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Department of Energy
Washington, DC 20585

APR 26 1996

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N.W., Suite 700
Washington, D.C. 20004

Dear Mr. Chairman:

Enclosed is the "Low-Level Waste Program Requirements Document" dated April 15, 1996. This document is a deliverable due to you as detailed in Secretary O'Leary's March 31, 1995, Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 94-2. This management system requirements document was developed as part of our systems engineering approach for low-level waste management.

The Requirements Document is a compilation of existing statutory requirements, policy, and standards that are specific to the LLW program. The Requirements Document is a living document; as requirements are changed in source documents, this and other program documents will be updated to reflect the changes.

The Department has completed the action identified under this deliverable commitment, and proposes closure of this commitment.

Sincerely,

for
Stephen P. Cowan
Deputy Assistant Secretary
for Waste Management
Environmental Management

Enclosure

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**DOE COMPLEX-WIDE
LOW-LEVEL WASTE
PROGRAM
REQUIREMENTS**



REVISION 0

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENVIRONMENTAL MANAGEMENT

April 15, 1996

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1.0 INTRODUCTION

This document contains the system requirements for the Department of Energy's (DOE) Complex-Wide Low-Level Waste Program (LLW Program). DOE committed to the Defense Nuclear Facility Safety Board (DNFSB) in the LLW Implementation Plan for the DNFSB Recommendation 94-2 to prepare a LLW management system requirements document. This document meets that commitment. This is a living document - as requirements are changed in source documents, this document will be updated to reflect the changes.

In addition to system requirements, this document contains the LLW Program goals and assumptions. Program goals describe future expectations for the LLW Program and are combined with other stakeholder inputs in a set of criteria for decision making. Program assumptions are conditions or characteristics impacting the LLW Program that have not been proven or demonstrated. Because use of assumptions causes risk to the program plan, they must be tracked until they are proven or demonstrated.

The LLW Program system level requirements are presented in Section 7.0 of this document. LLW Program goals are provided in Appendix A and LLW Program assumptions are included in Appendix B.

2.0 REQUIREMENTS APPLICATION

2.1 BACKGROUND

A requirement is something needed or wanted by a customer. In the systems engineering environment, requirements are characteristics that identify the accomplishment level needed to achieve specific objectives for a given set of conditions. As a part of the systems engineering activities, we must express these needs and wants as the set of characteristics or requirements imposed on our system. Each requirement must be measurable and must be adhered to or accomplished. The requirements set evolves from needs statements or specifications; statutes; implementing organization's policy and standards; and other characteristics that may naturally be expected of the system.

Once agreed to, the system requirements set becomes the basis for all the activities, tasks or action performed on the LLW Program. Performance measures will be established for each requirement. These measures will be used to verify compliance with the given requirement as the LLW Program work progresses to assure the evolving program solution meets the defined needs and wants.

In addition to the LLW Program system requirements set, Field Elements may have additional requirements which they must accomplish or adhere to. These requirements will be identified as a part of the Field Element's system engineering activities and become part of the Field Element's requirements set. The activities, tasks and actions necessary to accomplish the Field Element's requirements set will be incorporated into the Field Element's LLW program plans.

2.2 APPLICABILITY OF REQUIREMENTS TO LLW PROGRAM INTEGRATION

Figure 1, Integrating the DOE Complex-Wide LLW Program, is a simplified context diagram that illustrates the relationship of requirements in this document to the strategy for integrating the LLW Program complex-wide. The need to integrate the LLW Program is established by requirement IP-R-9 (See Section 7.9.1). The diagram illustrates the relationship of requirements to both ongoing waste operations and activities necessary to integrate the LLW Program.

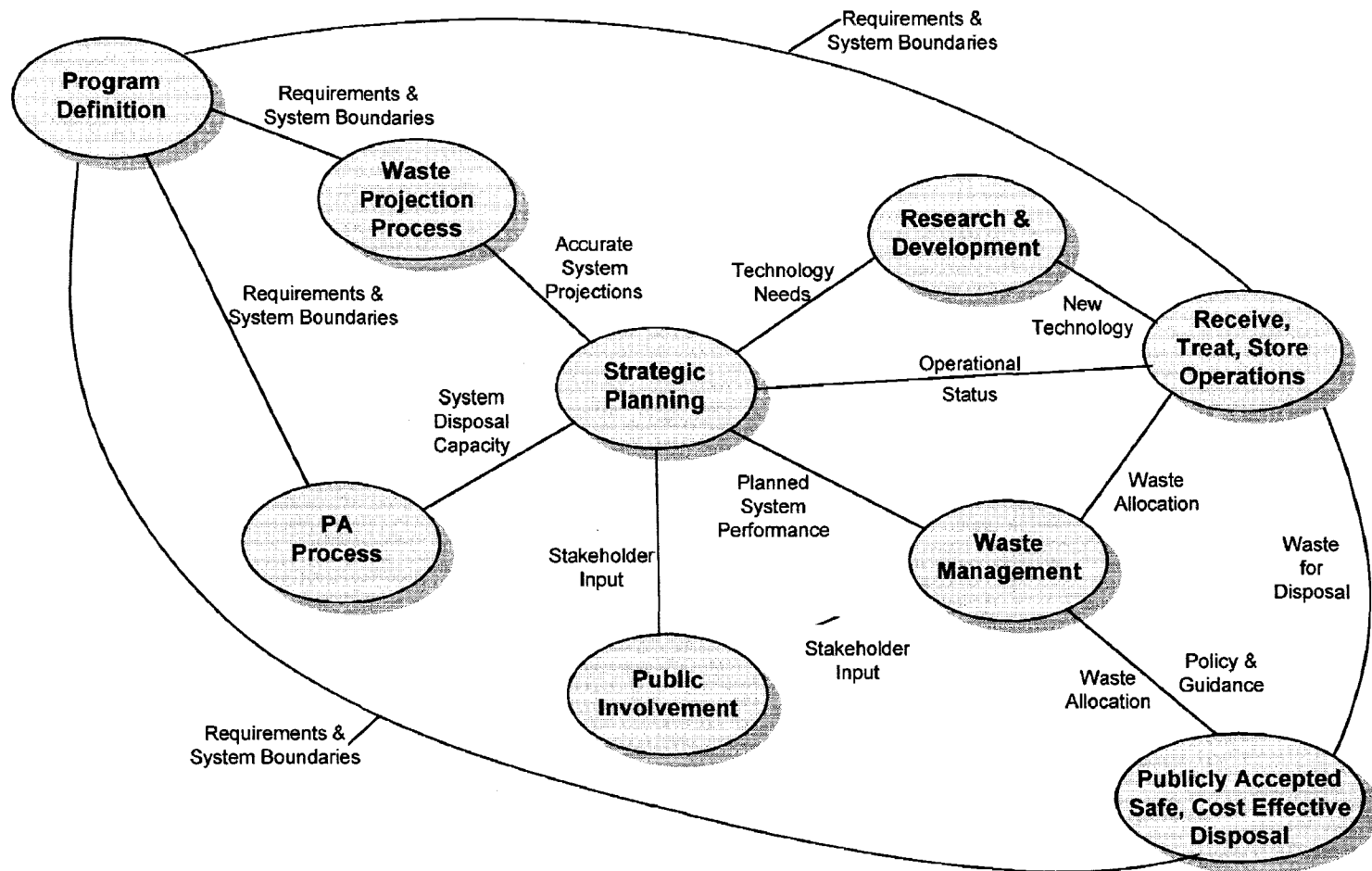
The relationship of requirements directly applicable to ongoing waste operations is shown by the paths in the outer loop of the figure. A primary source document for these requirements at the complex-wide level is DOE Order 5820.2A.

The relationship of requirements to activities needed to integrate management of the LLW Program is shown by the paths and activities included within the outer loop of the figure. In the Program Definition function, requirements are defined for the Waste Projection and Performance Assessment (PA) Processes to ensure that accurate information is available for Strategic Planning. Information provided includes waste projection, disposal capacity, and long term disposal facility performance. Strategic Planning integrates this information with input from stakeholders, operational status information, technology inputs, complex-wide review (not shown), and other pertinent information to develop a model of planned system performance. The model is used to develop recommendations in support of Waste Management decisions that will achieve the end result of publicly accepted, safe, and cost effective disposal of LLW waste. The primary source documents for the requirements governing these activities are DOE Order 5820.2A, the 94-2 Implementation Plan and the Interim DOE Interim Policy on Regulatory Structure.

In addition to the requirements included in this document, the system model used in Strategic Planning will include selected site specific requirements, e.g., those which define limits on a site's treatment, storage and disposal activities. These site specific requirements originate from state and local laws, regulations, agreements, etc.

The requirements included in this document establish a baseline for the LLW Program and are, in general, applicable to all participants in the LLW Program. On a site specific basis, some requirements may not be applicable because the associated activity is not being performed. As changes in system requirements are established (e.g., revision to DOE Order 5820.2A, the 94-2 Implementation Plan, and the Interim Policy on Regulatory Structure), this requirements document and the system model used in Strategic Planning will be updated.

Figure 1: INTEGRATING THE DOE COMPLEX-WIDE LLW PROGRAM



3.0 THE LLW PROGRAM CUSTOMER

A customer, or stakeholder, is generally considered to be individuals or organizations who can have influence over the LLW Program. This broad concept of a customer is being applied to the LLW Program to assure all customer needs and wants are considered. It is essential that we do a thorough job of: defining our customer set, establishing each customer's needs, and translating these needs into requirements on the system or in the case of a given Field Element, on an element of the system. Doing a good job in identifying and incorporating customer requirements will minimize any disruptive events during execution of the LLW Program.

For the LLW Program, there is a varied customer set. It has been determined that not only is the customer set varied, some customers are only interested in local elements of the LLW Program. As an example, a given state governing agency or group of citizens may only be interested in the elements of the LLW Program associated with the activities within the state boundary. The customer set for the DOE Complex-Wide LLW Program has been limited to those customers that are interested in the complex-wide LLW Program. Each Field Element will have to expand their customer set to include customers with local interest.

The customer set for the DOE Complex-Wide LLW Program is:

- United State Congress (representing the Public)
- DNFSB and staff
- The Secretary of Energy
- Assistant Secretary for Environmental Management
- Deputy Assistant Secretary for Environmental Restoration
- Office of Environment, Safety and Health
- Field Element Senior Management
- DOE LLW Generators
- Non-DOE LLW Generators
- National Citizen Special Interest Groups
- DOE LLW Field Element Programs
- Field Element Work Force

As each Field Element completes their specific systems engineering evaluation, they will have to consider the additional customers that may have interest in a specific Field Element's part of the LLW Program. A candidate list of site customers includes:

- Specific DOE LLW Generators
- Specific Non-DOE LLW Generators
- DOE Complex-Wide LLW Program
- Federal Regulatory Agencies
- State Governments (including Regulatory Agencies)
- Local Governing Agencies

- Indian Tribes
- Community Advisory Boards
- Local Special Interest Groups
- Local Citizens

4.0 SOURCES FOR LLW PROGRAM REQUIREMENTS

The sources for the LLW Program system requirements are statutes, orders, policy statements, and plans. Only source documents with requirements specific to the LLW Program are included. Other source documents with requirements that apply to all DOE efforts, regardless of the program, are not included. The specific source documents included are:

- The Nuclear Waste Policy Act of 1982
- Low Level Radioactive Waste Policy Act of 1985
- DOE Order 5820.2A
- Memorandum, September 15, 1992, J E. Lytle and R. P. Whitfield, Memoranda of Understanding between the Office of Waste Management and the Office of Environmental Restoration (MOU)
- Memorandum, May 31, 1995, J. E. Lytle, Inclusion of Pre-88 Source Term and Other Sources of Radioactive Contamination in Low-Level Waste Disposal Facility Performance Assessments
- Memorandum, July 21, 1995, T. P. Grumbly, Interim Policy on Regulatory Structure [Establishes requirements on Performance Assessment review and approval.]
- DOE Implementation Plan for Recommendation 94-2, dated March 31, 1995
- LLW Program Future State Document, December 31, 1993
- Secretary's letter agreeing to DNFSB conditions for accepting DOE's Implementation Plan, dated February 28, 1996

5.0 SOURCES FOR SITE SPECIFIC REQUIREMENTS

In addition to the source documents listed above, Field Elements may have unique requirements placed on a given site from a number of site specific sources. These sources could include the following documents:

- Field Element Policies
- Consent Orders
- Court Settlements
- State Statutes
- Agreements with Local Governments
- Agreements with Indian Tribes
- DOE Order 6430.1A if imposed on the site contractor(s) by contract

Facility and site Standards/Requirements Identification Documents (S/RIDs), developed as part of the Department's response to DNFSB Recommendation 90-2, are good references for site specific source documents and requirements.

