tracers. Although this type of waste does not contain source, special nuclear, or by-product material, it is included in a category of LLMW because of its radioactive content and because it has treatment limitations.

TRU Mixed Waste is mixed waste containing a hazardous component and alpha-emitting, transuranium radionuclides with a half-life greater than 20 years and an activity of greater than 100 nanocuries per gram. TRU mixed waste is divided into two hazard classes: 1) contact handled and 2) remote handled. Proper packaging of contact handled TRU mixed waste causes low alpha contamination to approach nearly 100% attenuation outside containers or boxes. Remote handled TRU mixed waste contains higher alpha contamination than contact handled and poses a more significant exposure hazard.

II. Tasks to be Performed

A. Waste Identification and Characterization

1. LLMW

LLMW has been generated at many LANL locations. The hazardous constituent is characteristic or listed waste. The radioactive constituent may be the result of activation or the presence of radioactive isotopes. LLMW exists as solid, liquid, or compressed gas. Before 1986, most LLMW was disposed at TA-54, Area G. However, LLMW has been placed in storage since EPA affirmed its authority over regulating the hazardous component of mixed waste in July 1986. Additional characterization of this waste is needed before it can be treated or disposed. All containers of LLMW have been tracked, in accordance with RCRA record keeping requirements, since 1988.

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Beginning in 1984, LANL began developing facility-wide administrative requirements for identification and handling of mixed waste. In 1990, LANL began instituting waste characterization requirements through waste profiles and performed an extensive waste stream characterization study to identify all mixed waste generation. Since January 1, 1991, all mixed waste placed into storage has required a complete waste profile before treatment or storage.

Attachment A, Table 1 addresses low-level solid mixed waste. Table II addresses low-level liquid and gaseous mixed waste. Waste types, estimated volumes, category, waste codes and other information are detailed in these tables. Attachment A will be updated annually and will be included in the Annual Report (AR 100).

2. TRU Mixed Waste

Before January 1, 1991, all TRU mixed waste was tracked by generating process and amount of contamination. The processes that have generated TRU mixed waste continue to exist today. By determining what hazardous components contemporary waste categories contain, LANL has been able to extrapolate the types of hazardous components that may exist in pre-1991 TRU waste. Additional characterization of this waste is needed before it can be treated or disposed. All TRU mixed waste generated at LANL after January 1, 1991, requires extensive waste profiling, consistent with requirements for low-level mixed waste. TRU mixed waste generated before January 1, 1991, will require detailed chemical analyses of representative samples.

Attachment A, Table III addresses TRU solid mixed waste.*

TRU dewatered treatment sludges were generated up to 1984 from the TA-50, Building 1, wastewater treatment facility and may contain spent solvent contamination. In 1984, the treatment process was changed at TA-50, Building 1 to separate TRU from nontransuranic wastewaters. The result was a significant reduction in the generation rate of TRU waste.

*As required by the Federal Facility Compliance Act of 1992, DOE has published in the Federal Register a 180-Day Inventory Report of all mixed waste at its facilities. The differences between Table III of Attachment A and the 180-Day Inventory Report are attributable to the fact that Table III does not include those TRU-mixed wastes which are contained in Solid Waste Management Units and subject to the HSWA portion of LANL's Hazardous Waste Permit.

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3. Hazardous Waste

A small volume of hazardous waste has been placed in storage because no available treatment capacity exists. This waste, listed in Attachment A, Table IV, includes mercury compounds and pentachlorophenol (dioxin-containing waste - F027). Although this waste does not contain radioactive components, LANL has been unsuccessful in locating a commercial treatment facility capable of handling this waste in accordance with LDR regulations.

B. Current Storage

1. LLMW

LLMW is currently stored at TA-54 Areas G and L. Solid LLMW is stored at Area G in Building 49. This facility contains a bermed asphalt pad with a tension support dome structure. Containers stored within this building principally consist of 55 gal. DOT-approved steel drums stacked three high on pallets, which are separated by 2 ft. aisle space. This facility is subject to requirements of 40 CFR Part 265 Subpart I (Container Storage) and will be evaluated and upgraded as needed to meet 40 CFR Part 264 requirements. "Best Management Practices" will be implemented to address the need for long-term storage.

Liquid LLMW is currently stored on an asphalt pad at TA-54 Area L. The containers which are 35 and 55 gal. DOT-approved polyethylene and steel containers, and several 85 gal. DOT-approved drum overpacks, are stacked three high on pallets and separated by 2 foot aisle space. The asphalt pad does not currently provide adequate secondary containment as required in 40 CFR Part 264 Subpart I, but the facility is subject to 40 CFR Part 265 Subpart I interim status storage standards. The asphalt pad will also be evaluated and upgraded as needed to meet 40 CFR Part 264 requirements and "Best Management Practices" will be implemented to address the need for long-term storage. A schedule for submission of the permit application for Area L has been submitted to NMED, but as of this time it has not been approved.

As mentioned above, LANL is currently developing a plan to study the condition and identify needed upgrades to meet 40 CFR 264 standards for container storage. The completion of this study will lead to development of the permit application and will identify upgrades which can be made. If upgrades are needed, a schedule for upgrade activities will be submitted as a deliverable (IFLL 200).

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<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Reporting Category</u>
IFLL 100	Complete preconceptual study to identify required interim LLMW storage facilities/upgrades.	30 days after effective date of agreement (M)	Report
IFLL 200	Complete a schedule of upgrade activities	180 days after effective date of the agreement (M)	Deliverable

Note: (M) = Milestone
(TT) = Target Timeline

The Mixed Waste Receiving and Storage Facility (MWRSF), a planned construction project, is designed to support planned treatment facilities by providing temporary RCRA-compliant storage and a controlled area for opening and sampling LLMW containers. Waste containers will be transported from the storage facilities at TA-54, staged and segregated in the MWRSF, and sent to the appropriate treatment facility.

2. TRU Mixed Waste

The primary storage facility for TRU mixed waste is TA-54, Area G. Currently generated TRU waste is stored in Building 48, Area G, TA-54. This is a tension supported structure on a bermed asphalt pad. Containers are stored in TRU-PACs and in steel drums on pallets separated by 2 ft. aisles. Additional storage of TRU mixed waste include the storage vault at TA-55, building PF-4 and the basement of TA-3, Building SM-29. These facilities were included in the January 1991 RCRA Part A permit application and are subject to requirements in 40 CFR Part 265, Subpart I, Container Storage.

From 1979 to January 1991, TRU waste was placed on pads 1, 2, and 4. These units were included in the January 1991 RCRA Part A permit application as container storage units. Pads 1, 2, and 4 were designed as container storage facilities in the late 1970s before issuance of applicable RCRA regulations. Placement of waste on these pads required the use of boxes and steel containers stacked six high in plywood cells with polyethylene liners. Each pad consists of several of these cells overlain by

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soil. These units were constructed on an above-grade asphalt pad.

Because pads 1, 2, and 4 were designed and constructed before the issuance of applicable RCRA regulations, these container storage facilities do not meet 40 CFR Part 265 Subpart I interim status container storage requirements. As a result, LANL is developing plans to remove mixed waste from these pads and to place the containers in a storage facility meeting 40 CFR Part 264 Subpart I standards. Pads 1, 2, and 4 will be upgraded to meet 40 CFR Part 264 Subpart I standards or will be closed. Removal of other mixed waste from pads 1, 2, and 4 will invoke LDR requirements.

In addition to plans to remove wastes from the pads, LANL will prepare a preconceptual study that will identify short and long term storage needs to maintain conformance with 40 CFR Part 264 Subpart I. The plan will include target dates for new storage facilities if they are needed.

Additionally, for the waste contained in TRU Pads 1, 2, and 4, LANL will submit a certification of compliance for completion of RCRA compliant storage according to 40 CFR Part 264 Subpart I as required by Compliance Order NMHWA 93-02 issued by NMED. The schedule of compliance will be January 30, 1995 or the date for compliance required for TRU waste in the NMED Order (STRU 200).

