

FEDERAL FACILITY COMPLIANCE ACT**PROPOSED SITE TREATMENT PLAN
FOR DOE MIXED WASTES AT
GENERAL ATOMICS**

Prepared for

The State of California
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Department of Toxic Substances Control
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March 1995



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EXECUTIVE SUMMARY

Purpose of the Site Treatment Plan

The Proposed Site Treatment Plan (PSTP) for U.S. Department of Energy Oakland Operations Office (DOE/OAK) mixed wastes at General Atomics (GA) was written in response to the Federal Facility Compliance Act (FFCAct). The FFCAct requires that site treatment plans (STPs or plans) be developed for facilities at which DOE generates or stores mixed waste. Mixed waste is defined by the FFCAct as any waste containing both a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA), and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

On April 6, 1993, DOE published *The Schedule for Submitting Plans for the Treatment of Mixed Waste Generated or Stored at Each Site* in the *Federal Register* (58 FR 17875, DOE, 1993a) describing its proposed process for developing the site treatment plans. The plans would be developed in three phases: conceptual, draft, and proposed. The conceptual plan presented known treatment needs, capabilities, and preliminary options for treating the mixed waste. The purpose of the draft plan was to identify site-specific preferred options for treating the mixed waste, or for developing technologies where technologies do not exist or need modification. The proposed plan reflects DOE's preferred options, developed with State input and based on existing available information. The options reflect a "bottom-up" approach and have been evaluated for their potential affects on other DOE sites and the overall DOE program. Changes in the preferred options and associated schedules were also made between the draft and proposed site treatment plans as a result of evaluations from the DOE-wide perspective. These may change further as a result of discussions with affected states and public comments before the approval of the PSTP and issuance by the California Department of Toxic Substances Control (DTSC) of an Order (FFCAct Order) requiring DOE to implement the STP for each site.

The PSTP consists of the Compliance Plan Volume, and the Background Volume and its Appendices. The Compliance Plan Volume contains the enforceable milestones associated with the

preferred treatment options. A more detailed discussion of the preferred treatment options, which is provided for informational purposes only, is presented in the Background Volume and its Appendices.

DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other Plans reflect those constraints. DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in prioritizing its activities. Through this process, DOE expects that some schedules will be revised before the Site Treatment Plans are approved and FFCACT Orders issued.

Summary of PSTP Proposed Options

Current inventories of characterized DOE/OAK mixed wastes to be treated onsite at GA consist of contaminated waste waters (approximately 22 m³) resulting from the New Production Reactor (NPR) program and Hot Cell decontamination and decommissioning (D&D) activities. Current inventories of DOE/OAK mixed wastes to be treated offsite at Hanford are relatively small, with total quantities not exceeding 2.7 m³. Several recently identified mixed waste streams are still undergoing characterization.

Future generation of small quantities of DOE/OAK mixed wastes at GA is expected due to continued D&D and research activities. Future mixed wastes generated that do not meet RCRA Land Disposal Restriction requirements will be characterized and addressed in updates to this plan as required.

**FEDERAL FACILITY COMPLIANCE ACT
PROPOSED SITE TREATMENT PLAN
FOR DOE MIXED WASTES AT
GENERAL ATOMICS
SAN DIEGO, CALIFORNIA**

BACKGROUND VOLUME

Prepared for

The State of California
California Environmental Protection Agency
Department of Toxic Substances Control
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LIST OF ACRONYMS