6.0 LLW PROGRAM CONFIGURATION CHANGE CONTROL

Documents which establish requirements for a system's functional performance and physical characteristics are collectively referred to as configuration documentation. Successful accomplishment of the LLW Program requires all participants be provided configuration documentation which is correct, consistent and current. Configuration documents must be consistent among themselves and consistent with the physical configuration of the LLW system. Because the LLW Program has a large number of participating organizations and a large volume of information, the task of managing this information is a major challenge. This section describes the processes that will be used to identify and manage configuration documentation at the LLW Program Headquarters level.

6.1 CONFIGURATION DOCUMENTATION

Configuration documents prepared and issued at the LLW Program Headquarters level are documents establishing complex-wide LLW Program plans, goals, objectives, functions and requirements; management policies; and LLW Program interfaces. These configuration documents include:

- Recommendation 94-2 Implementation Plan
- LLW Project Management Plan
- LLW Program Requirements Document
- LLW Future State Document
- LLW System Description Document
- LLW Program Management Plan
- Disposal Authorization Statements
- Policy Memoranda Affecting LLW Program
- Memoranda of Understanding/Agreement
- Reports documenting LLW Projections Summaries
- Reports documenting LLW TSD Capacity Status
- Reports documenting LLW Disposal Distribution

The key processes to manage configuration documents at the LLW Program Headquarters level are document control and baseline change control. Document control provides for control and distribution of configuration documents. Baseline change control provides for evaluation of proposed and directed changes to determine impacts on LLW Program scope (including technical), cost, and schedule baselines. All configuration documents will be placed under document control and those which can impact LLW Program scope, cost and schedule baselines will be placed under baseline change control. The LLW Program Management Plan will

establish the baseline change control process and identify configuration documents that will be placed under baseline change control.

6.2 LLW PROGRAM LEVEL DOCUMENT CONTROL

The Headquarters LLW Program Manager and Field Element Managers are responsible for controlling distribution of LLW configuration documents, including distribution of approved changes. For configuration documents prepared and issued at the Headquarters level for the complex-wide LLW Program, the Headquarters LLW Program Manager will provide controlled distribution to: LLW Management Task Group members, LLW Executive Management Group members, LLW Management Steering Committee members, affected HQ Office Directors, Field Element senior management, and Field Element LLW Program Managers. These recipients are responsible for controlling any further distribution, including Headquarters approved changes.

LLW Program Field Element managers will ensure identification and controlled distribution of documents they prepare and issue which establish Field Element LLW program plans, goals, objectives, functions and requirements; management policies and requirements, Field Element interfaces, facility design bases documents, operations bases documents, and permitting documents. Field Element configuration documents which must be distributed to the Headquarters LLW Program Manager include:

- Field Element LLW Projection Documents
- Field Element LLW TSD Capacity Status Documents
- Field Element LLW Program Management Plans
- Field Element LLW Performance Assessments

6.3 LLW PROGRAM REQUIREMENTS DOCUMENT APPROVAL & CONTROL

This LLW Program Requirements document compiles the system requirements for the LLW Program. It will be approved by the Deputy Assistant Secretary for Waste Management and concurred with by the Deputy Assistant Secretary for Environmental Restoration. Each revision of this document will be noted by the next available consecutive number with the first release designated by the number zero.

7.0 LLW PROGRAM REQUIREMENTS

This section contains system requirements specific to the DOE Complex-Wide LLW Program. These requirements are a collection of the requirements, specific to LLW, documented in the identified source documents. Within a given source document, similar requirements were combined. The requirements are presented by the identified source document.

DOE policy statements, orders, notices, and manuals that apply to all DOE efforts, regardless of the program, are not uniquely identified. These non-LLW specific DOE requirements must be systematically applied across the LLW Program's activities, as applicable.

DOE guidance documents do not specify requirements. Guidance documents generally present the conditions/issues which should be considered when addressing a common activity and good engineering practices to accomplish the common activity. LLW Program participants are highly encouraged to follow available guidance were applicable to promote common approaches across the LLW Program. Where available guidance is not followed, the individual using an alternative approach should demonstrate the alternative approach is equivalent to the guidance.

Sections 7.1 through 7.9 contain the LLW Program system requirements. The alpha-numeric designator preceding each requirement statement is a unique identifier that allows traceability back to the source document. The designators are:

DOE-R-X - where X is a unique number, identifies requirements originating in statutes, policy statements, orders, notices, manuals, and letters containing policy statements.

IP-R-X - where X is a unique number, identifies requirements that originate in the DOE Implementation Plan for Recommendation 94-2 dated March 31, 1995.

FUT-R-X - where X is a unique number, identifies requirements that originate in the DOE LLW Future State Document dated December 12, 1993.

7.1 THE NUCLEAR WASTE POLICY ACT OF 1982

DOE-R-01: The term "low level radioactive waste" means radioactive material that: (A) is not high-level radioactive waste, spent nuclear fuel, transuranic waste, or by-product material as defined in section 11e(2) of the Atomic Energy Act of 1954 (42 U.S.C.2014(e)(2)); and (B) the Nuclear Regulatory Commission (NRC), consistent with existing law, classifies as low-level radioactive waste.

DOE-R-01.1: The Secretary shall have the authority to assume title and custody of LLW and the land on which such waste is disposed of, upon request of the owner of such waste and land and following termination of the license issued by the NRC for such disposal, if the NRC determines that: requirements for site closure, decommissioning, and decontamination are met; transfer without cost to the government; and Federal ownership is needed to protect the public health and safety, and the environment. If the Secretary assumes title and custody, the Secretary shall maintain such waste and land in a manner that will protect the public health and safety, and the environment.

7.2 LOW LEVEL RADIOACTIVE WASTE POLICY AMENDMENTS ACT OF 1985

DOE-R-02: Makes the DOE responsible for the disposal of low-level radioactive waste owned or generated by: the Department of Energy; the United States Navy, as a result of the decommissioning of vessels of the United States Navy; and the Federal Government as a result of any research, development, testing, or production of any atomic weapon. [3(b)(1)(A-C)]

DOE-R-03: Makes the DOE responsible for the disposal of licensed commercial low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the USNRC's upper limit for such waste to be generally acceptable for licensed near-surface land disposal. (Under NRC's LLW classification system, such LLW are called Greater-Than-Class-C or GTCC waste.) [3(b)(1)(D)]

DOE-R-04: Provides that all GTCC waste from activities licensed under the Atomic Energy Act must be disposed of in an NRC licensed facility that the NRC determines is adequate to protect the public health and safety. [3(B)(2)]

7.3 DOE ORDER 5820.2A [Note: The following requirements are applicable to solid LLW.]

DOE-R-10: DOE LLW that contains non-radioactive hazardous waste components (mixed waste) shall conform to the requirements of this order, applicable EH Orders, and shall also be regulated by the appropriate regional authorities under the RCRA. [Chapter III 2d]

DOE-R-11: DOE LLW disposed of after issuance of DOE 5820.2A shall be managed to protect public health and safety in accordance with standards specified in applicable EH Orders and other DOE Orders. [Chapter III 3a(1)]

DOE-R-12: DOE LLW disposed of after issuance of DOE 5820.2A shall be managed to assure that external exposure to waste and concentrations of radioactive material which may be released into surface water, ground water, soil, plants and animals results in an effective dose equivalent that does not exceed 25 mrem/yr to any member of public. [Chapter III 3a(2)]

DOE-R-13: Releases to the atmosphere shall meet the requirements of 40 CFR 61. [Chapter III 3a(2)]

DOE-R-14: DOE LLW disposed of after issuance of DOE 5820.2A shall be managed to assure that the committed effective dose equivalents received by individuals who inadvertently may intrude into the facility after the loss of active institutional control (100 years) will not exceed 100 mrem/yr for continuous exposure or 500 mrem for a single acute exposure. [Chapter III 3a(3)]

DOE-R-15: DOE LLW disposed of after issuance of DOE 5820.2A shall be managed to protect ground water resources, consistent with Federal, State and local requirements. [Chapter III 3a(4)]

DOE-R-16: Field organizations with disposal sites shall prepare and maintain a site specific radiological performance assessment for the disposal of waste for the purpose of demonstrating compliance with the performance objectives stated in paragraph 3a. (Paragraph 3.a, Performance Objectives, are included herein as DOE-R-11 through DOE-R-15.) [Chapter III 3b(1)]

DOE-R-17: Each field office organization shall, for each DOE reservation within its cognizance, prepare and maintain an overall waste management systems performance assessment supporting the combination of waste management practices used in generation reduction, segregation, treatment, packaging, storage, and disposal. [Chapter III 3b(2)]

DOE-R-18: LLW shall be characterized with sufficient accuracy to permit proper segregation, treatment, storage, and disposal. [Chapter III 3d(1)]

DOE-R-19: This characterization shall ensure that, upon generation and after processing, the actual physical and chemical characteristics and major radionuclide content are recorded and known during all stages of the waste management process. [Chapter III 3d(1)]

DOE-R-20: Waste characterization data shall be recorded on a waste manifest, as required by paragraph 3m, and shall include: a) the physical and chemical characteristics of the waste; b) volume of the waste, c) weight of the waste, d) major radionuclides and their concentrations, e) packaging date, package weight, and external volume. [Chapter III 3d(2)]

DOE-R-21: Waste shipped from one field organization to another for treatment, storage, or disposal shall be done in accordance with the requirements established by the operations office having the responsibility for operations of the receiving facility. [Chapter III 3e(1)]

DOE-R-22: Waste acceptance criteria shall be established for each LLW treatment, storage, and disposal facility and submitted to the cognizant field organization. [Chapter III 3e(2)]

DOE-R-22.1: Generators of waste shall implement a low-level waste certification program to provide assurance that the waste acceptance criteria for any low-level waste treatment, storage, or disposal facility used by the generator are met. [Chapter III 3e(3)]

DOE-R-23: Generators and facilities receiving the waste are jointly responsible for assuring compliance with waste acceptance criteria. [Chapter III 3e(3)]

DOE-R-24: Generator LLW certification programs shall be subject to a periodic audit by operators of facilities to which the waste is sent by the generator. [Chapter III 3e(4)]

DOE-R-25: The waste acceptance criteria for storage, treatment, or disposal facilities shall address the following issues: a) allowable quantities/concentrations of waste specific radionuclides to be handled, processed, stored or disposed of; b) criticality safety requirements; c) restrictions regarding LLW classified for security reasons; d) external radiation and internal

heat generation; e) restrictions on the generation of harmful gases, vapors, or liquids in waste; f) chemical and structural stability of waste packages, radiation effects, microbial activity, chemical reactions, and moisture; g) restrictions for chelating and complexing agents having the potential for mobilizing radionuclides; and h) quantity of free liquids. [Chapter III 3e(5)]

DOE-R-26: Waste shall be treated by appropriate methods so that the disposal site can meet the performance objectives stated in Paragraph 3a. (Paragraph 3.a, Performance Objectives, are included herein as DOE-R-11 through DOE-R-15.) [Chapter III 3f(1)]

DOE-R-27: Waste treatment techniques such as incineration, shredding, and compaction to reduce volume and provide more stable waste forms shall be implemented as necessary to meet performance requirements. [Chapter III 3f(2)]

DOE-R-28: Use of waste treatment techniques to increase the life of the disposal facility and improve long-term facility performance, by improved site stability and reduction of infiltrating water, is required to the extent it is cost effective. [Chapter III 3f(2)]

DOE-R-28.1: The development of large scale waste treatment facilities shall be supported by appropriate the National Environmental Policy Act documentation in addition to the following: (a) A document shall be prepared that analyzes waste streams needing treatment, treatment options considered and a rationale for selection of proposed treatment processes; (b) A construction design report including projected waste throughput and treatment methods, construction and operating cost estimates; and (c) A Safety Analysis Report. [Chapter III 3f(3)]