<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Reporting Category</u>
STRU 100	Complete preconceptual study for short and long-term storage.	09/30/94 (M)	Report
STRU 200	Certification of compliance for 40 CFR Part 264 Subpart I compliance for TRU waste.	01/30/95 or date specified in NMED Compliance Order	Deliverable

3. Hazardous Waste

Mercury containing compounds and pentachlorophenol with no commercial treatment or disposal capacity are currently in storage at TA-54, Area L. Mercury wastes are a small number of bottles of laboratory chemicals that are mercury salts and solutions (approximately .07 cu. ft.). Commercial facilities are available for recycling metallic mercury, but LANL has not been able to locate permitted facilities that can treat these wastes. Pentachlorophenol wastes include one drum of fungicide and a second drum containing four small bottles of waste and

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contaminated handling equipment such as respirator cartridges and gloves. Incineration of dioxins requires demonstration of 99.9999% Destruction Removal Efficiency (DRE). One permitted incinerator capable of this DRE has been located, but the facility will not accept dioxin wastes until a suitable disposal site is located for the incinerator slag. These are subject to requirements in 40 CFR 264 Subpart I and additional provisions required in the LANL Hazardous Waste Permit.

C. Waste Minimization

Waste Minimization is required by DOE Order 5400.1. Control and authority for the Waste Minimization Program at LANL is derived from LANL Director's Policy statement DP105. This policy statement specifies what the program will do, and what organization is responsible for each phase of the program.

The Waste Minimization Program Office (WMPO) provides oversight, policy, guidance and support to the generators in waste minimization, particularly in supporting Process Waste Assessments (PWA) and Site Specific Plans (SSP). The management level Laboratory Waste Minimization Steering Committee also provides data and technical support to other LANL functions.

Process managers are responsible for the implementation of PWAs and SSPs with support from WMPO.

1. The Waste Minimization Plan consists of the following elements:

a. Prioritization: The first step in solving waste generation problems by waste minimization is to prioritize the waste streams at the LANL.

Mixed waste was the first category to be addressed. The 30 mixed waste generating functions at LANL will receive the programs primary attention during the remainder of FY92 and through FY93.

b. Process Waste Assessments: PWAs provide an overall view of the waste generation problems. The PWA program is developing a LANL designed computer based model that analyzes systems based on mass balances. This should be operational by Spring 1993. During FY92, 4 of 6 PWAs are being performed to validate the model for mixed waste generators. For FY93, PWAs will continue to focus on mixed waste and progress will be reported in annual reports.

c. Site Specific Plans: PWAs will result in the writing and development of SSPs that identify problems, technical and administrative solutions and means of implementation for each waste generating process at LANL. The format of this plan will

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contain the basic waste minimization elements of technical and administrative solutions.

d. Defining solutions: Once problems are identified, existing technical and administrative solutions will be identified. For problems with no existing technical solution, research and development requirements will be identified and pursued through LANL R&D functions.

In March 1991, LANL committed to an overall waste minimization goal of 20% reduction by Fiscal Year 1994 (FY94). That goal was identified relative to a FY 1991 baseline.

The Waste Minimization Plan will be submitted to EPA (WM 100). The Annual Report (AR 100) will document the success of the implementation of the plan and the accomplishment of its goals.

2. Specific Activities and Accomplishments (See Attachment B for a complete list.)

a. Reporting: Reports on waste generation rates and trends are distributed to LANL management on a monthly basis. This information will be included in the annual reports that will be furnished to the EPA (AR 100).

b. Recycling: Laboratory and industrial chemicals are currently recycled, on a limited basis, within LANL by distribution of a list of available chemicals to potential end users. LANL is in the process of developing laboratory procedures and contract vehicles for recycling chemicals outside of LANL.

c. Training and Pollution Prevention Awareness: The WMPO provides a Pollution Prevention Awareness Campaign that provides general waste minimization information to LANL staff, and provides training support to the Laboratory Training Office.

d. Evaluation of New Waste Generation Activities: WMPO reviews approximately 10 potential waste generating programs per week, through the LANL ES&H Questionnaire Committee. Also, approximately 15 new SOPs per week are reviewed. All new potentially waste generating projects and major modifications to existing projects are reviewed for waste minimization requirements.

e. To complement the Waste Minimization Plan (WM-100), a separate LDR Waste Minimization Work Plan (WM 200) will be prepared annually. This will identify how waste minimization priorities are developed, and activities implemented to assure that mixed waste streams are promptly identified; have their PWAs completed quickly; have their Site Specific Plan developed; and corrective actions completed or necessary R/D initiated to solve identified problems.

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<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Report Category</u>
WM 100	Provide Waste Minimization Plan covering mixed and hazardous waste.	30 days after effective date of agreement (M)	Report
AR 100	Complete annual report on waste minimization plan for mixed and hazardous waste.	First Report 30 days after effective date of agreement and thereafter, annually, on July 30, beginning in 1994	Report
WM 200	LDR Waste Minimization Work-Plan	First Report 30 days after effective date of agreement, and thereafter, annually, on July 30, beginning in 1994	Deliverable

D. Treatment of Low-Level Mixed Waste

Compliance with the LDR requirements will require treatment of LLMW to EPA-established standards before disposal. Planned treatment includes the use of available off-site treatment capacity, where feasible; initiation of operation of the Controlled-Air Incinerator (CAI); design, construction, and operation of the Hazardous Waste Treatment Facility (HWTF); and design, construction, and operation of skid mounted treatment processes used in the HWTF.

Treatment processes for LLMW are identified in Attachment A, Tables I and II, and are separated into two categories titled "Selected" and "Available Treatment." Selected Treatment means that a waste stream treatment has been selected and is being designed, or a treatment capability exists, such as the CAI and off-site treatment. Available Treatment means that standard treatment approaches are available for the hazardous component, but not enough work has been done to determine if the available treatment can be safely applied to LLMW. Attachment A will be updated annually and will be included in the Annual Report (AR 100).

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The waste categories in the tables are broad and, as stated earlier, additional characterization is needed to support treatment. A plan to further characterize LLMW will be prepared and implemented (HLL 100). The characterization plan will present both the methodology and schedule for characterizing the waste. Because the wastes are both hazardous and radioactive, analytical capacity is limited. The plan will identify available analytical resources and how they will be used to characterize these wastes. The additional characterization may identify components, either hazardous or radioactive, in subsets of the waste categories that may preclude the use of selected treatment processes. New treatment processes will be developed for this waste.

Past efforts to develop treatment priorities have been informally based on storage risk and volume. A formal procedure and plan to set priorities for treatment development and implementation will be prepared (HLL 200). It will be based on the risk associated with storage, volume of the waste stream, and the availability of applicable treatment facilities. Risk will be determined based on the hazards associated with long-term storage and the health and environmental impacts associated with loss of storage control.

As wastes are fully characterized, the prioritization plan will be used to score the waste. Treatment skid development, discussed in II.D.3.b. will address waste with high scores first. The CAI workoff plan (CAI 300) and the HWTF workoff plan (HW600) will be organized based on waste scores generated by prioritization.

<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Report Category</u>
HLL 100	Complete characterization plan for historical LLMW.	30 days after effective date of agreement (M)	Deliverable
HLL 200	Complete a formal plan for prioritizing LLMW treatment.	05/31/94 (M)	Deliverable

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1. Off-Site Treatment of LLMW

Off-site treatment is the treatment of waste at another location, outside the confines of LANL. This includes commercial facilities, as well as other DOE sites. At the present time, treatment of LANL waste at other DOE sites is unavailable due to the limited number of treatment facilities in operation, the incompatibility of LANL waste with the treatment processes, and other regulatory barriers. DOE has surveyed 138 commercial treatment facilities. An opportunity for treating some of LANL LLMW at a commercial facility has been identified. This facility is available to treat liquid mixed waste. The facility does not accept solid or gaseous mixed waste for treatment. Liquid waste with the potential for treatment at this facility includes the following from Appendix A:

Ignitable Liquids
Spent Solvents
Contaminated Chemical Products

DOE will pursue the treatment of this waste at commercial facilities. To support this effort, a review of the requirements and costs for packaging, transportation, and treatment at the identified facility will be performed. The feasibility of using this facility will be documented (OSS 100). A schedule for activities associated with the off-site treatment at this facility will be included as appropriate.