All PSTP Volumes

α -MLLW	Alpha-Contaminated MLLW
BDAT	Best Demonstrated Available Technology
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH	Contact-Handled
CSTP	Conceptual Site Treatment Plan
D&D	Decontamination and Decommissioning
DHS	California Department of Health Services
DIID	"D3D", or Doublet III fusion program
DOE	U.S. Department of Energy
DOE/OAK	U.S. Department of Energy, Oakland Operations Office
DSTP	Draft Site Treatment Plan
DSTP Framework	Draft Site Treatment Plan Development Framework
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
EM	Environmental Management
EMAB	Environmental Management Advisory Board
EP	Extraction Procedure
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
FFCAct	Federal Facility Compliance Act
GA	General Atomics
HCF	Hot Cell Facility
HEPA	High Efficiency Particulate Air (Filters)
HLW	High-Level Waste
HTGR	High Temperature Gas-Cooled Reactor
INEL	Idaho National Engineering Laboratory
IPA	Isopropyl Alcohol
IWPF	Idaho Waste Processing Facility
LDR	Land Disposal Restriction
LLNL	Lawrence Livermore National Laboratory
LLW	Low-Level (Radioactive) Waste
MHTGR	Modular High Temperature Gas-Cooled Reactor
MLLW	Mixed Low-Level Waste
MTRU	Mixed Transuranic Waste
MWIR	Mixed Waste Inventory Report
MWMF	Mixed Waste Management Facility
NEPA	National Environmental Policy Act
NaOH	Sodium hydroxide
nCi/g	nanoCurie per gram
NGA	National Governors' Association
NPR	New Production Reactor
NRC	Nuclear Regulatory Commission

LIST OF ACRONYMS, continued

All PSTP Volumes

OAT	Options Analysis Team
ORNL	Oak Ridge National Laboratory
PCB	Polychlorinated Biphenyls
PEIS	Programmatic Environmental Impact Statement
POTW	Publicly Owned Treatment Works
PSTP	Proposed Site Treatment Plan
RCRA	Resource Conservation and Recovery Act
RERTR	Reduced Enrichment Research and Test Reactor
ROD	Record of Decision
SPM	Systems Prioritization Method
SRS	Savannah River Site
STP	Site Treatment Plan
SVA	Sorrento Valley Building "A"
TBD	To Be Determined
TCE	Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TFE	Thermionic Fuel Element
TLF	Target Level Funding
TRU	Transuranic
WAC	Waste Acceptance Criteria
WERF	Waste Experimental Reduction Facility
WIPP	Waste Isolation Pilot Plant
WM	Waste Management
WRAP	Waste Receiving and Processing
WS	Waste Stream

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The Proposed Site Treatment Plan (PSTP) for U.S. Department of Energy (DOE) mixed wastes at General Atomics (GA) was written in response to the Federal Facility Compliance Act (FFCAct). The FFCAct requires that site treatment plans (STPs or plans) be developed for facilities at which the DOE generates or stores mixed waste. Mixed waste is defined by the FFCAct as any waste containing both a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA), and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.). On April 6, 1993, DOE published *The Schedule for Submitting Plans for the Treatment of Mixed Waste Generated or Stored at Each Site* in the *Federal Register* (58 FR 17875, DOE, 1993a) describing its proposed process for developing the site treatment plans. The plans would be developed in three phases: conceptual, draft, and proposed. The conceptual plan presented known treatment needs, capabilities, and preliminary options for treating the mixed waste. The purpose of the draft plan was to identify site-specific preferred options for treating the mixed waste, or for developing technologies where technologies do not exist or need modification. The proposed plan reflects DOE's preferred options, developed with state input and based on existing available information. The options reflect a "bottom-up" approach and have been evaluated for their potential affects on other DOE sites and the overall DOE program. Changes in the preferred options and associated schedules were also made between the draft and proposed site treatment plans as a result of evaluations from the DOE-wide perspective. These may change further as a result of discussions with affected states and public comments before the approval of the PSTP and issuance by the regulating agency of an Order (FFCAct Order) requiring DOE to implement the STP for each site. For DOE Oakland Operations Office (DOE/OAK) wastes located at sites in California, the plans must be submitted to the State of California Department of Toxic Substances (DTSC) for approval, approval with modification, or disapproval.