DOE-R-28.2: Operation of waste treatment facilities shall be supported by adequate documentation including the following: (a) Operation and maintenance procedures; (b) Personnel training and qualification procedures; (c) Monitoring and emergency response plans; and (d) Records shall be maintained for each package of low-level waste that enters and leaves the treatment facility. [Chapter III 3f(4)]

DOE-R-30: Generators shall provide an annual forecast in the third quarter of the fiscal year to the field organizations managing the offsite disposal facility to which the waste is to be shipped. [Chapter III 3g(2)]

DOE-R-31: Generators must receive advance approval from the receiving facility and shall certify prior to shipment that waste meets the receiving facility waste acceptance criteria. [Chapter III 3g(3)]

DOE-R-31.1: Low-level waste shall be stored by appropriate methods, to achieve the performance objectives stated in paragraph 3a. [Chapter III 3h(1)]

DOE-R-31.2: Records shall be maintained for all low-level waste that enters and leaves the storage facility, (see paragraph 3m). [Chapter III 3h(2)]

DOE-R-31.3: The development and operation of a waste storage facility shall be supported by the following documentation (two or more of these may be combined for convenience): (a) An analysis which identifies the need for the storage facility; (b) A Construction Design Report, including projected waste planned for storage; construction and operating cost estimates; (c) A Safety Analysis Report and appropriate National Environmental Policy Act documentation; and (d) Operational procedures and plans. [Chapter III 3h(3)]

DOE-R-31.4: Storage of waste to allow for nuclides to decay or storage of wastes until they can be disposed of by approved methods are acceptable. [Chapter III 3h(4)]

DOE-R-32: LLW shall be disposed of by methods appropriate to achieve the performance objectives stated in paragraph 3a, consistent with the disposal site radiological performance assessment in paragraph 3b. (Paragraph 3.a, Performance Objectives, are included herein as DOE-R-11 through DOE-R-15. Paragraph 3.b, Performance Assessment, is included herein as DOE-R-16 and DOE-R-17.) [Chapter III 3i(1)]

DOE-R-33: Engineered modifications (stabilization, packaging, burial depth, barriers) for specific waste types and for specific waste compositions (fission products, induced radioactivity, uranium, thorium, radium) for each disposal site shall be developed through the performance assessment. [Chapter III 3i(2)]

DOE-R-34: An Oversight and Peer Review Panel of DOE, contractor, and other specialists in performance assessment will be selected by DP-12, with participation by EH-1 and operations office representatives. (Note: In the current organization, DP-12 is EM-30.) [Chapter III 3i(3)]

DOE-R-35: Through consultation and review, this panel shall ensure consistency and technical quality around the DOE complex in the development and application of performance assessment models that include site specific geohydrology and waste compositions. [Chapter III 3i(3)]

DOE-R-36: Disposition of waste designated as greater-than-class C, as defined in 10 CFR 61.55, must be handled as special cases. [Chapter III 3i(4)]

DOE-R-37: Disposal systems for such waste must be justified by a specific performance assessment through the NEPA process and with the concurrence of DP-12 for all DP-1 disposal facilities and NE-20 for those disposal facilities under the cognizance of NE-1. (Note: In the current organization, DP and NE responsibilities have devolved to EM.) [Chapter III 3i(4)]

DOE-R-38: Waste must not be packaged for disposal in cardboard or fiberboard boxes, unless such boxes meet DOT requirements and contain stabilized waste with a minimum of void space. [Chapter III 3i(5)(a)]

DOE-R-39: Liquid wastes, or wastes containing free liquid, must be converted into a form that contains as little freestanding and noncorrosive liquid as reasonably achievable, but in no case,

shall the liquid exceed 1 percent of the volume of the waste when the waste is in the disposal container, or 0.5 percent of the volume of the waste processed to a stable form. [Chapter III 3i(5)(b)]

DOE-R-40: Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures or of explosive reaction with water. [Chapter III 3i(5)(c)]

DOE-R-41: Waste must not contain, or be capable of generating, quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste. [Chapter III 3i(5)(d)]

DOE-R-42: Waste in a gaseous form must be packaged at a pressure that does not exceed 1.5 atmospheres at 20 degrees C. [Chapter III 3i(5)(e)]

DOE-R-43: Waste must not be pyrophoric. Pyrophoric materials contained in waste shall be treated, prepared, and packaged to be nonflammable. [Chapter III 3i(5)(f)]

DOE-R-44: Disposal site selection criteria (based on planned waste confinement technology) shall be developed for establishing new LLW disposal sites. [Chapter III 3i(7)(a)]

DOE-R-45: Disposal site selection shall be based on an evaluation of the prospective site in conjunction with planned waste confinement technology, and in accordance with the NEPA process. [Chapter III 3i(7)(b)]

DOE-R-46: The disposal site shall have hydrogeologic characteristics which, in conjunction with the planned waste confinement technology, will protect the groundwater resource. [Chapter III 3i(7)(c)]

DOE-R-47: The potential for natural hazards such as floods, erosion, tornadoes, earthquakes, and volcanoes shall be considered in site selection. [Chapter III 3i(7)(d)]

DOE-R-48: Site selection criteria shall address the impact on current and projected populations, land use resource development plans and nearby facilities, accessibility to transportation routes and utilities, and the location of waste generation. [Chapter III 3i(7)(e)]

DOE-R-49: Design criteria shall be established prior to selection of new disposal facilities, new disposal sites, or both. These criteria shall be based on analyses of physiographic, environmental, and hydrogeologic data to assure that the policy and requirements of this Order can be met. The criteria shall be also based on assessments of projected waste volumes, waste characteristics, and facility and disposal site performance. [Chapter III 3i(8)(a)]

DOE-R-50: Disposal units shall be designed consistent with disposal site hydrology, geology, and waste characteristics and in accordance with the NEPA process. [Chapter III 3i(8)(b)]

DOE-R-51: Field organizations shall develop and implement operating procedures for LLW disposal facilities that protect the environment, health and safety of the public, and facility personnel; ensure the security of the facility; minimize the need for long-term control; and meet the requirements of the closure/post-closure plan. [Chapter III 3i(9)(a)]

DOE-R-52: Permanent identification markers for disposal excavations and monitoring wells shall be emplaced. [Chapter III 3i(9)(b)]

DOE-R-53: Operating procedures shall include training for disposal facility personnel, emergency response plans, and a system of reporting unusual occurrences according to DOE 5000.3. [Chapter III 3i(9)(c)]

DOE-R-54: Waste placement into disposal units should minimize voids between containers. [Chapter III 3i(9)(d)]

DOE-R-55: Operations are to be conducted so that active waste disposal operations will not have an adverse effect on filled disposal units. [Chapter III 3i(9)(e)]

DOE-R-56: Field organizations shall develop site-specific comprehensive closure plans for new and existing operating LLW disposal sites. [Chapter III 3j(1)]

DOE-R-57: The plan shall address closure of disposal sites within a 5-year period after each is filled and shall conform to the requirements of the NEPA process. [Chapter III 3j(1)]

DOE-R-58: Performance objectives (in this case for closure) for existing disposal sites shall be developed on a case-by-case basis as part of the NEPA process. [Chapter III 3j(1)]

DOE-R-59: During closure and post closure, residual radioactivity levels for surface soils shall comply with existing DOE decommissioning guidelines. [Chapter III 3j(2)]

DOE-R-60: Corrective measures shall be applied to new disposal sites or individual disposal units if conditions occur or are forecasted that could jeopardize attainment of the performance objectives of this Order. [Chapter III 3j(3)]

DOE-R-61: Inactive disposal facilities, disposal sites, and disposal units shall be managed in conformance with the RCRA, CERCLA, and SARA or, if mixed waste is involved, may be included in permit applications for operation of contiguous disposal facilities. [Chapter III 3j(4)]

DOE-R-62: Closure plans for new and existing operating LLW disposal facilities shall be reviewed and approved by the appropriate field organization. [Chapter III 3j(5)]

DOE-R-63: Termination of monitoring and maintenance activity at closed facilities or sites shall be based on an analysis of site performance at the end of the institutional control period. [Chapter III 3j(6)]

DOE-R-64: Each operational or non-operational LLW treatment, storage, and disposal facility shall be monitored by an environmental monitoring program that conforms with DOE 5484.1 and, at a minimum meet the requirements of paragraph 3k(2) through (4). [Chapter III 3k(1)]

DOE-R-65: The environmental monitoring program shall be designed to measure: a)operational effluent releases; b)migration of radionuclides; c)disposal unit subsidence; and d)changes in disposal facility and disposal site parameters affecting long-term site performance. [Chapter III 3k(2)]

DOE-R-66: The monitoring program shall be capable of detecting changing trends in the performance sufficiently in advance to allow application of any necessary corrective action prior to exceeding performance objectives. [Chapter III 3k(4)]

DOE-R-67: The monitoring program shall be able to ascertain whether or not effluents from each treatment, storage, or disposal facility or disposal site meet the requirements of applicable EH Orders. [Chapter III 3k(4)]

DOE-R-69: Each field organization shall develop and maintain a record keeping system that records: a) historical record of waste generated, treated, stored, shipped, disposed of, or both, at the facilities under its cognizance. [Chapter III 3m(1)]

DOE-R-70: The data maintained shall include all data necessary to show that the waste was properly classified, treated, stored, shipped, and/or disposed of. [Chapter III 3m(1)]

DOE-R-71: The data maintained in the system shall be based on the data recorded on waste manifests. [Chapter III 3m(1)]

DOE-R-72: Records shall be kept and accompany each waste package from generator through final disposal. [Chapter III 3m(2)]

DOE-R-73: The manifest shall contain data necessary to document the proper classification, and assist in determining proper treatment, storage, and disposal of the waste. [Chapter III 3m(2)]

DOE-R-74: Chapter III 3m(2) Waste manifests will be kept as permanent records. At a minimum, the following data will be included a) waste physical and chemical characteristics; b) quantity of each major radionuclide present; c) weight of the waste; d) volume of the waste; e) other data for compliance with waste acceptance criteria.

**7.4 9/15/92 MEMORANDUM FROM J. E. LYTLE AND R. P. WHITFIELD -
MEMORANDUM OF UNDERSTANDING (MOU) BETWEEN EM AND ER**

DOE-R-85: The Deputy Assistant Secretary for Waste Management is responsible for: Treating, storing, and disposing of the wastes generated by DOE activities in accordance with DOE Orders and applicable Federal, State and local laws and regulations. [III.1.a]

DOE-R-86: The Deputy Assistant Secretary for Waste Management is responsible for: Planning, designing, constructing, budgeting, operating, and maintaining treatments, storage, and disposal facilities for wastes generated by DOE operations, unless otherwise delegated to EM-40. [III.1.b]

DOE-R-87: The Deputy Assistant Secretary for Waste Management is responsible for: Establishing criteria for accepting waste from generators in accordance with DOE Orders and applicable Federal, State and local laws and regulations. [III.1.c]

DOE-R-88: The Deputy Assistant Secretary for Waste Management is responsible for: Coordinating with all waste generators to assure the availability of capacity and capability to accept waste. [III.1.d]

DOE-R-89: The Deputy Assistant Secretary for Waste Management is responsible for: Providing advice, consultation and assistance to EM-40 in the planning, design, construction, regulatory compliance, operation; and maintenance of waste treatment, storage, and disposal facilities managed by EM-40. [III.1.e]

DOE-R-90: The Deputy Assistant Secretary for Waste Management is responsible for: Conducting reviews of EM-40 waste treatment, storage, and disposal facilities as required by DOE Orders (e.g., DOE Order 5820.2A). [III.1.f]

DOE-R-91: The Deputy Assistant Secretary for Environmental Restoration will be responsible for: Providing annual plans and projections of anticipated volumes by waste type which are intended for shipment to EM-30 facilities so that EM-30 may assure availability of needed waste management capacity and capability. [III.2.a]

DOE-R-92: The Deputy Assistant Secretary for Environmental Restoration will be responsible for: Assuring interim management of waste generated as a result of EM-40 environmental restoration activities. [III.2.b]