Offsite treatment facilities have waste acceptance criteria that limit both the chemical and radionuclide content of the waste to ensure their permit conditions are not exceeded. The waste acceptance criteria and the competition with other facilities for capacity limits the wastes that can be shipped.

DOE will use off-site treatment facilities where available. To effectively use the capabilities and resources available, DOE will evaluate the availability and/or applicability of off-site treatment of LLMW on an annual basis (AR 100). The evaluation will identify the capabilities of available commercial and DOE facilities and determine the feasibility of treating LANL waste.

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<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Report Category</u>
OSS 100	Complete report on feasibility of treatment of LANL LLMW at identified facility.	30 days after effective date of agreement (M)	Report
OSS 200	Complete an annual action plan for offsite shipment of wastes.	Annually, on July 30, beginning in 1994 (M)	Deliverable
AR 100	Complete annual updates of off-site facilities capable and available for treatment of LLMW.	Annually, on July 30, beginning in 1994 (M)	Report

2. Treatment of LLMW in the Controlled Air Incinerator

The CAI was built in the early 1970s as a research and development project to demonstrate that standard industrial incineration components could be modified and used to safely treat materials contaminated with transuranic nuclides. Between 1976 and 1987, 24 tests, including RCRA and TSCA trial burns, were conducted. Based on the performance of the system, the CAI was granted a TSCA permit in 1986 and a RCRA Part B Permit for treatment of hazardous waste in 1989. A second RCRA trial burn will be performed following the completion of system upgrades, and a Part B permit application will be submitted to the NMED for treatment of mixed waste.

The CAI can treat both solid and liquid waste. Nominally rated at 1.5 million BTU/h, it can handle up to 100 lb/h of solid waste or 200 lb/h of liquid waste. Operations were discontinued in 1987 for an upgrade to improve reliability and allow extended operation of the system.

The CAI was designed to treat solid, combustible waste. The unit is also equipped to treat liquid waste by injecting these materials directly into the primary chamber of the incinerator.

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Waste that may be treated in the CAI includes the following from Appendix A:

Decontamination Debris
Ignitable Liquids

Spent Solvents
Contaminated Chemical
Products

The CAI is designed to treat waste contaminated with transuranic nuclides but can also treat waste contaminated with other radionuclides, including small quantities of volatile radionuclides (that is, carbon 14 and tritium). The quantities of volatile radionuclides will be limited by the CAI's waste acceptance criteria to minimize impacts on the environment. The RCRA Hazardous Waste permit conditions for the CAI system prohibit the treatment of Freon-11, Freon-12 and tribromomethane except in trace amounts. Treatment of noncombustible materials, including contaminated soil, is restricted due to the fixed hearth design of the CAI. Solvent-contaminated vermiculite also cannot be treated in the CAI because the vermiculite acts as an insulator and prevents the ash mass on the hearth floor from reaching temperatures required to complete combustion. Ash generated by the CAI will be immobilized before disposal. A study is in progress to evaluate vitrification as a method for immobilizing the CAI ash. This technology will provide a final waste form that meets the LDR requirements for disposal of LLMW. It also converts the ash to a form that is safe to handle and store while awaiting access to a final disposal site.

The schedule for the initiation of CAI operations is dependent on the completion of a number of activities. They include the hiring and training of operating personnel (CAI 100), completing system upgrades, preparing safety documentation, and the performance of the RCRA trial burn (CAI 200). Treatment of LLMW could be initiated soon after the RCRA trial burn is completed under interim status. Uncertainties delay establishing a definitive schedule for CAI operations. These uncertainties are associated with the possibility of the NMED including additional regulatory requirements, which are currently being prepared, specific to radioactive waste incineration. Therefore, a work-off plan will be prepared at a later date, and will include milestones for treatment of applicable LLMW in the CAI (CAI 300).

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<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Report Category</u>
CAI 100	Complete staffing for Controlled Air Incinerator operations.	30 days after the effective date of agreement (M)	Notice
CAI 200	Complete RCRA trial burn.	02/13/95 (M)	Notice
CAI 300	Submit work-off plan for applicable LLMW.	09/30/95 (M)	Deliverable

3. Treatment of LLMW in the Hazardous Waste Treatment Facility

The Hazardous Waste Treatment Facility (HWTF) is in the preliminary design phase. The HWTF will house treatment processes for LLMW and hazardous waste that are not amenable to off-site treatment or CAI treatment. The HWTF is being designed to be consistent with the fact that DOE will be required to treat many small volume hazardous and LLMW streams in this facility. It will comprise four treatment rooms with utilities and containment. Two rooms will be dedicated to hazardous waste; one of these rooms for treatment of characteristic waste; and the other room for treatment of listed waste. The third and fourth rooms will be used to treat low-level mixed waste; one room for treatment of characteristic LLMW and one room for treatment of listed LLMW.

Small, skid-mounted treatment equipment will be used to process waste in the HWTF. This equipment will allow multiple use of the treatment facility by processing waste in campaigns. Once a campaign has been completed, the skid will be decontaminated and moved into storage. The treatment room will then be available to process a different waste stream using a different treatment skid.

Treatment of waste using skids can precede completion of the HWTF, providing suitable facility space can be found and permitting can be completed.

The total number of processes needed to treat LANL's LLMW cannot be defined. In some cases, one skid may process more than one waste stream. In another case, more than one process may be needed to address differences in waste properties, or contaminate concentrations. The lack of adequate waste characterization needed for process evaluation and design may also require the

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development of additional treatment skids for waste streams within a single waste category.

a. Treatment Skids Under Development

Development of treatment processes, and design of several skids is currently under way. The following discussion summarizes the status of the development effort.

Reactive Metals Skid

This skid is applicable to reactive metals.

Reactive waste, including lithium hydride, sodium metal, and calcium metal, will be reacted with water in an inert atmosphere, and the resulting hydroxide will be neutralized. Depending on the concentration of the neutralized solution, the residual will be either solidified for disposal as low-level waste or discharged to the radioactive wastewater treatment plant. Bench-scale testing is in progress to develop design information. If the testing is successful, design of the pilot unit could start early in 1993 and the skid will be included in the HWTF Part B application.

Plating Waste, Acids, and Bases Skid

This skid is applicable to the following categories of waste:

- Acids
- Bases
- Reactive Liquids
- Contaminated Wastewater
- Analytical Laboratory Waste - (Chromium)
- Contaminated Nonwastewater

This skid is potentially applicable to the following:

- Analytical Laboratory Waste - (Arsenic)
- Analytical Laboratory Waste - (Cadmium)
- Analytical Laboratory Waste - (Selenium)
- Contaminated Photographic Fixer

Plating and pickling waste contains various acids, or cyanide and base, and various metals, and are typically contaminated with low concentrations of depleted uranium (<1 g/L). The Best Demonstrated Available Technology (BDAT) for this waste includes one or more of the following steps; neutralization of acids, oxidation of cyanide and ammonia, reduction and precipitation of chromium, and precipitation of metals. The BDAT techniques require substantial quantities of treatment reagents that will increase the residual volume. An electrodeposition technique is in the process of bench-testing to deposit as much metal as possible before conventional treatment. If successful, the electrolytic approach will be combined with the established

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approach to reduce the final waste volume. This treatment skid will also be available to do neutralization and metals precipitation for other liquid waste. Use of the skid to treat waste listed above as "potentially applicable" will be determined during bench-scale testing. Stabilization processes, including cementation and encapsulation, will be investigated as methods of treating the sludges and residues from the skid before disposal.

DETOX Process skid

This skid is applicable to the following from Appendix A:

- Decontamination debris
- Ignitable liquids
- Spent solvents

This skid is potentially applicable to the following:

- Contaminated chemical products

The DETOX process is a liquid phase, iron-catalyzed oxidation process being developed as a alternative to incineration for some waste and as a treatment process that can handle certain waste that cannot be processed in the CAI. In the latter category, waste includes vermiculite contaminated with organics and solvents containing elevated tritium and carbon-14. Candidate waste includes ignitable liquids, metal contaminated oils, chlorinated solvents, and fluorinated solvents. Reaction times for oxidizing rags and cellulose materials are too long to be practical. The process does not oxidize rubber or plastics.