The PSTP identifies specific facilities for treating mixed waste and proposes schedules as required by the FFCAct. Schedules for activities associated with the preferred treatment options are

also provided as appropriate. A standardized evaluation procedure was used to identify the specific treatment facilities for treating the mixed wastes. If existing onsite treatment, onsite small-scale treatment (less-than-90-days generator treatment or a treatability study), or an existing commercial treatment agreement was available, then that option was considered the preferred treatment option. If these options were not available, then planned onsite, existing offsite, or planned offsite facilities that could potentially treat the waste were identified and evaluated. The evaluations were based on the following criteria: (1) treatment effectiveness, (2) environmental health and safety, (3) implementability, (4) regulatory concerns, (5) stakeholder concerns, and (6) life-cycle costs. The preferred treatment option selected for each characterized waste stream as a result of these evaluations, as modified by the Options Analysis Team (OAT) overall DOE preferred mixed waste treatment configuration, is presented in the PSTP.

The Proposed Plan also contains schedules for the implementation of the preferred treatment options. DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules in this and other Plans reflect those constraints. DOE is providing schedules to support further discussions with the expectation that schedules in the approved Plans will differ for some sites from the schedules in the Proposed Plans.

The schedules contained in this and the Proposed Plans for other sites are based on funds currently budgeted for and projected to be available for waste management activities. As a result, schedules in the Proposed Plans for some facilities, particularly the largest and most costly facilities, may be protracted. Schedules for small sites that are relying on the treatment capacity at larger sites are also affected. DOE anticipates that, at some sites, funds will be shifted from other environmental management activities to support more sensible and integrated schedules for mixed waste treatment.

DOE discussed with States and EPA the difficulty DOE faces in providing timely schedules for some new treatment facilities given current budgetary constraints, and the need to consider whether funds from other activities should be shifted to support more timely schedules. The States and EPA recommended that the Proposed Plans be submitted with schedules consistent with current budget and priorities, even though they recognized schedules may be extended. As part of its efforts to develop its budget request for FY 1997, DOE has asked regulatory agencies to work with DOE and other interested parties at the site and National level to assist DOE in prioritizing its activities, including mixed waste treatment, and in assessing activities under way and that need to be accomplished at the site. Through this budget development process and through discussions on the Proposed Plans, DOE and the regulatory agencies expect that some schedules will be revised before the Site Treatment Plans are approved and the FFCAct Orders are issued.

Even after the Plans are approved, DOE anticipates that modifications and adjustments to the Plan will be necessary because of the technical and funding uncertainties that naturally exist with long-term activities like those covered by the Plans. For example, emerging or new technologies not yet considered may be identified in the future that provide opportunities to manage waste more safely, effectively, and at lower cost than the current technologies identified in the Proposed Plan. DOE will continue to evaluate and develop technologies that offer potential advantages in the areas of public acceptance, risk abatement, and performance and life cycle cost. Should more promising technologies be identified, DOE may request a modification of its treatment plan in accordance with provisions of the final Site Treatment Plan and/or the FFCAct Order.

The PSTP reflects the results of discussions among the State of California and other states, the U.S. Environmental Protection Agency (EPA), and others based on the *Conceptual Site Treatment Plan* (CSTP, DOE/OAK, 1993a) submitted to the State of California in October 1993, and the *Draft Plan* (DOE/OAK, 1994a) submitted in August of 1994. The plans for DOE/OAK mixed wastes located at GA are available for review at the Department of Energy Oakland Operations Office Public Reading Room at 1301 Clay Street, Oakland, California.