DOE-R-93: The Deputy Assistant Secretary for Environmental Restoration will be responsible for: Characterizing, packaging, and labeling waste to be transferred to EM-30 in accordance with EM-30 waste acceptance criteria. [III.2.c]

DOE-R-94: The Deputy Assistant Secretary for Environmental Restoration will be responsible for: Transporting waste to the appropriate EM-30 facility. [III.2.d]

DOE-R-95: The Deputy Assistant Secretary for Environmental Restoration will be responsible for: Planning, designing, constructing, budgeting, operating, and maintaining treatment, storage and disposal facilities at EM-40 sites in coordination with EM-30. [III.2.e]

DOE-R-96: The Deputy Assistant Secretary for Environmental Restoration will be responsible for: Including life-cycle costs and other impacts for waste management when assessing remediation and D&D alternatives in coordination with EM-30. [III.2.f]

DOE-R-97: DOE Field Office Environmental Restoration program managers will identify annually to their respective Field Office Waste Management program managers the types and quantities of waste and the associated waste generation schedule to ensure that EM-40 requirements are addressed in the local EM-30 waste management planning. [IV.1]

DOE-R-98: During the feasibility study and the remedy selection process, the waste management impacts of various remediation alternatives under consideration will also be discussed with Waste Management program managers. [IV.2]

DOE-R-99: The Field Office Waste Management program managers will coordinate with the Environmental Restoration program managers in the planning and design of new TSD facilities to assure that all potential requirements are identified and accommodated. [IV.3]

DOE-R-100: The Field Office identified requirements will be coordinated with the cognizant EM-30 and EM-40 Headquarters program managers to validate the needs and ensure incorporation into long-term, complex-wide program plan. [IV.4]

DOE-R-101: A Facility Planning Board chaired by EM-30 will review annually the data provided by Field Offices and make a determination on all facility recommendations. [V.1]

DOE-R-102: The nine-member Planning Board will examine, on a case-by-case basis, facility requirements identified by EM-30 and EM-40 and will determine the need, scope, management, and funding strategy for each recommendation. [V.2]

DOE-R-103: The Planning Board will evaluate the effectiveness of the provisions in this MOU and recommend changes as appropriate. [V.3]

DOE-R-104: Changes to the MOU will require an amendment to the MOU. [V.4]

DOE-R-105: The Planning Board will assist in the development of site-specific agreements consistent with the MOU. [V.5]

DOE-R-106: Site-specific agreements will need approval by the appropriate Field Office, the Planning Board, and appropriate EM-30 and EM-40 Headquarters Program Managers. [V.6]

7.5 5/31/95 MEMORANDUM FROM J. E. LYTLE - PRE-88 SOURCE TERM INCLUSION

DOE-R-75: Operations Offices must include within the scope of performance assessments for active and planned LLW disposal facilities an analysis of other source terms that potentially add to doses calculated for the receptor. Therefore, LLW disposed of prior to September 26, 1988, as well as other sources of radioactive contamination in the ground (e.g., spills, leaks, liquid discharge plumes), are to be included in performance assessments.

7.6 7/21/95 MEMORANDUM FROM T. P. GRUMBLY - INTERIM POLICY ON REGULATORY STRUCTURE

DOE-R-76: PAs shall be reviewed by an oversight and peer review panel (PRP).

DOE-R-76.1: The PRP shall ensure consistency and technical quality around the DOE complex in the development and application of performance assessment models that include site-specific geohydrology and waste composition.

DOE-R-76.2: The PRP shall be selected by the DAS for Waste Management, and shall be composed of DOE, contractor, and other specialists in performance assessments, with participation by representatives from the Office of Environment, Safety and Health and from operations offices.

DOE-R-77: For new LLW disposal facilities, PAs shall be reviewed by the responsible field element and submitted to the DAS for Waste Management before construction begins.

DOE-R-77.1: Documentation from PRP reviews shall accompany the PA, as will other information as needed to assess disposal facility performance (such as the closure plan and safety analysis report for the disposal facility.)

DOE-R-77.2: Waste Management staff will evaluate the PA and PRP reviews, consult with the Office of Environment, Safety and Health, and make a recommendation to the Assistant Secretary for Environmental Management regarding compliance with the performance objectives of DOE 5820.2A. Chapter III.

DOE-R-77.3: If warranted, the Assistant Secretary for Environmental Management authorizes construction of the disposal facility.

DOE-R-77.4: If construction is authorized, the DAS for Waste Management will prepare and approve a disposal authorization statement that sets forth those conditions for design, construction, and operation of the disposal facility that are appropriate to assure compliance with the LLW performance objectives.

DOE-R-78: For existing LLW disposal facilities that continue to accept waste for disposal, PAs shall be reviewed by the responsible field element and submitted to the DAS for Waste Management for initial acceptance.

DOE-R-78.1: Upon PA acceptance for existing disposal facilities, the DAS for Waste Management shall prepare a disposal authorization statement that sets forth those conditions for operation of the disposal facility (including any changes to design and construction of future disposal units or modifications to existing disposal units) that may be appropriate to ensure compliance with the LLW performance objectives.

DOE-R-78.2: If the PA is not accepted for existing disposal facilities, the responsible field office shall, as appropriate, have the PA or support analysis revised and/or take steps (e.g., curtail disposal operations, change waste acceptance criteria and so forth) to ensure that the public and environments are protected and the performance objectives are met.

DOE-R-78.3: Although DOE 5820.2A requires, for purposes of compliance with the performance objectives, that PAs only address LLW disposed after 26 September 1988, the Department is modifying its policies to require that PAs analyze the radiological impacts of LLW disposal facilities considering a complete source term (i.e., LLW disposed in an active disposal facility) both before and after 26 September 1988 as well as significant other sources of radioactivity caused by Department operations and potentially contributing to the dose assessment at the point of compliance for the active disposal facility.

DOE-R-79: Field offices having a disposal facility PA accepted by the DAS for Waste Management shall conduct a PA maintenance program during the operational period of the disposal facility.

DOE-R-79.1: PAs shall be reviewed and revised when changes in waste forms of packaging, radionuclide inventories, facility design, closure concepts, or the understanding of the site or other features may change the conclusions of the existing PA (e.g., concentration limits or waste acceptance criteria derived from the results).

DOE-R-79.2: On an annual basis, or as otherwise required, Field Offices will make a documented determination of the continued adequacy of the PA based on waste receipts, the results of monitoring or test programs, and other relevant factors.

DOE-R-80: Before final closure of the disposal facility, or as otherwise directed, a final version of the PA shall be prepared, reviewed by the responsible field element, and submitted to the DAS for Waste Management for approval, along with a final closure plan for the disposal facility prepared in accordance with paragraph 3.j of Chapter III of DOE 5820.2A.

DOE-R-80.1: Field Offices may institute changes to the specifications in the disposal authorization statements provided that the changes (1) do not alter the conclusions of the PA with

respect to protection of health and safety and the environment, or compromise compliance with Departmental directives, policies, or regulations, (2) do not lead to a significant (e.g., 10%) increase in actual or projected releases to the environment from the disposal facility, or (3) are not otherwise prescribed without authorization.

DOE-R-81: Field Offices shall provide (biennially or as otherwise directed from the date of initial PA acceptance) a summary of waste disposal operations with respect to the conclusions and recommendations of the PA that include: (1) an assessment of the waste receipts (radionuclides, forms) in comparison to those projected for the period in question (or in comparison to authorized limits), (2) a summary of the results of tests or research programs identified in the PA or elsewhere, (3) an assessment of the continued adequacy of the PA, (4) recommendations for changes to design and operation or future research or test work, (5) a summary of changes, if any, to the conditions of operation of the disposal authorization statement, and (6) monitoring results (include or reference if integrated into the Annual Site Environmental Reports consistent with Orders DOE 5400.1 and DOE 5400.5).

DOE-R-81.1: Field Offices shall take steps as part of the Department's contract reform initiative to integrate LLW management requirements into new and renegotiated contracts so that contractors are penalized or rewarded through awards or fees commensurate with the performance of their low-level waste management responsibilities.

7.7 2/28/96 LETTER FROM H. R. O'LEARY TO J. T. CONWAY AGREEING WITH CONDITIONS OF ACCEPTANCE SPECIFIED IN THE 7/15/95 DNFSB LETTER ACCEPTING THE 94-2 IMPLEMENTATION PLAN

DOE-R-107 Our understanding of the first condition of acceptance [DNFSB acceptance of 94-2 IP] is that Department approval of a low-level waste disposal facility performance assessment needs to be based on an assurance of public protection. This means that source terms that result from the overlap of plumes from current and future low-level waste disposal with plumes from other radioactivity to be left at the site (e.g., residues from liquid disposal and past solid waste disposal) will not cause an unacceptable offsite impact. Our intent is to accomplish this goal using a combination of the low-level waste performance assessment process, the Comprehensive Environmental Response, Compensation, and Liability Act process, and other mechanisms. With this understanding, we agree with the conditions of acceptance that you specified.

DOE-R-108 The Department of Energy approval of performance assessments needs to be based on the entire LLW inventory located on a site such that the offsite consequences of the collection of these sources can be established.

DOE-R-109: The plan to perform a preliminary analysis as a precursor to the final performance assessment is acceptable to conserve resources. However this effort should be accomplished as a continuum rather than as separate sequential studies.

DOE-R-110: A quarterly progress report be submitted to the Board.

7.8 REQUIREMENTS ORIGINATING FROM THE DOE 94-2 IMPLEMENTATION PLAN & THE DOE FUTURE STATE DOCUMENT

The DOE 94-2 Implementation Plan (94-2 IP) documents commitments made by the Secretary to the DNFSB. In accordance with the June 7, 1994, memorandum from Undersecretary C. B. Curtis and Revision 2 of the, "Guidelines for the DOE Interface with the DNFSB," commitments established in the 94-2 IP are documented obligations that describe actions to be performed and are considered requirements on the DOE Complex-Wide LLW Program.

As stated in the 94-2 IP, the Department is committed to achieving the future state of the program as projected by the LLW Management Steering Committee. Although the LLW Program Future State document prepared by the LLW Management Steering Committee has not been formally issued, statements in the document that define the future state have been included herein as requirements on the DOE Complex-Wide LLW Program.

The requirements from these source documents have been segregated into eight groupings to facilitate the program staffs understanding of the requirements. The eight groupings are:

- Organization and Management
- Systems Engineering
- Complex Wide Review
- DOE Regulatory Structure and Process
- Performance Assessments
- LLW Projections
- Research and Development
- Operations

Under each of these eight groupings, the requirements have been sorted by the following requirement types:

- Scope - characteristics of workscope, schedule, and cost
- Policy - characteristics originating in organizational policy
- Performance - characteristics, including assigned responsibilities, establishing a level of product output

Each requirement has the unique identifier as noted in Section 7.0 to show traceability back to the source document.

7.8.1 ORGANIZATION AND MANAGEMENT

Scope requirements

IP-R-09: Efforts to achieve the objective of the IP will be accomplished by an integrated LLW Management Program within the Department's Office of Environmental Management. This objective will be accomplished by establishing the technical basis for LLW management, developing and implementing effective policies, requirements, and compliance criteria for managing LLW. The overall objective of the Implementation Plan is to improve the LLW management system so that performance assessments are approved that demonstrate DOE LLW disposal facilities meet DOE Order 5820.2A radiological performance objectives; that the PA's include all appropriate LLW as radioactive source terms in the evaluation, and that LLW is disposed of with a margin of safety in place to protect workers and the public and the environment in addition to conditions imposed based on the PA.

IP-R-55: The Department will provide for a restructuring of management of the LLW program at Headquarters, and elevate the priority of LLW management.

IP-R-60: Upper-level program documentation describing the program requirements, program strategies, and program plan for LLW management will be prepared based on the systems engineering evaluation.

IP-R-66: The task group organization shown in Figure III.1, DOE Organization to Respond to DNFSB 94-2 of the Implementation Plan, will be established within the Office of Environmental Management to address the needed improvements to the LLW management system.

IP-R-69: A Low-Level Waste Management Task Group (LLWMTG) will be formed to address the needed improvements in the Department's management of LLW.

IP-R-71: A Low-Level Waste Executive Management Group will be formed to provide direction to the LLWMTG on major policy issues that are identified as task initiatives in the Implementation Plan, or which are identified later as a result of the complex-wide review or other assessments.