The DETOX process uses iron (III) in an acid solution as the primary oxidant, and the iron (II) formed in the oxidation process is converted back to iron (III) by a second catalyzed reaction with oxygen. The primary benefit of the DETOX process is the ability to oxidize organic constituents in a contained reactor at about 250° C and 40 psig. Bench-testing of the process is in progress. Results of the bench-scale tests will be used to determine whether the process is a viable alternative to incineration, and is applicable to LANL waste. Further development of the process will be performed in accordance with the program management plan for treatment skid development, as appropriate.

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b. Development of Additional Treatment Skids

Waste for which treatment technologies have not been selected include:

- Oxidizers
- Contaminated Debris
- Contaminated Scrap Metal
- Process Residues
- Decontamination Waste
- Dewatered Treatment Sludges
- Gas Cylinders
- Contaminated Metal
- Contaminated Chemical Products

DOE will pursue the development of additional treatment skids required for compliance with LDR requirements by first characterizing and prioritizing, as described in Section II D, that waste for which a treatment technique has not already been established.

A methodology for the development of treatment technologies and equipment will be established in parallel with the preparation of the characterization and prioritization plans. In general, this effort will include the following activities:

- Waste Characterization
- Identification of Available Technologies (that is, literature search)
- Evaluation of Available Technologies
- Selection of Applicable Technology
- Bench-Scale Testing
- Pre-Conceptual Design
- Environmental Permitting
- Treatment Skid Design (Title I and Title II)
- Document Preparation (safety and operating)
- Nonradioactive Testing
- Radioactive Testing
- Waste Treatment

This methodology will be formalized in a program management plan for generic skid development. It will include the total effort from waste characterization through construction, permitting, and operation (ATS 100). The status and completion schedule/milestones for treatment skids already being developed will be established based on the plan and the plan will be used to develop the schedules for additional skids including milestones for completion and operation.

Following completion of the program management plan, development of two treatment processes will be initiated each fiscal year, while progress on the previously started skids is maintained

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according to the program management schedule. Bench-scale testing will precede skid design to confirm that the treatment is appropriate and to generate design data. While the hazardous components can be treated with available technologies identified in Attachment A, Appendix B the varying quantities of radionuclides and the physical characteristics of individual waste streams may make the application of standard techniques impractical. Every attempt will be made to use existing techniques as expediently as possible. However, safety concerns associated with the radioactive portion of the waste may require different approaches, even between wastes within the same waste category in the matrix. While knowledge of process is available, a more detailed analysis of both the radioactive and chemical contamination of the waste is needed before a safe and effective treatment option is determined. If bench testing of a treatment process proves the approach unworkable, the remaining alternatives will be reevaluated and an alternate method selected. If no alternative is available, treatment of the waste will become the subject for research and development activities. Research and development will be applied where standard treatment approaches cannot safely or effectively be used.

DOE will report on the status of skid development, design, and construction annually with progress measured against the program management plan. (AR 100)

<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Report Category</u>
ATS 100	Complete program management plan for generic development, design, permitting, construction, and operation of LLMW treatment skids.	30 days after effective date of agreement (M)	Deliverable
AR 100	Complete annual report on skid development progress.	First Report 30 days after effective date of agreement and thereafter, annually, on July 30, beginning in 1994 (M)	Report

c. Construction and Operation of HWTF

Compliance with the LDR requirements for LLMW is tied to the availability of the HWTF. The plan for treatment of the

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multitude of small-volume waste streams that LANL generates will require the use of a variety of processes. All LLMW not otherwise treated by the CAI or offsite facilities will be treated in the HWTF or other onsite treatment facilities. Design and construction of the facility will be tracked closely. Because of the uncertainty associated with construction requirements, out-year milestones have been established based on target timelines. These timelines are estimates of activity durations, and are keyed from the preceding milestones. The first step will be completion of the Preliminary Design Summary Report (HW 100). A definitive schedule will be prepared and included in the Title II design of the facility (HW 200). The RCRA mixed waste permit application will be concurrently submitted to the NMED (HW 300). Target timelines will be replaced with definitive timelines, and milestones for remaining activities will be included in HW 400. Construction will commence three months after the effective date of the RCRA permit (HW 500). A work-off plan for LLMW (HW 600) will be prepared to document the strategy and schedule for treatment of this waste and will be submitted after the facilities are better defined. The plan will reflect the priority for processing LLMW established in Prioritization Plan (HLL 200), and status of treatment technologies/skids as documented in the Annual Report (AR 100). Construction will be completed twenty months after start of construction (HW 700). Treatment operations are estimated to begin twelve months after completion of construction (HW 800). A work-off period of four years is based on current knowledge of waste and facilities (HW 900).

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<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Report Category</u>
HW 100	Complete Preliminary Design Summary Report (Title I) for the Hazardous Waste Treatment Facility.	30 days after effective date of agreement (M)	Notice
HW 200	Complete definitive design (Title II).	01/30/95 (M)	Notice
HW 300	Submit RCRA mixed waste permit application to the NMED.	01/30/95 (M)	Notice
HW 400	Complete schedule with definitive timelines for HW 500, HW 600, and HW 700.	04/30/95 (M)	Deliverable
HW 500	Start Construction	Three months after effective date of RCRA MW permit. (TT)	Notice
HW 600	Complete LLMW work-off plan for HWTF	Eleven months after start of construction (TT)	Deliverable
HW 700	Complete construction.	Twenty months after start of construction (TT)	Notice
HW 800	Start treatment operations.	One year after completion of construction (TT)	Notice
HW 900	Complete waste work-off.	Four years after start of operations (TT)	Notice

E. Related LLMW Operations

1. Lead Decontamination Trailer

Most radioactive lead waste is in brick form. These bricks are contaminated primarily on the surface. The BDAT for this waste is macro-encapsulation. However, if the radioactivity can be

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removed, the lead can be reused. A mobile decontamination trailer, purchased by DOE, will be used to remove surface contamination using a high-pressure (approximately 60 psig) jet of an inert abrasive material (for example, alumina or glass powder), water, and air. The slurry will be recycled to minimize the generation of waste. When exhausted, the lead-contaminated slurry will be solidified in the trailer, in keeping with all applicable regulations, and then disposed of as appropriate. An application for NESHAP pre-construction review has been prepared.

<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Report Category</u>
LD 100	Start operation of lead decontamination trailer.	30 days after effective date of agreement (M)	Notice
LD 200	Complete treatment of applicable LLMW.	Within eighteen months of start of operations (M)	Notice

F. Treatment of TRU Mixed Waste

The identified disposal option for TRU mixed waste is the Waste Isolation Pilot Plant (WIPP) located near Carlsbad, New Mexico. The need for treatment and the degree of treatment for TRU mixed waste will be driven by the final Waste Acceptance Criteria (WAC) for the operational phase of WIPP.

EPA has already approved a no-migration petition for the Operations Demonstration Periods, or test phase, at WIPP. During this test phase, waste at WIPP will be stored retrievably. LANL TRU waste is not involved in this test phase. If the test phase results in the successful demonstration of safe disposal, DOE will seek approval for a no-migration petition for operation of WIPP based on the data generated during the test phase. If the no-migration petition is approved, WIPP can begin to accept wastes from DOE sites, including LANL, on a routine basis. Such waste will be exempt from LDR treatment standards, but will be subject to the WIPP WAC.

DOE directives regarding the management of TRU mixed waste require that the facility shipping the waste certify that it meets the WIPP WAC in effect at the time of shipment. The WIPP WAC cannot be finalized until the WIPP test phase has been completed and the no-migration petition for operation of WIPP has been approved by EPA.

Therefore, DOE cannot, at this time, accurately predict what treatment standards will be required for TRU mixed waste, what

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treatment facilities will be needed, or when they will be available. Nevertheless, preliminary planning is taking place for facilities for retrieving stored TRU mixed waste and preparing the waste for shipment; for characterization and segregation of waste for treatment and/or repackaging for shipment to WIPP. In the event the no-migration petition is denied, DOE will seek alternative disposal options.

In the interim LANL will take corrective actions to store the waste in compliance with RCRA regulations. New facilities must be constructed to store TRU waste currently stored on earth covered pads. An additional TRU Waste Facility is planned and will allow opening of waste containers and characterization and segregation of wastes for treatment, or repackaging for shipment to the WIPP. Combustible TRU waste can be treated at the CAI if required by the WIPP WAC. New facilities will have to be constructed to house other treatment process if required by WIPP WAC.