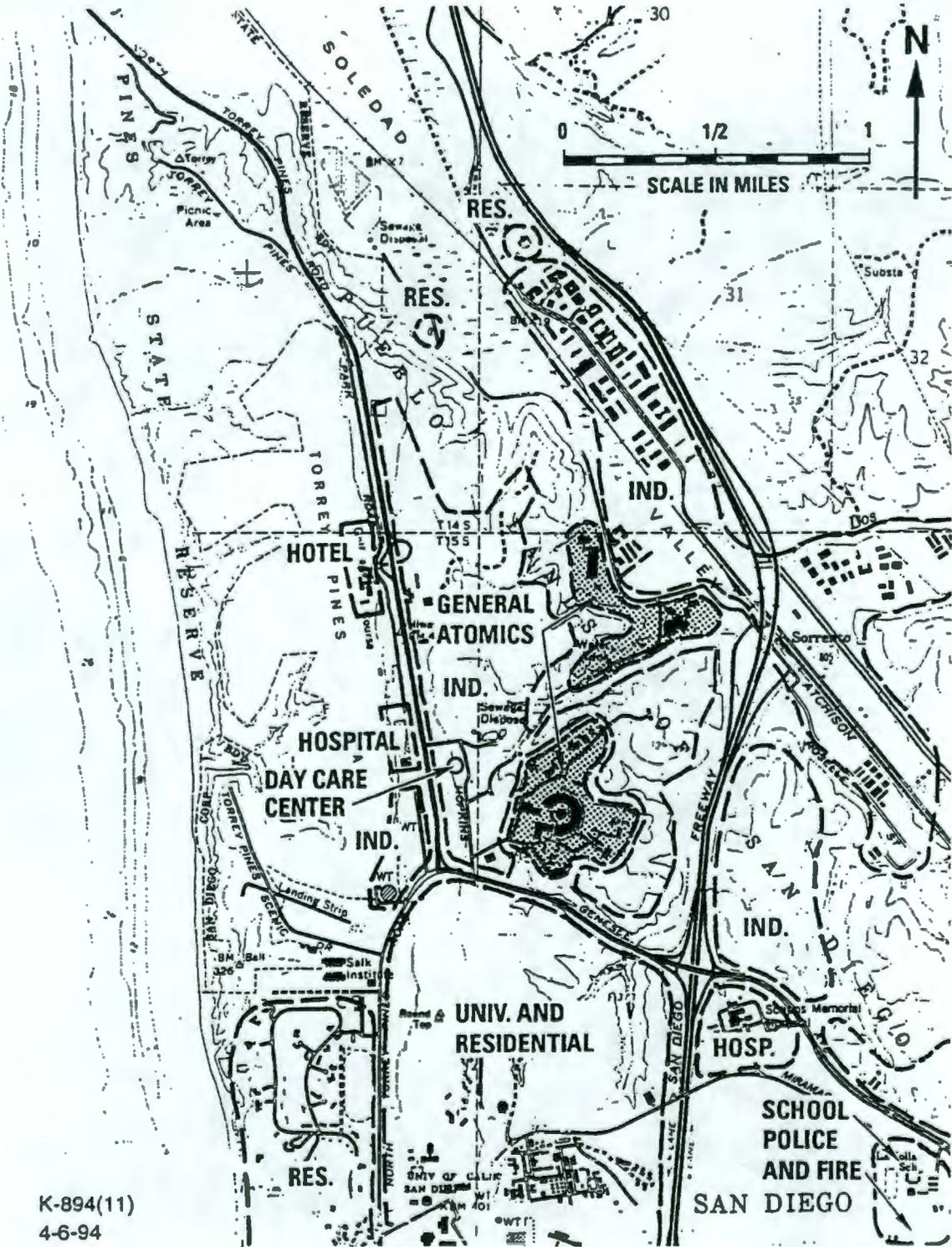
The PSTP consists of the Compliance Plan Volume, and the Background Volume and its Appendices. The Compliance Plan Volume contains the enforceable milestones associated with the preferred treatment options. A more detailed discussion of the preferred treatment options, which is provided for informational purposes only, is presented in the Background Volume and its Appendices.

1.2 SITE HISTORY AND MISSION

GA, located at 3550 General Atomics Court, San Diego, CA 92121, is a privately-owned and operated facility that has conducted nuclear energy research and development activities since the late 1950's. A regional location map for GA is shown in Figure 1-1, with a site plan shown in Figure 1-2. Over the years, a wide range of nuclear research and development activities have been conducted under DOE funding, including the following programs:

- *Sorrento Valley Building "A" (SVA)*. Work conducted in the SVA facility involved the fabrication of fuel for the High Temperature Gas-Cooled Reactor (HTGR) program. The fuel consisted of a mixture of uranium and thorium carbide-coated particles pressed into a graphite matrix. The thorium, the fertile constituent (material capable of being transformed into a fissionable material by capturing a neutron) of the fuel, was present in a 4-to-1 ratio relative to the uranium. The SVA facility operated as a large scale fuel fabrication facility for a number of years by was shut down in 1986. The SVA facility has been completely decontaminated and decommissioned (D&D'd). SVA mixed wastes included in this PSTP resulted from this D&D effort.