IP-R-74: The Deputy Assistant Secretaries serving on the Executive Management Group will provide program direction when needed to their offices to accomplish task initiatives in the Implementation Plan in accordance with the schedule and direction as determined by the Executive Management Group.

IP-R-75: The offices so directed by the Assistant Secretaries will report as needed to the LLWMTG on progress on the task initiatives until they are completed.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-77: The LLW Steering Committee will continue to provide coordination and integration activities to guide improving the low-level waste management system.

IP-R-79: The Performance Assessment Task Team (PATT) will continue to provide a coordination function for program and technical managers of LLW disposal performance assessment (PA) activities conducted at DOE sites by management and operating contractors.

IP-R-80: The PATT will advise the LLWMTG on policy and guidance required to complete technically defensible and consistent PAs.

IP-R-82: The Peer Review Panel (PRP) will continue to provide reviews to ensure consistency and technical quality of the PAs prior to submittal to DOE Headquarters.

IP-R-83: The PRP will report to the LLWMTG on PA review progress and results of PA reviews.

IP-R-87: A Low-Level Waste Management Research and Development Task Team (RDTT) will be established reporting to the LLWMTG, under the direction of the Research and Development Technical Lead. To be responsive to the DNFSB's R&D recommendations and improve the LLW management program, the RDTT will be organized to guide the LLW R&D program and provide increased priorities for LLW R&D projects.

IP-R-88: The RDTT will identify in its recommended strategies to the LLWMTG, R&D organizations with recognized resources, capabilities, and expertise to meet identified R&D needs.

IP-R-89: The LLWMTG will negotiate with R&D organizations (that have recognized resources, capabilities and expertise) for revised or new projects that fulfill LLW management program R&D requirements.

IP-R-90: The Office of Environment, Safety and Health (EH) will provide technical assistance to development of requirements and guidance for LLW management through its Office of Environmental Policy and Assistance.

IP-R-92: The Office of Oversight in EH will provide independent verification of conformance to established policies and requirements. In particular, it will verify compliance with the safety principles identified in the Department's October 21, 1994 letter to the DNFSB articulating the functions the Department deems necessary for an effective safety management program.

IP-R-94: A Project Management Plan (PjMP) will be prepared and implemented by June 30, 1995 by the LLWMTG to manage the task initiatives and commitments described in this Implementation Plan.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-96: A change control process will be developed and instituted by the LLWMTG to effect changes in this Implementation Plan if schedules for deliverables and/or interim milestones are affected by external forces that cannot be predicted at this time.

IP-R-101: The LLWMTG will establish a regular report format and provide reports semi-annually to the DNFSB on progress on the commitments described in this Implementation Plan. The report will also be furnished to the Low-Level Waste Executive Management Group to ensure that they are kept abreast of developments at the same time as the DNFSB.

IP-R-108: The Office of Technology Development (OTD) will provide prompt progress and results reports of its LLW R&D projects for dissemination within the LLW management program.

IP-R-109: The LLWMTG will interface with the Office of Facility Transition and Management (OFTM) in the same capacity as present, but with an emphasis on volume/inventory projections of LLW.

IP-R-111: The LLWMTG will continue to keep abreast of the standards development affecting the disposal of DOE LLW, and developments in regulations and guidance affecting the commercial disposal of LLW through this interface with the NRC and EPA.

IP-R-118: The Department will complete and document a Program Strategy laying out the programmatic strategies, policy initiatives, and assumptions for achieving the integrated LLW program. Due Date: September 30, 1995

IP-R-120: The Department will complete and document LLW management system requirements and constraints, and prioritize the requirements based on the criteria used in the evaluation for measuring system performance. Due Date: December 31, 1995

IP-R-124: The P_jMP prepared to manage and track progress of the task initiatives in this Implementation Plan will be factored into the program plan where appropriate.

IP-R-127: Periodic reassessments of the LLW management system will be conducted using the systems engineering approach to maintain the process of improvement started by the initial systems engineering evaluation and subsequent program documentation.

IP-R-157: The Department will specifically define the roles and responsibilities of various Headquarters and field elements for implementing, overseeing and approving key low-level waste management requirements. Due Date: May 31, 1995

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-168: The responsibilities for regulatory oversight and enforcement within DOE will be identified; these responsibilities will be independent from the Deputy Assistant Secretary responsible for executing low-level waste program activities. Due Date: May 31, 1995

IP-R-170: Consequences for non-compliance with requirements will be clearly defined, including those conditions that could result in the shut-down of LLW management operations. Due Date: May 31, 1995

IP-R-251: Generally, the RDTT will provide a comprehensive catalog of LLW R&D activities that might apply to *any* LLW waste management function.

FUT-R-06: The envisioned waste management system will also include a comprehensive internal oversight program to ensure consistency with accepted risk management standards and be consistent with the conduct of operations expected of the commercial waste management industry.

FUT-R-10: Establish an integrated management, cost control, and technical process which will control waste management costs and facilitate decision-making to meet LLWMP standards of excellence and facilitate coordination between waste types.

FUT-R-22: Significant local issues will be identified and the LLWMP will work with local governments to ensure that such issues are considered and resolved equitably.

FUT-R-23: The program will work toward reaching acceptable agreements with each State or Indian Tribe hosting a LLW management facility.

FUT-R-5: LLW waste management activities will be accomplished with public participation.

Policy Requirements

IP-R-56: The new LLW management organization will be responsible for integrating the multiple tasks presented in the Implementation Plan into a structured program.

IP-R-66.1: The Deputy Assistant Secretary for Waste Management (OWM) is assigned the overall responsibility for the efforts described in this Implementation Plan.

IP-R-67: The Deputy Assistant Secretary for Waste Management will ensure that the funding is committed and the required priority is placed on the task initiatives described.

IP-R-68: The Deputy Assistant Secretary for Waste Management will continue to report within the line management of the Office of Environmental Management to the Assistant Secretary for Environmental Management.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-70: The LLWMTG will report to the Deputy Assistant Secretary for Waste Management.

IP-R-70.A: The LLWMTG is responsible for ensuring that results of the complex-wide review (see Section V), or from the other initiatives when they are completed, are integrated into the LLW management program effectively to result in the best possible benefit from the Implementation Plan.

IP-R-70.1: The Low-Level Waste Program Manager will serve as the manager of the Task Group, and will report directly to the Deputy Assistant Secretary.

IP-R-70.2: Program managers from the Office of Environmental Management will be assigned to the LLWMTG, and they will report to the Low-Level Waste Program Manager.

IP-R-71.1: The Low Level Waste Executive Management Group is responsible for assuring that all programmatic issues that could have some bearing on task initiatives are considered and resolved, and for assuring that necessary coordination between program offices and programs is identified and carried out.

IP-R-72: The Low-Level Waste Executive Management Group will consist of the following Deputy Assistant Secretaries or their designees;
Principal Deputy Assistant Secretary for Environmental Management
Deputy Assistant Secretary for Compliance and Program Coordination
Deputy Assistant Secretary for Environmental Restoration
Deputy Assistant Secretary for Technology Development
Deputy Assistant Secretary for Facility Transition and Management
Deputy Assistant Secretary for Environment

IP-R-73: The Principal Deputy Assistant Secretary for Environmental Management will serve as the chairperson of the Low-Level Waste Executive Management Group.

IP-R-75.1: The Deputy Assistant Secretary for Compliance and Program Coordination is responsible for the complex-wide review described in Section V, and will continue to report directly to the Assistant Secretary.

IP-R-76: The technical manager of the complex-wide review assigned within the Office of Compliance and Program Coordination will report to the LLWMTG on progress of the complex-wide review.

IP-R-78: The LLW SC will report to the LLWMTG, and will continue to have the same membership and charter.

IP-R-81: The current active members and charter will remain in effect for the PATT.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-84: The current charter for the Peer Review Panel (PRP) will remain in effect for completing reviews of PAs, but changes in procedure will be made to reduce potential conflicts of interest.

IP-R-85: Also, diversification of the PRP membership roster will be considered to add expertise to the current roster of individuals with site-specific PA experience.

IP-R-97: The LLWMTG will assure the quality of technical work and products at the program management level.

IP-R-99: Qualifications of personnel are (or will be) addressed in charters describing the roles and responsibilities of the PATT, PRP, and the RDTT.

IP-R-105: Consequently, Environmental Restoration personnel will be assigned to serve on the LLWMTG to interact with program managers and Operations Office personnel to ensure programs and projects managed by Environmental Restoration for the removal of LLW under CERCLA and/or RCRA are integrated with Waste Management LLW programs.

IP-R-106: Also, Environmental Restoration representation will be increased on the LLW Management Steering Committee to assist in developments that could potentially impact Environmental Restoration projects, and to provide another vehicle through which Environmental Restoration senior management may obtain regular reports on task initiatives and the LLW management program.

IP-R-169: Field elements will be required to commit to implementation of interim and future implementation guidance and technical standards as they are developed, adopted, and approved, as well as existing DOE low-level waste management requirements.

FUT-R-18: The LLWMP will not limit outside reviews to technical issues, but will also extend them to institutional and managerial issues.

FUT-R-21: The LLWMP will apply socioeconomic standards (when evaluating socioeconomic issues) comparable to those applied to environmental and technical issues, including independent review, to socioeconomic effects.

Performance Requirements

IP-R-11: The term LLW, as used in this Implementation Plan, includes the radioactive component of mixed low-level waste.

IP-R-95: The P_jMP will contain: detailed schedules and assignments and responsibilities for tasks; the duties, responsibilities, and qualifications for individuals accomplishing initiatives;

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

reporting requirements for individual tasks; other requirements for effective completion, and; a description of progress tracking on tasks.

IP-R-100: The PMP will include progress tracking of schedules and milestones to ensure that commitments are being met in response to Recommendation 94-2.

IP-R-103: The implementation of proposed changes in the management of LLW described in the documentation prepared under this Implementation Plan may result in operational changes or in facilities being built or modified. Such decisions however will not be made until the completion of any required analysis under NEPA.

IP-R-123: This Implementation Plan serves as the baseline program plan for the LLW management program, and actions in it will be incorporated into the LLW Program Management Plan.

IP-R-125: The Program Management Plan will describe the dissolving of the LLW Management Task Group and how the responsibilities for continual improvement in the LLW program are assumed by other entities.

FUT-R-09: Ensure that the LLW management system is based upon consistent life-cycle risk management approach to minimize waste for current and future generations.

7.8.2 SYSTEMS ENGINEERING

Scope Requirements

IP-R-38: The Department will evaluate as part of a systems engineering evaluation of the LLW management system the safety merits and demerits of privatizing disposal of DOE LLW. This evaluation will be completed by April 1996 so appropriate results may be included in a LLW Program Management Plan.

IP-R-112: A systems engineering approach for low-level waste management will be applied to provide a technical basis with clearly identified interfaces for the management of the Department's LLW program.

IP-R-116: The Department will complete and document a systems engineering evaluation to accomplish the mission of the LLW program by identifying the key technical and programmatic functions of the program, describing the input and output requirements and constraints for these functions, and establishing the criteria for effectively determining system performance. Due Date: June 30, 1995

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-122: The Department will complete and document a Program Management Plan addressing the improvements needed in the LLW management system. Due Date: April 30, 1996

IP-R-128: Assessments of site activities will be conducted for their effectiveness and compliance with LLW management systems requirements, and corrective actions will be identified to continue improving the management of LLW at the sites.

IP-R-159: The Department will initiate its systems engineering analysis and complex-wide review to determine needs and parameters for more comprehensive policies, requirements, and guidance.

Policy Requirements - None

Performance Requirements

IP-R-39: The privatization evaluation will consider the use of a private facility located away from the Department's sites operated for the exclusive disposal of DOE LLW, and the use of a private disposal facility operated at a DOE site by a commercial disposal firm.

IP-R-58: The LLW Program Systems Engineering evaluation will feed the complex-wide review to be conducted on all active, planned, and inactive LLW disposal facilities.

IP-R-113: The system engineering process will be designed and applied to ensure the improvements are well-structured within an integrated program and are prioritized appropriately.