After the WIPP WAC for the operational phase is issued, DOE will prepare a TRU Waste Work-off Plan which will describe the entire process and operations for treatment to the WAC. (TRU 100)

<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Report Category</u>
TRU 100	Complete and submit TRU waste work-off plan.	Within 26 months of issuance of WIPP WAC for operational phase (M)	Deliverable

G. Treatment of Hazardous Waste

The majority of hazardous waste generated at LANL is packaged and shipped off-site for treatment and disposal at commercial facilities. However, a few wastes for which no off-site treatment capabilities have been identified. Volume of this waste is small, approximately two drums of pentachlorophenol and several laboratory chemical bottles (.07 cu. ft.) of mercury salts. DOE will continue the search for off-site treatment of this waste and will include the status of commercial opportunities in the annual update report on off-site capabilities (Milestone AR 100). If efforts to find off-site capacity are not successful, this waste will be included in the prioritization plan and treatment development discussed for LLMW. In the event that off-site commercial facilities are not available, a treatment skid will be built for the mercury wastes allowing treatment in the HWTF and the pentachlorophenol will be scheduled into the CAI. The wastes will be included in the

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workoff plans (CAI 300, HW 900) based on the prioritization plan (HLL200).

H. Gas Cylinders

A Quality Assurance procedure is being developed for gas cylinders listed in Attachment A, Table II, to ensure that cylinders originating from radiation control areas contain no added radioactivity, that is, radioactivity above background. In the interim, these cylinders are managed as mixed waste. When the procedure is finalized, the cylinders will be evaluated and those cylinders found not to contain radioactive waste will be shipped off-site for treatment.

LANL will prepare a workoff plan for these cylinders that defines the approach and schedule that will be followed to treat these wastes.

<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Report Category</u>
GAS 100	Complete a gas cylinder workoff plan.	30 days after effective date of agreement (M)	Deliverable

I. Certification of Compliance

A certified report that will document that all activities in the compliance plan have been completed will be submitted for review.

<u>ID No.</u>	<u>Activity</u>	<u>Date</u>	<u>Category</u>
CNC 100	Certification of compliance.	Within 90 days of completion of activities. (M)	Deliverable

**ATTACHMENT A
FOR
APPENDIX B**

**INVENTORY AND TREATMENT DATA
FOR LLMW, TRU MIXED WASTE AND
HAZARDOUS WASTE**

EXPLANATION OF TABLES

Column 1 (Waste Category) lists a category into which LANL has placed waste streams based upon a common character of the waste.

Column 2 (Waste Code) and Column 3 (Waste Component) are the specific RCRA designations that classify the waste category as a hazardous waste.

Column 4 (Treatment Standards) is the treatment standard designated in 40 CRF 268 for that waste code.

Column 5 (Stored) lists the quantity of waste, in cubic feet, that is presently in storage at LANL.

Column 6 (Rate) lists the estimated rate of generation, in cubic feet per year, at LANL.

Column 7 (Subject to LDR) lists the quantity of waste, in cubic feet, that is currently subject to 40 CFR 268.

Column 8 (Storage Location) lists the specific structure in/on which the wastes are stored. For example, Area G, Pad 2 or in Building 29 at Technical Area 3 (i.e., TA 3-29).

Column 9 (Treatment) This column is divided into two subcolumns. The first (Selected) lists those treatment techniques that have actually been selected to treat the waste, while the second (Available) lists the available treatment operations. If the first is blank, but there is a listing in the second, it means that a treatment is available for the particular waste code, but one has not been selected. In some cases the selection may require evaluation because even though the treatment technology may be appropriate for a RCRA waste code, it may not be for the radioactive component. Footnotes at the end of the table correspond to the numbers designated in these columns.

Column 10 (Treatment Facility) lists, as designated in the footnotes at the end of the table, the LANL/Offsite treatment facilities anticipated to treat these wastes to LDR standards.

APPENDIX B, ATTACHMENT A, TABLE 1 - LOW-LEVEL SOLID MIXED WASTES

Waste Category	Waste Code	Waste Component	Treatment Standards	Stored (ft ³)	Rate (ft ³ /yr)	Subject to LDR (ft ³)	Storage Location	Treatment Selected	Treatment Available	Treatment Facility
1. Oxidizers	D001	nitrates and nitrated compounds	deactivation 3rd thirds	597.57	196.74	0.0	TA-54 Area G Bldg 49		11, 7	2
2. Reactive	D003	lithium, potassium, and sodium	deactivation 3rd thirds	399.07	41.67	0.0	TA-54 Area G Bldg 49	3, 5		2
3. Debris	D004	arsenic	5.0 mg/L 3rd thirds	7.35	2.45	0.0	TA-54 Area G Bldg 49		7	2
4. Debris	D005	barium	100.0 mg/L 3rd thirds	207.47	69.16	0.0	TA-54 Area G Bldg 49	6		2
5. Scrap metal	D006	cadmium	5.0 mg/L 3rd thirds	117.64	34.31	0.0	TA-54 Area G Bldg 49	8, 7		2
6. Process residues	D007	chromium	5.0 mg/L 3rd thirds	14.71	4.90	0.0	TA-54 Area G Bldg 49		10, 6, 7	2
7. Shielding	D008	lead	5.0 mg/L 3rd thirds 5767.15	5,767.15	1,717.20	0.0	TA-54 Area G Bldg 49	8, 7		3, 2
8. Decontamination waste	D009	mercury	0.2 mg/L 3rd thirds	74.87	17.60	0.0	TA-54 Area G Bldg 49		12, 6, 7	2
9. Dewatered treatment sludges	F001 F002 F005	1,1,1-trichloroethane trichloroethylene methylene chloride chlorinated fluorocarbons toluene	0.41 mg/L 0.091 mg/L 0.96 mg/L incineration 0.33 mg/L f-solv/dioxin	9529.54	0.00	4,733.01	TA-54 Area G Bldg 49		7, 9	5
10. Debris	F002	1,1,1-trichloroethane trichloroethylene	0.41 mg/L 0.091 mg/L incineration f-solv/dioxin	771.41	199.64	558.79	TA-54 Area G Bldg 49	4, 2		1, 2

APPENDIX B, ATTACHMENT A, TABLE 1 - LOW-LEVEL SOLID MIXED WASTES

Waste Category	Waste Code	Waste Component	Treatment Standards	Stored (ft ³)	Rate (ft ³ /yr)	Subject to LDR (ft ³)	Storage Location	Treatment Selected	Available	Treatment Facility
11. Debris	F003	acetone methanol xylene	0.59 mg/L 0.75 mg/L 0.15 mg/L incineration f-solv/dioxin	71.54	21.40	32.09	TA-54 Area G Bldg 49	4, 2		1, 2
Key to Codes										
A. Treatment Techniques					B. Treatment Facility					
1. - Amalgamation		6. - Chemical Precipitation		11. - Biodegradation		1. - Controlled Air Incineration				
2. - DETOX (Chemical Oxidation)		7. - Stabilization		12. - Leaching		2. - Hazardous Waste Treatment Facility				
3. - Deactivation		8. - Decontamination		13. - Macroencapsulation		3. - Mobile Trailer				
4. - Incineration		9. - Chemical Oxidation		14. - Thermal Treatment and Slagging		4. - Offsite Capabilities				
5. - Neutralization		10. - Chemical Reduction		15. - Not Determined		5. - Not Determined				