- *New Production Reactor (NPR)*. GA participated in DOE's NPR program with its next generation HTGR, the Modular High Temperature Gas-Cooled Reactor (MHTGR). The primary objective of the NPR program was to provide a replacement source of tritium production to replace the aging tritium-producing reactors at the DOE Savannah River Site. MHTGR fuel development activities were performed in support of the project, which was canceled in 1992. NPR wastes included in this PSTP resulted from these fuel development activities.
- *Hot Cell Facility (HCF)*. The HCF was established to perform inspections and testing of irradiated fuel and activated components. Various fuel types were studied in the facility, including fuel from the HTGR, DOE's Reduced Enrichment Research and Test Reactor (RERTR) program, and from thermionic fuel elements (TFE) produced as part of the space power development effort. The HCF has been shut down and is currently in the early stages of D&D.
- *Doublet III*. GA is active in the area of fusion research and development for both the magnetic and inertial confinement methods. The magnetic confinement experiment is known as DIII-D (D3D), or more commonly, the Doublet III. This research is ongoing and is expected to continue to generate small amounts of mixed waste as long as the experiment is in operation.
- *TRIGA Reactors*. There are two TRIGA research reactors located on the GA site. These reactors have performed irradiation services to both government (including DOE) and private entities over the years. The TRIGA Mark F reactor has been permanently shut down and GA has requested the Nuclear Regulatory Commission (NRC) to



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FIGURE 1-1 General Atomics Regional Location Map