7.8.3 COMPLEX WIDE REVIEW

Scope Requirements

IP-R-12: The Department will conduct a complex-wide review of (1) active and planned LLW disposal facilities and inactive LLW disposal facilities, of other potentially overlapping radioactive source terms, and of LLW treatment and storage facilities by March 1996; and (2) of all remaining inactive LLW disposal facilities by June 1996.

IP-R-16: Corrective Action Plans will be developed at each site to address the vulnerabilities identified by the complex-wide review.

IP-R-61: The system vulnerabilities identified by the complex-wide review will be integrated into the program-level documentation as they are prepared.

IP-R-135: The review will address generation of low-level waste in terms of meeting waste acceptance criteria for receiving facilities,

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-137: The complex wide review initially will include a comprehensive survey of all active and planned LLW treatment, storage and disposal facilities and all past disposal facilities.

IP-R-138: Following the survey, selected sites will receive an independent on-site assessment that will consider results of other recent evaluations and determine the rationale for additional on-site assessments at other facilities.

IP-R-140: Stakeholder participation in this complex-wide review will be promoted and conducted through existing site advisory boards which interface with stakeholders.

IP-R-151: Establish Review Organization and Management for Complex-Wide Reviews by July 31, 1995.

IP-R-152: Conduct Site Evaluation Surveys by August 31, 1995.

IP-R-153: Conduct First Priority On-Site Independent Assessments by March 31, 1996.

IP-R-154: Conduct Second Priority On-Site Independent Assessments by August 31, 1996.

IP-R-155: Assess Implementation of Corrective Actions by Operations Offices by August 31, 1996.

FUT-R-12: The LLWMP will identify DOE complex-wide issues that may affect site-specific plans for LLW management as early as practicable.

Policy Requirements

IP-R-145: First priority for on-site reviews following the survey will be given to: All active LLW treatment, storage and disposal facilities; all disposal facilities under construction or constructed and not yet used; and any inactive disposal facilities which potentially add to doses from active or planned disposal facilities because of their relative proximity, their potential for overlap of groundwater plumes or some yet to be defined technical basis of source term overlap.

Performance Requirements

IP-R-13: The complex-wide review will determine the major vulnerabilities of the LLW management system and identify corrective actions to address safe disposition of all LLW.

IP-R-14: The complex-wide review will be based in part on a systems engineering evaluation which will identify the key technical and programmatic functions of the LLW management program, describe the input and output requirements and constraints for these functions, and establish the criteria for effectively determining system performance.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-59: The complex-wide review will identify vulnerabilities that require immediate attention at specific facilities, and system vulnerabilities requiring the attention of the LLW management program at the Headquarters level to resolve.

IP-R-133: A complex-wide review of low-level radioactive waste treatment, storage and disposal sites will be conducted to identify environmental, safety and health vulnerabilities for which corrective actions will be developed.

IP-R-134: The complex-wide review will include the radioactive component of mixed low-level waste (MLLW).

IP-R-136: The review of individual sites will follow defined evaluation criteria and a process for screening deficiencies and weaknesses to identify vulnerabilities.

IP-R-139: The review will result in prioritized vulnerabilities as bases for corrective action plans and establish a process for closing-out corrective actions and monitoring ongoing performance.

IP-R-141: The approach to the complex-wide review for objectives 1 and 2 will be based on a "Target-Barrier-Hazard" analysis: As a function of the "hazard" at a given site determined by waste form and radionuclide inventory, the review will focus on challenges to "barriers" represented by the waste packaging, the natural and engineered features of the facility, and the site's administrative controls. Objective 1 and 2 are; 1- to identify environmental, safety, and health vulnerabilities associated with the Department's management of low-level radioactive waste and 2-to form the basis for an integrated and planned set of actions by Field Management to correct the identified vulnerabilities.

IP-R-142: The approach to the complex wide review for objectives 3 and 4 will be based on implementation experiences and outcomes in achieving the first two objectives. This approach will address DOE's self-regulation effectiveness; the management process to ensure adherence to DOE Orders and directives, as well as the processes for identifying non-compliant conditions and closing-out related corrective actions. Objective 3 and 4 are: 3-to prompt development of new requirements for managing LLW and 4-to establish a process and methodology for periodic reviews in the future as a means to assure compliance with approved requirements.

IP-R-146: Sites other than LLW facilities, that contribute to the doses from LLW disposal facilities, that may be considered in the complex-wide review are cribs, ponds, distinct release sites of spills and leaks, and contaminated sites being addressed under the Formerly Utilized Sites Remedial Action Program (FUSRAP) and Uranium Mill Tailings Remedial Action (UMTRA).

IP-R-147: Site and disposal facility surveys and evaluations will be completed following specific criteria for waste management, waste disposal facilities, and their related administrative controls.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-148; Criteria for waste disposal facilities will be used to assess waste packaging and form, environmental monitoring, and facility siting, design, construction and performance assessments.

IP-R-149; Criteria for administrative controls will be used to assess procedures, records, training, monitoring and trending.

IP-R-150; Criteria will be applied to the facility under adverse conditions, accidents or postulated events such as those covered in applicable safety analysis reports, as well as to the facility's capability to respond with compensatory measures.

7.8.4 DOE REGULATORY STRUCTURE AND PROCESS

Scope Requirements

IP-R-23: The Department will take immediate steps to clarify existing requirements in DOE Order 5820.2A to achieve compliance with the radiation dose objectives in the Order. These immediate steps will be completed by June 1995.

IP-R-26: The Department will then clarify and improve the PA review and approval process, including standardizing review criteria and making changes to the Peer Review Panel. These improvements will be made by June 1996.

IP-R-28: The Department will identify the need for and issue uniform technical standards for LLW management based on best commercial practices both nationally and internationally in, at a minimum, the technical areas of PAs, waste form and packaging, waste characterization, site closure, and site monitoring by June 1996.

IP-R-30: The Department commits to codifying the essential requirements of LLW management in a low-level waste regulation. The rule will be developed following an evaluation to select requirements from non-DOE LLW management regulations and management systems that are appropriate to incorporate in such a rule for management of DOE LLW.

IP-R-62: While the vulnerability assessment of the complex-wide reviews is going on, new requirements, standards and guidance to address the critical areas affecting safety identified by the DNFSB will be issued.

IP-R-86: Also, a Standard Review Plan (SRP), and other guidance documents, will be prepared to standardize the PRP (performance assessment peer review panel) reviews of PAs.

IP-R-129: Utilizing input from a regular review and assessment of changes in standards, guidance, and practices of the commercial industry and international organizations, and feedback

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

from the site assessments, revisions to LLW management system policy, directives, requirements, guidance, and standards will be made as appropriate.

IP-R-156: The Department will issue near-term policies, requirements, and guidance to effect immediate improvement in the Department's low-level waste management system.

IP-R-162: The Department will undertake, the development of detailed requirements and standards for the management of low-level waste by continuing ongoing efforts to revise Order 5820.2A and issue the revision as Order 5820.2B.

IP-R-165: LLW program will issue an OWM directive on inclusion of pre-1988 waste and consideration of other sources of radioactive contamination. Due Date: May 31, 1995

IP-R-172.1: The Department will issue performance assessment guidance that will provide minimum criteria for an acceptable performance assessment, and guidance on the preparation and approval of low-level waste radiological performance assessments. Due Date: August 31, 1995

IP-R-174: The Department will issue interim Implementation Guidance that defines the applicability of its low-level waste requirements to all waste management operations involving low-level waste including those conducted under RCRA and CERCLA. Due Date: September 30, 1995

IP-R-177: The Department will evaluate alternatives to clarify and strengthen the regulatory oversight and enforcement functions for performance assessments within DOE. Due Date: May 31, 1996

IP-R-180.1: The Department will initiate a process to compare its requirements and standards for low-level waste management with similar non-DOE systems.

IP-R-180.2: Prepare a report comparing DOE and non-DOE requirements and standards for performance assessments and performance assessment maintenance and other waste management technical areas including waste form and packaging, waste characterization, site closure, site monitoring, and waste acceptance criteria. Due Date: September 30, 1995

IP-R-181: Using the results of the complex-wide review, the Department will analyze the reasons for the differences and identify potential changes to DOE requirements and standards.

IP-R-183: The Department will establish Technical Standards Working Groups to develop or adopt technical standards and implementation guidance in the technical areas listed above (waste form and packaging, waste characterization, site closure, site monitoring and waste acceptance criteria) (except for PAs), and any other areas as they are identified in the future.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-187: Following the issuance of the revised Waste Management Order, the Standards Working Groups will develop and issue final implementation guidance documents and technical standards on all of the technical areas in LLW management. Due Date: May 31, 1996

IP-R-189: The Department will complete a critical review of DOE Waste Management Draft Order 5820.2B to identify essential requirements that should be included in a Low-Level Waste Management rule. Due Date: May 31, 1996

IP-R-193: A draft rule will be prepared by the LLW Management Task Group. Drafts rule Due Date: August 31, 1996. Issue final rule Due Date: August 31, 1997

IP-R-214: Guidance will be prepared for including evaluation of the entire source term (in preliminary assessments or PAs) for the active low-level waste disposal facilities. Due Date: July 31, 1995

FUT-R-8: The LLW Program will establish appropriate DOE guidance and procedures for LLW program management of waste acceptance, characterization, categorization, packaging, transportation, treatment, storage, and disposal.

Policy Requirements - None

Performance Requirements

IP-R-24: The immediate steps to be taken to clarify and strengthen the regulatory structure for LLW management will include identifying and clarifying the roles and responsibilities for compliance and oversight at LLW disposal facilities, and by directing that all source terms be included in radiological performance assessments for LLW disposal facilities.

IP-R-98: Improvements to the review procedure for PAs will be implemented in which quality records will be identified and record-keeping procedures explained.

IP-R-161: The systems engineering and standards evaluation activities will be closely coordinated and integrated to ensure that interim improvements address currently understood needs for improvement, while longer term actions address both immediate needs and needs identified by the planned reviews.

IP-R-163: The rulemaking activities necessary to codify resulting requirements will be initiated and finished as described in this plan in parallel with the finalizing of Order 5820.2B.

IP-R-172.2: The Performance Assessment guidance will address: Performance Assessment format and content; Standard Review Plan for Performance Assessments; Critical assumptions for performance assessment preparation; and Performance assessment maintenance program.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

The guidance will specify criteria for determining whether a source term potentially contributes to the dose from the active disposal facility. It will also address the approach and quality control for developing a source term for past disposal facilities.

IP-R-175: Recognizing that RCRA and CERCLA disposal and storage sites are also regulated by EPA and in some cases the states, the guidance that defines the applicability of DOE's LLW requirements to all operations involving LLW will identify the applicable low-level waste requirements for such activities and specify procedures necessary to demonstrate compliance with the requirements of Order 5820.2A.

7.8.5 PERFORMANCE ASSESSMENTS

Scope Requirements

IP-R-6.1 A schedule for completion of current PAs is given in Figure VII.I in the Implementation Plan.

IP-R-6.2 A phased approach is included for assessing the entire source term without delaying PAs already under review. The phased approach for assessing the entire source term implements the dose objectives of 5820.2A on the entire source term.

IP-R-41: The Department will complete PAs for active and planned LLW disposal facilities with PAs already in review (or to be submitted for review by June 1995) by February 1996, in accordance with the schedule included in this Implementation Plan.

IP-R-42: The Department will include pre-1988 LLW and other potentially overlapping radioactive source terms, if any, in revised PAs for these facilities during their first PA maintenance cycle.

IP-R-44: Performance assessments for active and planned LLW disposal facilities that are not already in review by June 1995 will include all sources in their evaluations.

IP-R-45: The schedule for completing these PAs (for active and planned LLW disposal facilities not already in the review process) will be committed to by April 1996.

IP-R-46: The Department will conduct a preliminary assessment of the radiation dose consequences of the composite contribution of all LLW disposal and other sources for active LLW disposal facilities. These assessments and, where necessary, initial corrective action plans, will be prepared by March 1996.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-197: The Department will conduct preliminary assessments using simple models to identify sites with potential problems. Guidance for conducting the analysis within one year will be issued.

IP-R-201: The source term from pre-1988 waste and other sources will be derived using an appropriate combination of existing records (waste disposal records, production histories, monitoring data, etc.), field data from monitoring and sampling, and modeling.