APPENDIX B, ATTACHMENT A, TABLE 2 - LOW-LEVEL LIQUID AND GASEOUS MIXED WASTES

Waste Category	Waste Code	Waste Component	Treatment Standards	Stored (ft ³)	Rate (ft ³ /yr)	Subject to LDR (ft ³)	Storage Location	Treatment		Treatment Facility
								Selected	Available	
1. Gas cylinders	D001	hydrogen	deactivation 3rd thirds	5.40	1.80	0.0	TA-54 Area L		4	1, 4
2. Gas cylinders	D001	ignitable gases	deactivation 3rd thirds	710.70	75.0	0.0	TA-54 Area L		4	1, 4
3. Ignitable liquids	D001	ignitable chemical reagents scintillation vials	deactivation 3rd thirds	2,800.54 2,760.44 40.10	619.72	0.0	TA-54-L TA-55-4	4, 2		1, 2, 4
4. Gas cylinders	D002	corrosive gases	deactivation 3rd thirds	8.82	3.0	0.0	TA-54 Area L		5	2, 4
5. Acids	D002	HNO ₃ , HCL, H ₂ SO ₄ , HF, HP ₃ O ₄ , and acetic acid	deactivation California 3rd thirds	181.08	46.38	106.89	TA-54 Area L	5		2
6. Caustics	D002	hydroxide salts and solutions	deactivation 3rd thirds	41.71	16.52	0.0	TA-54 Area L	5		2
7. Reactive	D003	cyanide and sulfide solutions	deactivation 3rd thirds	72.06	21.74	0.0	TA-54 Area L	9, 5, 6		2
8. Analytical laboratory waste	D004	arsenic	5.0 mg/L 3rd thirds	23.15	4.50	15.13	TA-54 Area L		6, 7	2
9. Analytical laboratory waste	D005	barium	100.0 mg/L California	89.47	28.43	0.0	TA-54 Area L	6		2
10. Analytical laboratory waste	D006	cadmium	1.0 mg/L California 3rd thirds	11.36	1.30	3.30	TA-54 Area L		6, 7	2
11. Analytical laboratory waste	D007	chromium	5.0 mg/L California 3rd thirds	162.16	5.42	102.09	TA-54 Area L	10, 6		2
12. Analytical laboratory waste	D008	lead	5.0 mg/L California 3rd thirds	281.30	81.39	218.75	TA-54 Area L	6		2

APPENDIX B, ATTACHMENT A, TABLE 2 - LOW-LEVEL LIQUID AND GASEOUS MIXED WASTES

Waste Category	Waste Code	Waste Component	Treatment Standards	Stored (ft ³)	Rate (ft ³ /yr)	Subject to LDR (ft ³)	Storage Location	Treatment		Treatment Facility
								Selected	Available	
13. Scrap metal	D009	mercury	0.2 mg/L California 3rd thirds	370.36	78.61	181.25	TA-54 Area L		1	2
14. Analytical laboratory waste	D010	selenium	1.0 mg/L California 3rd thirds	15.92	5.28	15.92	TA-54 Area L		6, 7	2
15. Photographic fixer	D011	silver	5.0 mg/L California 3rd thirds	18.88	5.56	0.0	TA-54 Area L		6, 7	2
16. Spent solvents	F001	1,1,1-trichloroethane trichloroethylene methylene chloride chlorinated fluorocarbons	0.41 mg/L 0.091 mg/L 0.96 mg/L incineration f-solv/dioxin	312.49	94.14	217.03	TA-54 Area L	4, 2		1, 2
17. Spent solvents	F002	1,1,1-trichloroethane trichloroethylene	0.41 mg/L 0.091 mg/L incineration f-solv/dioxin	449.21	130.53	160.20	TA-54 Area L	4, 2		1, 2
18. Spent solvents	F003	acetone methanol xylene	0.59 mg/L 0.75 mg/L 0.15 mg/L incineration f-solv/dioxin	570.59	148.75	272.61	TA-54 Area L	4, 2		1, 2
19. Spent solvents	F005	benzene pyridine toluene	incineration 0.33 mg/L 0.33 mg/L f-solv/dioxin	381.43	110.52	42.66	TA-54 Area L	4, 2		1, 2
20. Chemical products	P-wastes			30.48	10.12	0.0	TA-54 Area L			
	P012	arsenic oxide	5.6 mg/L	0.27					7	2
	P029	copper cyanide	100 mg/L	0.6					9	2
	P095	phosgene	incineration	29.41					4	5
	P098	potassium cyanide	110 mg/L	0.06					9	2
	P106	sodium cyanide	100 mg/L	0.04					9	2
	P113	thallium oxide	stabilization	trace					7	2
	P120	vanadium oxide	stabilization	0.04					7	2

APPENDIX B, ATTACHMENT A, TABLE 2 - LOW-LEVEL LIQUID AND GASEOUS MIXED WASTES

Waste Category	Waste Code	Waste Component	Treatment Standards	Stored (ft ³)	Rate (ft ³ /yr)	Subject to LDR (ft ³)	Storage Location	Treatment		Treatment Facility
								Selected	Available	
21. Chemical products	U-wastes			125.89	23.03	0.0	TA-54 Area L	4		1,4
	U002	acetone	160.0 mg/L	4.63						
	U012	aniline	14.0 mg/L	0.03						
	U044	chloroform	5.6 mg/L	0.02						
	U045	chloromethane	33.0 mg/L	0.02						
	U052	cresol	5.6 mg/L	0.02						
	U057	cyclohexanone	incineration	7.47						
	U075	dichlorodifluoromethane	7.2 mg/L	0.34					4, 2	5
	U077	1,2-dichloroethane	7.2 mg/L	0.46						
	U080	methylene chloride	33.0 mg/L	0.41						
	U112	ethyl acetate	33.0 mg/L	0.07						
	U117	ethyl ether	160.0 mg/L	4.01						
	U121	trichlorofluoromethane	33.0 mg/L	1.87					4, 2	5
	U122	formaldehyde	incineration	0.07						
	U123	formic acid	incineration	1.87						
	U131	hexachloroethane	28.0 mg/L	0.02						
	U133	hydrazine	0.025 mg/L	0.06					4, 9	5
	U144	lead acetate	0.5 mg/L	0.02					4	5
	U151	mercury	amalgamation	0.23					1	5
	U154	methanol	incineration	4.51						
	U160	methyl ethyl ketone peroxide	incineration	0.04						
	U165	naphthalene	3.1 mg/L	trace						
	U188	phenol	6.2 mg/L	0.18						
	U190	phthalic anhydride	28.0 mg/L	0.04						
	U204	selenium dioxide	5.7 mg/L	0.02					6, 7	5
	U210	tetrachloroethylene	5.6 mg/L	0.01						
U211	tetrachloromethane	5.6 mg/L	0.43							
U213	tetrahydrofuran	incineration	0.04							
U216	thallium chloride	stabilization	trace					7	5	
U218	thioacetamide	incineration	11.23							
U219	thiourea	incineration	trace							
U220	toluene	28.0 mg/L	0.15							
U225	bromoform	15.0 mg/L	0.04					4, 2	5	
U226	1,1,1-trichloroethane	5.6 mg/L	57.41							
U227	1,1,2-trichloroethane	5.6 mg/L	0.43							
U228	trichloroethylene	5.6 mg/L	21.89							
U239	xylene	28 mg/L	6.73							
U246	cyanogen bromide	incineration	1.33					4	5	
22. Gas cylinders	P-wastes			37.68	22.0	0.0	TA-54 Area L		4	1, 4
	P031	cyanogen	incineration	0.21						
	P056	fluorine	neutralization	2.01					5	2, 4
	P076	nitric oxide	incineration	19.72						
	P078	nitrogen dioxide	incineration	15.01						
	P095	carbonic dichloride	incineration	0.68						
P096	phosphine	incineration	0.22							

APPENDIX B, ATTACHMENT A, TABLE 2 - LOW-LEVEL LIQUID AND GASEOUS MIXED WASTES

Waste Category	Waste Code	Waste Component	Treatment Standards	Stored (ft ³)	Rate (ft ³ /yr)	Subject to LDR (ft ³)	Storage Location	Treatment		Treatment Facility
								Selected	Available	
23. Gas cylinders	U-wastes			4.27	3.0	0.0	TA-54 Area L		4	1, 4
	U029	bromomethane	15.0 mg/kg	0.20						
	U075	dichlorodifluoromethane	7.2 mg/L	4.05						
	U134	hydrogen fluoride	neutralization	0.02				5	2, 4	
Key to Codes										
A. Treatment Techniques					B. Treatment Facility					
1. - Amalgamation		6. - Chemical Precipitation		11. - Biodegradation		1. - Controlled Air Incineration				
2. - DETOX (Chemical Oxidation)		7. - Stabilization		12. - Leaching		2. - Hazardous Waste Treatment Facility				
3. - Deactivation		8. - Decontamination		13. - Macroencapsulation		3. - Mobile Trailer				
4. - Incineration		9. - Chemical Oxidation		14. - Thermal Treatment and Slagging		4. - Offsite Capabilities				
5. - Neutralization		10. - Chemical Reduction		15. - Not Determined		5. - Not Determined				
Note										
Gas cylinders shown in 2, 4, 22, and 23 are currently considered 'suspect' mixed wastes as an administrative control to determine whether they contain radioactive components. The Department of Energy and the Los Alamos National Laboratory are currently assessing the probability of radioactivity contained in the respective gases. As these cylinders are deemed to be nonradioactive, they will be reclassified and sent to previously identified offsite commercial treatment facilities.										