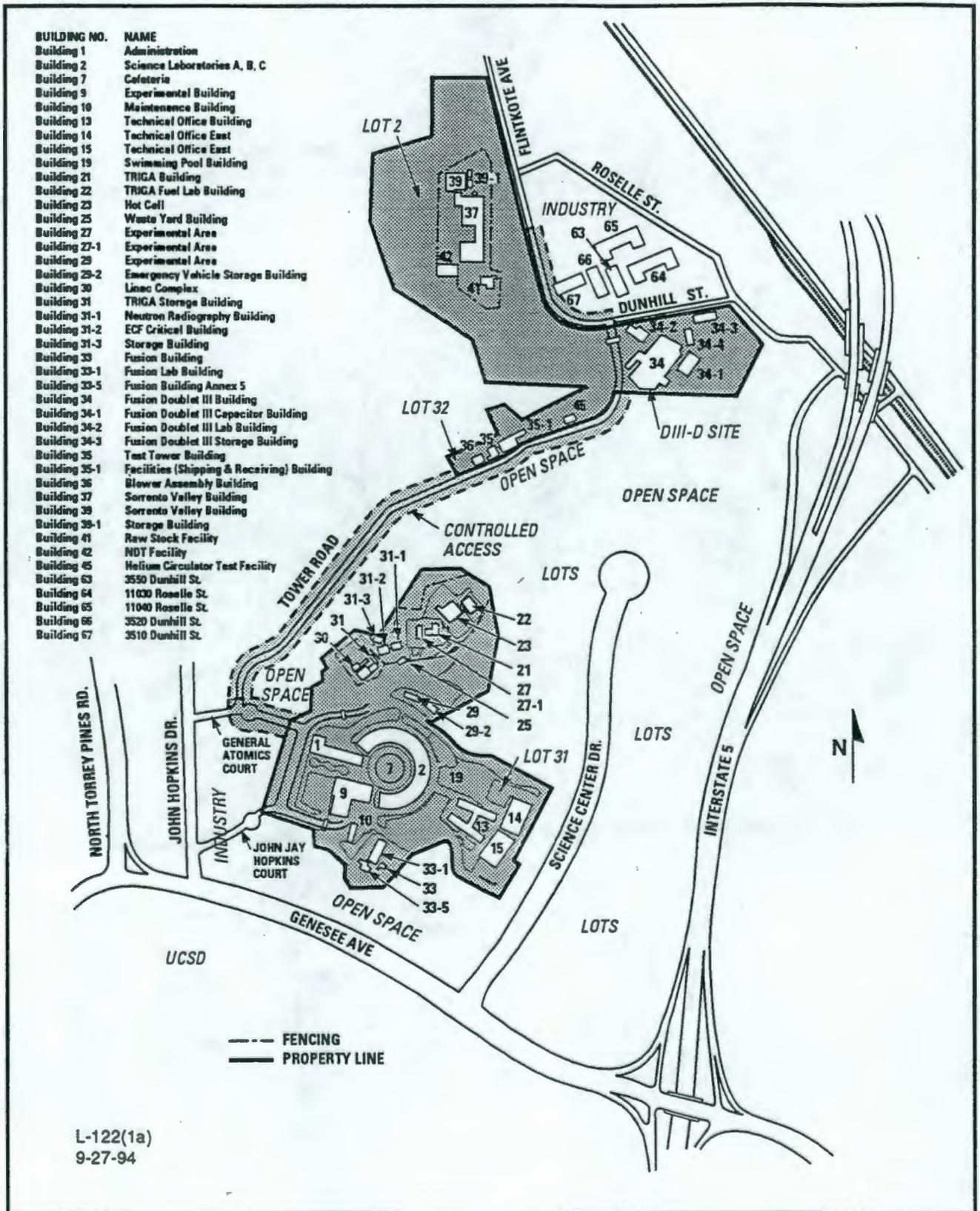


FIGURE 1-2 General Atomics Site Plan

withdraw GA's authorization to operate the reactor. The TRIGA Mark I is still licensed for operation but has been shut down. Future D&D activities at the TRIGA reactor complex may produce mixed wastes.

1.3 FRAMEWORK FOR DEVELOPING DOE'S SITE TREATMENT PLANS

RCRA Land Disposal Restriction (LDR) requirements require the treatment of hazardous waste [including the hazardous component(s) of mixed waste] to certain standards before the waste can be land-disposed, and prohibit storage of hazardous wastes that do not meet LDR standards, except for the purposes of accumulating sufficient quantities to facilitate proper recovery, treatment, or disposal of the waste. DOE is currently storing mixed waste inconsistent with the LDR provisions because the treatment capacity for such wastes, either at DOE sites or in the commercial sector, is not adequate or is unavailable at this time.

The FFCAct, signed on October 6, 1992, waives sovereign immunity for fines and penalties for RCRA violations at Federal facilities. However, the FFCAct postpones the waiver for three years for LDR storage prohibition violations for DOE mixed wastes and requires DOE to prepare plans for developing the required treatment capacity for its mixed waste at each site at which it stores or generates mixed waste. Each plan must be approved by the state or EPA, after consultation with other affected states and consideration of public comment, and an order issued by the regulatory agency requiring compliance with the plan. The FFCAct further provides that DOE will not be subject to fines and penalties for LDR storage prohibition violations for mixed waste as long as it is in compliance with an approved plan and order.

The FFCAct requires the plans to contain schedules for developing capacity for mixed waste for which identified treatment technologies exist, and, for mixed waste without an identified existing treatment technology, schedules for identifying and developing technologies. The FFCAct also requires the plan to provide certain information where radionuclide separation is proposed. The FFCAct states that the plans may provide for centralized, regional or onsite treatment of mixed waste, or any combination thereof, and requires the states to consider the need for regional treatment facilities in reviewing the plans.

The Schedule for Submitting Plans for the Treatment of Mixed Waste Generated or Stored at Each Site was published as a notice April 6, 1993, in the *Federal Register* (58 FR 17875, DOE, 1993a). In the Notice, DOE committed to providing the site treatment plans in three phases: a conceptual plan to be submitted in October 1993, a draft plan to be submitted no later than August 1994, and a final proposed plan to be submitted no later than February 1995. The date for the final proposed plan submittal has been extended to April 1995. This process provides opportunity for early

involvement by the states and other stakeholders to discuss technical and equity issues associated with the plans.