IP-R-202: In collecting data to support the preparation of the preliminary assessments or PAs, information on other hazardous constituents in the waste will also be collected to the extent practical.

IP-R-203.2: As in other aspects of performance assessment, a sensitivity and uncertainty analysis will be done on the source term.

IP-R-204: An action plan will be developed if aggregate impacts, as calculated in the preliminary assessments or PAs exceed applicable performance objectives.

IP-R-206: A cost-benefit analysis will be conducted to support decisions on the mitigating actions (IP-R-205) to be taken.

IP-R-209: Another iteration of the PA will be conducted to validate the efficacy of the mitigating action.

IP-R-213: The PAs will be submitted by the Operations Offices and will undergo review and approval (or preliminary approval) by Headquarters.

IP-R-221: The Operations Offices will submit schedules for updating these PAs (PAs previously submitted for review without entire source term) to include the entire source term. Due Date: April 30, 1996

Policy Requirements

IP-R-194: DOE will proceed with the review and a preliminary approval of those PAs that have been or are about to be submitted to Headquarters.

IP-R-195: These PAs (PA that have been submitted or are about to be submitted) will proceed through the review process as it is currently structured.

IP-R-200: Criteria that will be considered for excluding potential source terms include hydrogeology, proximity, and contaminant travel time.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-220: Some of the PAs will be submitted for review and preliminary approval without including the entire source term.

FUT-R-15: Existing LLW disposal facilities, should have approved performance assessments or equivalent risk assessment to demonstrate their safety. New disposal facilities should have approved performance assessments prior to their operations. Performance assessments should be maintained and updated periodically as required by DOE Policy.

Performance Requirements

IP-R-51: Final decisions regarding remediation actions at past disposal facilities will be made through the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) process although analysis performed to assess alternative actions to correct performance objective problems may influence the decision.

IP-R-52: The revised PAs, to include all source terms, will then include any changes to disposal operations or sources as the corrective action plans are implemented.

IP-R-53: These commitments (PA completion and corrective actions) will be implemented through the newly integrated LLW Management Program by either new actions and programs, or by feeding into existing efforts that are already underway within the Department.

IP-R-199: The guidance for the preliminary assessments for this effort will include technical criteria to determine which other sources should be considered.

IP-R-205: The action plans for facilities that exceed applicable performance objectives will include proposed mitigating actions and associated costs. Potential mitigating actions to be considered include refinement of the analysis, limitations on the receipt of waste disposed in the active or planned facility (including possible termination of disposal operations), and remediation of other sources.

7.8.6 LLW PROJECTIONS

Scope Requirements

IP-R-2.1: Guidance on volume projections will be issued;

IP-R-2.2: A program to routinely evaluate LLW projections will be implemented.

IP-R-17: The Department will conduct an evaluation of current waste generation volume projections, current methodologies used to project LLW volumes, and planned disposal capacity

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

for LLW by October 1995. Following this evaluation, a LLW projection program will be implemented by February 28, 1996.

IP-R-19: The projection program will issue an implementation guidance document that will describe the recommended methodologies for LLW volume projections and their recommended frequencies. The projection program guidance will be completed by March 1996 and will be coordinated with representatives from OWM, OFTM, other DOE program offices, and field offices. Full implementation of the projection program will be achieved by February 1997.

IP-R-221.7: A compilation of current and planned capacity for low-level waste disposal with field planning assumptions will be completed by September 30, 1995, to determine the baseline of the current available capacity for LLW disposal and the long-term capability to dispose of future-generated low-level waste.

IP-R-222: A uniform definition of capacity will be developed, taking into account issues such as waste inventory, future land use, and other potential constraints.

IP-R-224: The information on disposal capacity will be collected through the use of a survey form sent to the Operations Offices in coordination with OWM program managers. Operations Offices will conduct the surveys and report the information to OWM program managers and the LLW Management Task Group. Results of the survey will then be compiled into a survey report. Both disposal capacity and generation rates are dynamic, so the survey will be conducted initially on a biennial basis. This survey will be evaluated periodically to determine its adequacy.

IP-R-231: Review of projection data will occur at Headquarters and will support the development of the projection program.

IP-R-239: The projections program will be implemented at both the field and Headquarters levels.

IP-R-242: DOE will undertake an evaluation of its current LLW minimization efforts. DOE will document the evaluation and strategy for improvements to LLW minimization by March 31, 1996.

Policy Requirements

IP-R-235: The projections of LLW generation resulting from the projections program will be used for the planning, design, and operational activities at the various LLW disposal sites, development of DOE-wide waste projections, BEMR updates, other data collection and baseline information efforts.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-240: Implementation of the projection program will be coordinated with the Office of Field Management (FM), and will include integration of low-level waste projections into life-cycle planning. That is, the volume and characteristics of low-level waste to be generated and the capacity for disposal will become a consideration in the approval of future DOE projects, including decommissioning and environmental restoration projects.

Performance Requirements

IP-R-20: The projection guidance document will contain a system for evaluation of the projected volumes of waste requiring disposal to determine the accuracy and validity of waste volume projections. The guidance will be directed specifically at improving projections of LLW from D&D and remedial action projects, but it will also be coordinated with generators creating LLW routinely.

IP-R-221.3: The purpose of the evaluation of current LLW minimization efforts will be to identify methods and strategies by which DOE can further reduce the amounts of waste requiring disposal.

IP-R-221.9: The survey on disposal capacity will focus on data not currently being collected, such as the availability of waste disposal capacity over time, waste characteristics, permitting restrictions on disposal facilities, as well as various operational constraints. The survey will also take into account and document commercial disposal capacity and its use by DOE generators. The survey will also document Operations Office assumptions regarding the rate of waste generation and disposal.

IP-R-232: The projection program will include current baseline generation and capacity information, and will specify projection techniques to be used to project future low-level waste generation and the required frequency of projections.

IP-R-233: The projections will take into account low-level wastes resulting from treatment of mixed low-level wastes.

IP-R-234: The implementation guidance document for projecting LLW will discuss the importance of waste minimization activities for reducing the amount of waste scheduled for disposal.

IP-R-236: The projection program will have provisions for waste disposal sites to compare past projections to actual receipts, and to critique current projections with the purpose of improving projection techniques and increasing the quality of projections.

IP-R-237: The projection program will also describe the interrelation between volume projecting, disposal capacity planning, and project planning.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-243: The evaluation of current LLW minimization efforts will identify efforts that are successful in reducing the amounts of LLW requiring disposal with the purpose of developing a strategy for extending successful practices to other applications.

7.8.7 RESEARCH AND DEVELOPMENT

Scope Requirements

IP-R-4: A research and development program will be initiated to support LLW management. Specific R&D needs will be identified in these five areas: improving modeling and predictive capabilities of radionuclide migration; enhancing the stability of buried waste forms; enhancing the deterrence of intrusion; inhibiting the migration of radionuclides; and reducing the volume of waste to be disposed. The Department will identify its needs for improvement in these technical areas by November 1995.

IP-R-107: Recommended strategies for meeting LLW R&D requirements, whether through OTD or other organizations, will be coordinated with OTD by the RDTT.

IP-R-253: The R&D needs will be correlated with the cataloged R&D activities to identify (a) those needs already being addressed and (b) those that are not being addressed. A systematic correlation method will be developed for use in this task. Preliminary correlated results for the initial set of R&D needs will be distributed for review in order to validate the method. The efforts to initiate projects to perform R&D on needs not currently being addressed will be reported.

IP-R-284: Correlation of the initial R&D needs identified by the DNFSB with LLW R&D activities is due November 30, 1995.

IP-R-285: Correlation of additional R&D needs identified by the LLWMTG evaluations and improvement process with LLW R&D activities is due May 31, 1996.

IP-R-260: An R&D survey will be conducted to identify those activities where results and expected results are applicable to LLW management improvements. Information and data requirements will be established beforehand in order to expedite the survey. The desired structure and form of the acquired information and data will be defined so that results can be readily compiled and applied to determine which projects meet current or future LLW R&D needs.

IP-R-265: A catalog of the research projects identified throughout the survey will be prepared. The preliminary LLW management R&D Activities Catalog for initial needs identified by the DNFSB will be issued by June 30, 1995. Other LLW management program R&D Activities Catalog will be issued by December 31, 1995

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-269: The LLW R&D needs identified by the DNFSB will be verified as the initial set of needs to be coordinated by the RDTT. Any changes or additions to the list of R&D needs identified by the DNFSB, from recommendations of the PATT for example, will be made and justified by the RDTT. Initial LLW R&D Needs Statement will be issued by September 30, 1995.

IP-R-271: Additional R&D needs will be identified through the LLW management program complex-wide review, the systems engineering evaluation of the program, and needs analyses and assessments conducted within the LLWMTG. These R&D needs will be coordinated by the RDTT with the pertinent identifiers. The RDTT will then process these coordinated LLW R&D needs. Additional Coordinated LLW R&D Needs Statement will be issued by March 31, 1996

IP-R-278: In cases where R&D needs are being addressed, improved reporting procedures to the LLW management program will be instituted for these activities.

IP-R-279: In cases where R&D needs are not being addressed, recommended strategies will be developed for meeting these R&D needs by July 31, 1996.

IP-R-286: Recommended LLW R&D strategies will be developed for the LLWMTG. The strategy is to be based upon an identification of (a) LLW R&D needs that are not being addressed, and (b) demonstrated R&D capabilities and resources, DOE and non-DOE, that can be applied to meet these needs. The development of recommended strategies to meet these needs is a four-step process:

- 1) Identify pertinent R&D resource and approach options
- 2) Develop preliminary strategies for applying these options to meet unaddressed LLW R&D needs
- 3) Coordinate preliminary strategies with appropriate field elements or elements within the LLWMTG, and finalize strategies with the LLWMTG.
- 4) Present recommended strategies to the LLWMTG for action.

IP-R-287: An initial strategy will be developed to address the DNFSB identified R&D needs for the LLW management program based on the evaluations conducted on these initial needs. Recommended strategy for initial DNFSB identified R&D needs is due January 31, 1996.

IP-R-289: The RDTT will provide semi-annual reports, organized by LLW management program facilities, on strategy promotion, commitments, activities and results related to meeting unaddressed R&D needs.

FUT-R-19: The LLWMP will share technical information and data on a timely basis and in an appropriate form. Particular attention will be given to the needs of affected governments for timely and useful information in order to fulfill their oversight responsibilities.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

FUT-R-20: The LLWMP will work with other programs to implement the principle, "provide support to educational programs," by supporting the teaching of science at the secondary, undergraduate, and graduate levels and developing curricula and instructional materials -- both print and electronic -- for primary, secondary, and undergraduate studies.

Policy Requirements

IP-R-36; Results from specific R&D needs studies will be utilized appropriately in efforts to improve the LLW management program, and coordination with ongoing research will be accomplished through the integrated program.

IP-R-64: An effort will be started to redefine the LLW management system research and development needs, which will culminate in a re-focused research program that takes into account the results of the systems engineering approach, the complex-wide review, and the studies to determine improved standards, requirements, and guidance to improve the technical basis for LLW management. Other areas will also possibly be identified in support of improvements to the LLW management program.

Performance Requirements

IP-R-35: The R&D needs assessment will be correlated with the valid research results and ongoing studies to determine additional research needed for improving LLW management technologies in an integrated program by February 1996.

IP-R-248: The first phase of the Research and Development Program will result in a strategy to address needed R&D in the technical areas which were identified in Recommendation 94-2.

IP-R-249: The second phase of the Research and Development Program will address any needed R&D in other areas which may possibly be identified as the other task initiatives described in the Implementation Plan are accomplished.

IP-R-261: Existing technology development database systems will be utilized where available to support the R&D survey.

IP-R-262: The scope of the R&D survey will be comprehensive: Past, present and planned R&D projects; OWM, OTD, other Department, other government, commercial and international supported R&D projects; and Local site initiatives and activities.

IP-R-266: The cataloging of the R&D Survey will be conducted in two phases: The first phase will catalog the activities associated with the five areas of research identified by the DNFSB in 94-2; the second phase will catalog R&D being conducted in other LLW management areas.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

IP-R-273: The coordination effort by RDTT will ensure that the need is (a) correctly formulated and (b) properly focused to resolve a LLW management program deficiency or uncertainty.