APPENDIX B, ATTACHMENT A, TABLE 3 - TRANSURANIC SOLID MIXED WASTES

Waste Category	Waste Code	Waste Component	Treatment Standards	Stored (ft ³)	Rate (ft ³ /yr)	Subject to LDR (ft ³)	Storage Location	Treatment Selected	Available	Treatment Facility
1. Scrap metal	D003	sodium	deactivation 3rd thirds	3,886.34 1,313.72 2,572.62	21.57	0.0	TA-54 Area G Pad 2 Pad 4		3, 5, 7	5
2. Debris	D005	barium	100.0 mg/L	531.34 56.01 475.33	0.0	0.0	TA-54 Area G Pad 1 Pad 4	6		5
3. Process residues	D007	chromium	5.0 mg/L 3rd thirds	4,091.45 58.20 1,815.19 2,218.06	2.45	0.0	TA-54 Area G Pad 1 Pad 2 Pad 4		15	5
4. Shielding	D008	lead	5.0 mg/L 3rd thirds	72,412.72 41,196.68 6,110.67 11,232.04 9,373.33 4,500.00	2,146.61	0.0	TA-54 Area G Pad 1 Pad 2 Bldg 48 Pad 4 TA-55-4		13	5
5. Cemented process sludges	D008	lead	5.0 mg/L 3rd thirds	536.73 124.99 411.73	150.00	0.0	 TA-3-29 TA-55-4		15	5
6 Decontamination waste	F001 F002	1,1,1-trichloroethane trichloroethylene methylene chloride chlorinated fluorocarbons	0.41 mg/L 0.091 mg/L 0.06 mg/L incineration f-solv/dioxin	9,758.81 7.06 2,606.21 6,485.86 659.67	1,686.90	2,181.60	TA-54 Area G Pad 1 Pad 2 Bldg 48 Pad 4	4		1

APPENDIX B, ATTACHMENT A, TABLE 3 - TRANSURANIC SOLID MIXED WASTES

Waste Category	Waste Code	Waste Component	Treatment Standards	Stored (ft ³)	Rate (ft ³ /yr)	Subject to LDR (ft ³)	Storage Location	Treatment Selected	Available	Treatment Facility
7 Cemented process sludges	D007	chromium	deactivation	6,493.86	270.38	161.68	TA-54 Area G		15	5
	F001	1,1,1-trichloroethane	0.41 mg/L							
	F002	trichloroethylene	0.091 mg/L	2,679.66			Pad 1 Pad 2 Bldg 48 Pad 4 TA-3-29 TA-55-4			
	F005	methylene chloride	0.06 mg/L	1,069.68						
		toluene	0.33 mg/L	1,086.98						
		incineration	incineration	1,561.96						
			f-solv/dioxin	73.52						
			3rd thirds	22.06						
8 Dewatered treatment sludges	F001	1,1,1-trichloroethane	0.41 mg/L	38,428.18	0.0	0.0	TA-54 Area G		9,7	5
	F002	trichloroethylene	0.091 mg/L							
	F005	methylene chloride	0.06 mg/L	15,597.36			Pad 1 Pad 2 Pad 4			
		toluene	0.33 mg/L	16,827.36						
		incineration	incineration	6,003.47						
		f-solv/dioxin								

Key to Codes

A. Treatment Techniques

- 1. - Amalgamation
- 2. - DETOX (Chemical Oxidation)
- 3. - Deactivation
- 4. - Incineration
- 5. - Neutralization

- 6. - Chemical Precipitation
- 7. - Stabilization
- 8. - Decontamination
- 9. - Chemical Oxidation
- 10. - Chemical Reduction

- 11. - Biodegradation
- 12. - Leaching
- 13. - Macroencapsulation
- 14. - Thermal Treatment and Slagging
- 15. - Not Determined

B. Treatment Facility

- 1. - Controlled Air Incineration
- 2. - Hazardous Waste Treatment Facility
- 3. - Mobile Trailer
- 4. - Offsite Capabilities
- 5. - Not Determined

APPENDIX B, ATTACHMENT A, TABLE 4 - HAZARDOUS WASTES

Waste Category	Waste Code	Waste Component	Treatment Standards	Stored (ft ³)	Rate (ft ³ /yr)	Subject to LDR (ft ³)	Storage Location	Treatment Selected	Treatment Available	Treatment Facility																																				
1. Spent chemical wastes	D009	mercurous acetate mercurous chloride	0.2 mg/L 3rd thirds	0.07	0.0	0.0	TA-54 Area L		6, 7	2, 4																																				
2. Dioxins	F027	pentachlorophenol	0.01 mg/L incineration f-solv/dioxin	8.01	0.0	0.0	TA-54 Area L		4	1, 4																																				
<p>Key to Codes</p> <table border="0"> <tr> <td colspan="3">A. Treatment Techniques</td> <td colspan="3">B. Treatment Facility</td> </tr> <tr> <td>1. - Amalgamation</td> <td>6. - Chemical Precipitation</td> <td>11. - Biodegradation</td> <td>1. - Controlled Air Incineration</td> <td colspan="2"></td> </tr> <tr> <td>2. - DETOX (Chemical Oxidation)</td> <td>7. - Stabilization</td> <td>12. - Leaching</td> <td>2. - Hazardous Waste Treatment Facility</td> <td colspan="2"></td> </tr> <tr> <td>3. - Deactivation</td> <td>8. - Decontamination</td> <td>13. - Macroencapsulation</td> <td>3. - Mobile Trailer</td> <td colspan="2"></td> </tr> <tr> <td>4. - Incineration</td> <td>9. - Chemical Oxidation</td> <td>14. - Thermal Treatment and Slagging</td> <td>4. - Offsite Capabilities</td> <td colspan="2"></td> </tr> <tr> <td>5. - Neutralization</td> <td>10. - Chemical Reduction</td> <td>15. - Not Determined</td> <td>5. - Not Determined</td> <td colspan="2"></td> </tr> </table>											A. Treatment Techniques			B. Treatment Facility			1. - Amalgamation	6. - Chemical Precipitation	11. - Biodegradation	1. - Controlled Air Incineration			2. - DETOX (Chemical Oxidation)	7. - Stabilization	12. - Leaching	2. - Hazardous Waste Treatment Facility			3. - Deactivation	8. - Decontamination	13. - Macroencapsulation	3. - Mobile Trailer			4. - Incineration	9. - Chemical Oxidation	14. - Thermal Treatment and Slagging	4. - Offsite Capabilities			5. - Neutralization	10. - Chemical Reduction	15. - Not Determined	5. - Not Determined		
A. Treatment Techniques			B. Treatment Facility																																											
1. - Amalgamation	6. - Chemical Precipitation	11. - Biodegradation	1. - Controlled Air Incineration																																											
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4. - Incineration	9. - Chemical Oxidation	14. - Thermal Treatment and Slagging	4. - Offsite Capabilities																																											
5. - Neutralization	10. - Chemical Reduction	15. - Not Determined	5. - Not Determined																																											
<p>Note</p> <p>The Los Alamos National Laboratory has been unable to locate commercial treatment capacity for these hazardous wastes.</p>																																														

APPENDIX B - ATTACHMENT B

WASTE MINIMIZATION PROGRAM STATUS

1. PROGRAM MANAGEMENT

STATUS

Waste Minimization Program Office (WMPO) established in the Environmental Management Division (EM-DO) institutionalizing previously informal waste minimization efforts.

Completed

Director's Policy, DP105, which defines and authorizes waste minimization responsibilities signed 27 July 92.