IP-R-282: The validated correlation method used in phase one will be applied to phase two R&D needs to correlate them with pertinent R&D activities.

IP-R-283: As with the other R&D task initiatives, the correlation of the LLW R&D activities with identified needs will be conducted in two phases. The first phase will address the initial R&D needs identified by the DNFSB, and the second phase will address additional R&D needs identified by the LLWMTG evaluations and improvement process.

IP-R-288: The initial strategy for addressing the R&D needs identified by the DNFSB will be developed in time to be coordinated and included as appropriate in the LLW Program Management Plan.

7.8.8 OPERATIONS

Scope Requirements

FUT-R-1: Near-term activities to accomplish the mission for the LLW Management Program include development of strategies for waste minimization, pollution prevention, characterization, certification, handling, treatment, packaging, storage, transport, and disposal. The mission of the DOE LLWMP is to develop and implement a national integrated program for LLW management using a combination of Federal and private facilities to meet the needs of waste generators while fully protecting workers, the public, and the environment

FUT-R-3: Long-term waste isolation will be augmented, in part, by active institutional control during the first century after emplacement, but institutional control will not be relied upon beyond 100 years.

FUT-R-4: The scope of the LLWMP includes all DOE LLW and LLW assigned to DOE by law, including special case LLW, classified LLW and commercial Greater-Than-Class-C (GTCC) LLW, whether retrievably stored or newly generated.

FUT-R-7: Establish the ability to dispose of various categories of LLW in approved disposal facilities.

FUT-R-14: DOE will apply performance measures systematically and periodically to determine how LLWMP can remedy inadequacies and further strengthen its efforts.

REQUIREMENTS FROM DOE 94-2 IP & FUTURE STATE DOCUMENT (Continued)

Policy Requirements

FUT-R-2: Long-term waste isolation will be accomplished by disposal or monitored storage of LLW in an engineered facility, including shallow land burial, as specified by its characteristics and EM stakeholder input.

Performance Requirements - None

APPENDIX A: DOE COMPLEX-WIDE LLW PROGRAM GOALS

Program goals describe future expectations for the LLW Program and are combined with other stakeholder inputs in a set of criteria for decision making. These goals were taken from DOE Order 5820.2A, the DOE Implementation Plan in response to DNFSB Recommendation 94-2 and the LLW Program Future State Document. In stating the goals, these source documents use different terminology (e.g., "Program", "LLWMP", "LLW management program", "LLW management", and LLW management system) which should be considered synonymous with, "DOE Complex-Wide LLW Program."

The goals have been segregated into eight groupings to facilitate understanding. The eight groupings, which were also used earlier in Section 7.8 of the requirements document, are shown below. Under each of these eight groupings, the requirements may be further sorted into topical subgroups.

- Organization and Management
- Systems Engineering
- Complex Wide Review
- DOE Regulatory Structure and Process
- Performance Assessments
- LLW Projections
- Research and Development
- Operations

The WM Mission Statement establishes a goal for the Complex-Wide LLW Program that is applicable to all groupings:

FUT-G-1: The mission of WM is to provide cost effective, technically sound, and safe treatment, storage, and disposal of wastes resulting from operating both DOE nuclear operations and environmental restoration programs and to encourage and assist pollution prevention and waste minimization.

ORGANIZATION AND MANAGEMENT

The goals grouped under this heading are applicable to all activities conducted as part of the Complex-Wide LLW Program.

LLW Program Management

FUT-G-2: The mission of the DOE LLWMP is to develop and implement a nationally integrated program for low-level waste management using a combination of Federal and private facilities to meet the needs of waste generators while fully protecting workers, the public, and the environment.

IP-G-6: The vision of the future DOE LLW management program is of a nationally integrated, cost-effective program, based on acceptable risk and sound planning which results in public confidence and support. This management and operations system will isolate and dispose all legacy and D&D waste while also managing and disposing of newly generated wastes at the same rate it is being generated.

DOE-G-4: DOE LLW shall be managed on a systematic basis using the most appropriate combination of waste generation reduction, segregation, treatment, and disposal practices so that the radioactive components are contained and the overall system cost effectiveness is maximized. [5820.2A: Chapter III 2b]

DOE-G-5: DOE LLW shall be disposed of on the site at which it is generated, if practical, or if on-site disposal capability is not available, at another DOE disposal facility. [5820.2A: Chapter III 2c]

IP-G-23: The Department is committed to improving the low-level waste management system consistent with its acceptance of Recommendation 94-2.

IP-G-24: The Department is committed to achieving the future state of the program projected by the Low-Level Waste Management Steering Committee.

FUT-G-6.3: A consistent waste categorization system and methodology will be developed and implemented with consideration of performance objectives to ensure each waste category is managed in accordance with its potential hazards and in a cost-effective manner. (Also under Operations)

FUT-G-6.11: A modular data/information management system will be established to meet operational and planning needs.

FUT-G-7: Work should be completed as scheduled to establish confidence in the schedule for LLW management activities so that the management of LLW does not become an obstacle to DOE's mission.

FUT-G-8: Program Management should ensure that the LLW system has the necessary flexibility to adapt to future requirements while continuing to meet established commitments.

IP-G-10: (Short-Term Goals) Establish adequate storage capacity for special-case waste.

FUT-G-10.6: Establish and maintain standards of excellence.

FUT-G-10.9: Assign equal importance to institutional and technical activities.

FUT-G-12.4: Evaluate socioeconomic issues in cooperation with affected governments

FUT-G-10.11: Provide LLW Program alternatives and contingency plans.

Interfaces

FUT-G-12.2: Share information and data.

IP-G-5: Interfaces with other programs will be used more effectively than in the past to ensure the results of task initiatives in response to Recommendation 94-2 are integrated into the affected DOE program.

IP-G-12: (Short-Term Goals) The Program should implement the LLW system consistent with PEIS and FFCAAct equity decisions.

FUT-G-13: The LLWMP will maintain effective and appropriate channels of communication with the Operation Offices and site contractors to minimize inconsistencies between sites.

FUT-G-5.7: Decisions involving a single site will be delegated to the site operations and management staff to facilitate timely action.

Assessment

FUT-G-10.13: Program elements should assess their own performance rigorously. (Also under Operations)

FUT-G-5.6: An effective oversight (review, audit, etc.) process will be established that is limited to critical key reviewers.

Public Involvement

FUT-G-5.2: A pro-active public outreach program will be in place at each site and at Headquarters (HQ) to inform the public and to ensure that their concerns are being considered in DOE's decision-making process so the public can have confidence in DOE's waste management program.

SYSTEMS ENGINEERING - No goals identified.

COMPLEX WIDE REVIEW - No goals identified.

DOE REGULATORY STRUCTURE AND PROCESS

FUT-G-5.3: A consistent regulatory compliance framework will be in place for all LLW categories. The applicable LLW management requirements will be based on a consistent risk management approach. Waivers and exemptions to maintain operating status will be evaluated on a case-by-case basis.

FUT-G-6.6: DOE will work cooperatively with the Environmental Protection Agency (EPA), the Nuclear Regulatory Commission (NRC) and other appropriate agencies to establish a national Below Regulatory Concern (BRC) radioactive waste criteria.

FUT-G-10.4: The LLW Program should support the end to DOE self-regulating radioactive waste management-Work by working cooperatively with Congress and other agencies to establish and implement external regulation of the DOE LLW Program.

PERFORMANCE ASSESSMENTS

IP-G-7: (Short-Term Goals) DOE Headquarters should make approval decisions on all existing LLW disposal facility PAs.

IP-G-41: Source terms may be excluded from consideration if the exclusion is technically justified.

LLW PROJECTIONS - No goals identified.

RESEARCH AND DEVELOPMENT

FUT-G-6.5: Treatment technology and facilities will be developed and implemented to achieve predisposal objectives for the waste, and with respect to disposal, to reduce waste volume to the extent practicable and to produce an acceptable final waste form.

FUT-G-6.12: Technology to enhance the safety of LLW management will continuously be sought. Technologies in characterization, packaging, treatment, storage, performance assessment, disposal, and management will be developed.

IP-G-11: (Short-Term Goals) Program elements should identify their LLW management technology needs.

FUT-G-6.4: Package technology will be developed to fully support TSD activities.

OPERATIONS

General

DOE-G-1: Radioactive and mixed wastes shall be managed in a manner that assures protection of the health and safety of the public, DOE, and contractor employees, and the environment.: [5820.2A: 5.]

DOE-G-2: The generation, treatment, storage, transportation, and/or disposal of radioactive wastes, and the other pollutants or hazardous substances they contain, shall be accomplished in a manner that minimizes the generation of such wastes across program office functions and complies with all applicable Federal, State, and local environmental, safety, and health laws and regulations and DOE requirements.[5820.2A: 5.]

DOE-G-3: DOE LLW operations shall be managed to protect the health and safety of the public, preserve the environment of the waste management facilities, and ensure that no legacy requiring remedial action remains after operations have been terminated. [5820.2A: Chapter III 2a]

FUT-G-6.3: A consistent waste categorization system and methodology will be developed and implemented with consideration of performance objectives to ensure each waste category is managed in accordance with its potential hazards and in a cost-effective manner. (Also under Organization and Management)

IP-G-15: (Short-Term Goals) The Program should Implement consistent WAC and certification methodology.

Storage

FUT-G-6.7: Storage of waste, after the legacy wastes are disposed of, will only be for accumulating a batch treatment volume or for efficiency in shipping. Long-term interim storage will be minimized and limited to retrievable storage, such as GTCC LLW or special case LLW.

Disposal

FUT-G-6.9: Disposal and long-term isolation of all categories of LLW will be achieved with the use of proven processing/treatment technologies and disposal facilities. Disposal sites will be in operation and have the necessary data and records to allow for permanent closure upon receipt of their specified maximum capacity based on a site-specific performance assessment.

Facilities

FUT-G-5.4: LLW management facilities will be sized and configured to provide adequate disposal capacity for DOE LLW in compliance with DOE's agreements with other governmental agencies.

FUT-G-5.5: LLW management facilities will be integrated with the other waste-type management facilities to the extent practical and desirable to make the entire DOE waste management system more efficient and cost-effective.

FUT-G-11.3: The Program should use simple and proven designs and technologies whenever possible.

QA/QC

FUT-G-6.10: An integrated Quality Assurance/Quality Control (QA/QC) Program will be in place for all waste management functions, including generation, pollution prevention, waste minimization, characterization, packaging, transportation, treatment, storage, and disposal.

Training

FUT-G-6.13: Site waste management programs will work cooperatively with DOE-HQ to develop training and re-training programs to ensure the need for qualified personnel in LLW management is met. Human resource planning will also minimize socioeconomic impacts on each site.

Assessment

FUT-G-10.13: Program elements should assess their own performance rigorously. (Also under Organization and Management)

Safety

FUT-G-11.1: The Program should apply the concept of safety through performance assessment and engineering design in waste disposal.

APPENDIX B: DOE COMPLEX-WIDE LLW PROGRAM ASSUMPTIONS

Program assumptions are conditions or characteristics impacting the LLW Program that have not been proven or demonstrated. Because use of assumptions causes risk to the program plan, they must be tracked until they are proven or demonstrated.

IP-A-1.1: The LLW Program will be operating with a system of self-assessments and independent reevaluations to maintain the level of operating practice and compliance that will be achieved by the Implementation Plan initiatives.

IP-A-1.2: The LLWMTG will interface with the Office of Facility Transition and Management (OFTM) with an emphasis on volume/inventory projections of LLW to ensure that information on facilities scheduled for decontamination and decommissioning in the near-term are appropriately considered in development of LLW projections.

IP-A-1.3: DOE will continue to be self-regulating for LLW, at least for the near-term for onsite activities not involving mixed LLW.

IP-A-2: DOE will continue the policy that LLW generated at Department-owned and operated facilities should be disposed at that facility to the extent practicable.

IP-A-3: The implementation of proposed changes in the management of LLW described in the documentation prepared under this Implementation Plan may result in operational changes or in facilities being built or modified.

IP-A-4: Pursuant to CERCLA and/or RCRA, Environmental Restoration removes LLW in performing cleanup work.

IP-A-7: Current waste type classifications will remain in effect.