Completed

Program Requirements Document (PRD) which detail how waste minimization will be implemented is being written.

In Development

Performance Indicator Program procedures for measuring waste minimization activities are in place.

Ongoing

Performance Evaluation Procedures-Procedures being put into place for WMPO self-evaluation. Identification of strengths and weaknesses as compared with FY objectives. First to be done at the end of FY92. Corrective action report to result from self-assessment.

In Development

Waste Minimization Pollution Prevention Awareness Program Plan-Annual program plan submitted to DOE outlining program goals and objectives.

Ongoing

Quarterly Report- gives progress on WMPO and generators at LANL, coincides with calendar year PIP reporting. Sent to DOE Albuquerque, and started in CY92.

Ongoing

2. PROCESS WASTE ASSESSMENTS STATUS

Graphical interface and waste tracking algorithms are being tested on current waste stream data.

Ongoing

PWAs and walkthroughs on significant waste streams are ongoing (3 completed, 7 by October 92).

Ongoing

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Cost benefit analysis and best available technologies data bases are being developed.	Ongoing
Outfall mapping and regulatory information are being merged with the PWA software through Infocad.	Ongoing
Improved liquid waste tracking system is being developed for input to PWA program.	Ongoing
3. <u>SITE SPECIFIC PLANS</u>	<u>STATUS</u>
The initial plans are currently being reviewed against each other and WMPO criteria. A comment matrix will be available by October FY93. 20 finished, 50 in process.	Ongoing
4. <u>MISCELLANEOUS TECHNICAL</u>	<u>STATUS</u>
Dry machining of plutonium.	Ongoing
Radioactive Material Management Area Plan has been written and is being tested on a specific Laboratory facility.	Ongoing
Substitution for hazardous scintillation fluid has been implemented. All current scintillation work at LANL uses alternative fluids.	Completed
Electroplating waste minimization is being implemented including elimination of a vapor degreasing unit.	Ongoing
Plutonium waste minimization is being implemented a Plutonium Facility with emphasis on Pu recovery and reuse of acids.	Ongoing
Photographic waste minimization is being implemented throughout LANL through recovery of silver and reuse of rinse water.	Ongoing
A waste minimization working group has been established to address tritium and other accelerator produced isotopes.	In Development
Solvent/Materials Substitution Committee-on solvent/material substitutes. First report to be completed by end FY92 and made available to LANL and DOE.	Ongoing Information Gathering

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<u>5. RECYCLING</u>	<u>STATUS</u>
Recycle of all industrial metals through salvage yard.	Ongoing
Recycle of all precious metals through precious metal banks.	Ongoing
Recycle of 75% of white paper through salvage yard.	Ongoing
Recycle of all lead acid batteries through salvage yard.	Ongoing
Internal recycling of laboratory chemicals resulting in 2500 lbs of solid and 2000 gal. liquid recycled.	Ongoing
External recycling program for recycling chemicals outside of LANL. Has potential for recycling 65% of hazardous waste stream.	In Development
All used motor oil is recycled through GSA.	Ongoing
Other oil recycling program through salvage yard.	Ongoing
<u>6. POLLUTION PREVENTION AWARENESS CAMPAIGN AND TRAINING</u>	<u>STATUS</u>
ES&H Questionnaire- Review of new projects, from very large to maintenance activities, for waste minimization consideration. About 10/wk	Ongoing
SOPs Review of every SOP for waste generating processes. 15-20/wk	Ongoing
Member of the JCI Waste Minimization Committee-Ex-Officio member of the JCI senior management committee.	Ongoing
Waste Minimization Incentive Awards Program. Three categories - Administrative, Small Scale, and Large Scale, and three prizes in each category.	Ongoing
General Employee Training- All new employees receive the GET training prior to receiving a badge. Approximately 300 trained to date.	Ongoing

APPENDIX B - ATTACHMENT B

Waste Management Coordinator Training-Annual formal training on tools for waste minimization and management. Quarterly Informal meetings to begin October FY93, to provide forum for discussion of current issues, concerns, and training.	Ongoing
Managers Training-for DOE 5480.20. Starts in September FY92.	In Development
All employee training- Video to be finalized by the end of FY92. A Waste Minimization Training package will then be sent to all group offices at the beginning of FY93.	In Development
Taught course at UNM-LA Technical Series-Hazardous Waste Minimization and Management.	Completed
Environmentally Conscious Manufacturing Workshop-Chairperson and facilitator at work shop. Article published in ECM Newsletter.	Completed
Participation in the Northern New Mexico Consortium-Develops curricula for the Northern New Mexico Community Colleges.	Completed
Public Bridge the Gap Festival-Exhibit displayed.	Completed
New Mexico Conference on the Environment-Exhibit to be displayed in September FY92.	In Development
Article in the Employee Newsbulletin- monthly- 11 articles to date.	Ongoing
Waste-Management Education and Research Consortium (WERC) -Two lead presenters in a nationwide teleconference.	Completed
Master management memorandum written on solvent substitution and segregation of wastes directed at mixed waste generation.	Completed
7. <u>DATA MANAGEMENT</u>	<u>STATUS</u>
Development of LANL Waste Generation Rate Baseline.	Ongoing
Compilation of FY86-91 Raw Waste Generation Data.	Completed
Publication of FY86-91 Data in Annual Baseline/Goals Reports.	Completed

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Refinement of Baseline Waste Generation Rates.	Ongoing
Identification of External Factors for use in Normalizing Baseline.	Ongoing
Inclusion of Waste Generation Data in LANL Performance Indicator Program.	Ongoing
Routine "Waste Billing" Effort - a Pollution Prevention Awareness Tool, including collection of data, distribution of data, and interaction with generators.	Ongoing
Identification of Additional Data Collection/Data Verification Requirements.	Ongoing
Improvement of EM-7 Liquid Waste Volume Data Collection Methods.	Ongoing
Definition of Waste Management Unit Costs by Waste Type.	Ongoing
Identification of Requirements to Improve Waste Minimization Data Submitted to LANL Performance Indicator Program.	Ongoing
Design Method of Reporting Waste Volumes Generated by DOE PSO.	Completed
Receipt of Third-Party Waste Reduction Technologies/Solutions Database.	Completed
Evaluation of New Waste Reduction Technologies/Solutions Database.	Ongoing

APPENDIX C**LIST OF DELIVERABLES**

<u>I.D.No.</u>	<u>Description of Deliverable</u>	<u>Due Date</u>	<u>Category</u>
ATS 100	Program Management Plan for generic development, design, permitting, construction and operation of LLMW treatment skids.	30 days after effective date of agreement	Milestone
HLL 100	Characterization plan for historical LLMW.	30 days after effective date of agreement	Milestone
HLL 200	Formal plan for prioritizing LLMW treatment.	05/31/94	Milestone
HW 400	Schedule with definitive time frames for construction of the Hazardous Waste Treatment Facility	04/30/95	Milestone
CAI 300	Work-off plan for LLMW to be treated in the Controlled Air Incinerator.	09/30/95	Milestone
HW 600	Work-off plan for LLMW to be treated in the Hazardous Waste Treatment Facility.	11 months after start of construction	Target Timeline
TRU 100	Work-off plan for TRU mixed waste to be shipped to WIPP.	26 months after issuance of WIPP WAC for operational phase	Milestone
CNC 100	Certification of Compliance	Within 90 days of completion of activities	Milestone

APPENDIX C

LIST OF DELIVERABLES - CONTINUED

<u>I.D.No.</u>	<u>Description of Deliverable</u>	<u>Due Date</u>	<u>Category</u>
OSS 200	Complete an annual action plan for off-site shipment of wastes.	Annually on July 30, beginning in 1994	Milestone
WM 200	LDR Waste Minimization Work-Plan	First Report 30 days after effective date of agreement and thereafter, annually, on July 30, beginning in 1994	Milestone
GAS 100	Complete a gas cylinder work-off plan.	30 days after effective date of agreement	Milestone
IFLL 200	Complete a schedule of upgrade activities.	180 days after effective date of agreement (M)	Milestone
STRU 200	Certification of compliance for 40 CFR Part 264 Subpart I compliance for TRU waste.	01/30/95 or date specified in NMED Compliance Order	Milestone