The *Conceptual Plan* (DOE/OAK, 1993a), submitted in October 1993, focused on identifying treatment needs, capabilities, and options for treating the site's mixed waste. The *Draft Plan* (DOE/OAK, 1994a), submitted in August 1994, focused on identifying site-specific preferred options for treating the site's mixed wastes, wherever possible, as well as proposed schedules for constructing capacity. The options presented in the DSTP represent the site's best judgment of the available information and the states' input, and provided a starting point for discussions leading to the development of the *Proposed Plan*. The options presented in this proposed plan represent DOE's best judgment. The proposed plan is being submitted to the regulatory agency for review and approval, approval with modification, or disapproval, as required by the FFCAct. Each version of the plan reflects discussions among states, as well as site-specific input from the individual regulatory agency and other interested parties on the previous submittal. It is DOE's intent that this iterative process, with ample opportunity for input and discussion, will facilitate approval of the Site Treatment Plan and issuance of the compliance order required by the FFCAct. DOE's goal is to have all plans and FFCAct Orders in place by October 1995.

1.4 PSTP ORGANIZATION

The PSTP for DOE/OAK mixed wastes located at GA follows the same format as the proposed plans of other DOE sites to facilitate cross-site comparisons. The proposed plan is organized in two separate, but integrated volumes. The *Compliance Plan Volume* is a short, focused document containing the preferred options and schedules for implementing the options and is intended to contain all the information required by the FFCAct. The Compliance Plan Volume also contains a mechanism to implement the plan and establish schedules that will be enforced by the Order. It references, but does not duplicate, details on the options in the *Background Volume*. This *Background Volume* provides a detailed discussion of the preferred treatment option or options, identifies the waste streams the option addresses, and gives explanatory information for the *Compliance Plan Volume*. The Background Volume *Appendices* include documentation of proposed agreements with offsite receiving sites (Appendix A), and definitions applicable to all volumes of the PSTP (Appendix B).

Sections 1.0 and 2.0 of the Compliance Plan Volume propose certain administrative provisions appropriate for implementing the plan when finalized. These include provisions such as the approach to setting milestones, updates to the plan, additions or removals of waste streams covered by the plan, and funding considerations. These sections are intended to initiate discussion; it

is expected that the specific language will be developed in conjunction with the regulatory agency. New language to address other administrative provisions may eventually be added to these compliance plan volume sections or incorporated into a separate FFCAct Order.

Sections 1.0 and 2.0 in the Compliance Plan and Background Volumes contain introductory material relevant to the purpose of each Volume. The Background Volume contains general information on the proposed plan and the site in Section 1.0, and provides top-level assumptions and a description of the process used to determine the preferred options in Section 2.0.

Sections 3.0 through 5.0 of the Compliance Plan and Background Volumes discuss the preferred option or options for mixed low-level waste (MLLW), mixed transuranic (MTRU) waste, and mixed high-level waste (HLW). Each volume discusses the same waste streams and options in parallel sections. The Background Volume discusses the waste streams, technology needs, and uncertainties and other details on the preferred options. In the Compliance Plan Volume, the sections include proposed schedules as required under the FFCAct.

The Background Volume includes three additional sections that are not included in the Compliance Plan Volume because they are not required by the FFCAct and are not compliance-related. *Section 6.0* discusses mixed wastes expected to be generated in the future to assist in anticipating treatment needs. These waste streams will be incorporated into the Compliance Plan Volume, and treatment approaches and schedules developed, when the wastes are generated. *Section 7.0* discusses storage capacity needs and how compliant storage will be provided for DOE/OAK mixed wastes located at GA pending treatment. *Section 7.0* also includes a discussion of storage for waste treatment residues prior to disposal.

Section 8.0 describes a process being followed by DOE and the states for evaluating options for disposal of mixed waste treatment residues. Although the FFCAct does not require disposal to be covered in the plans, DOE is including disposal information to be responsive to the states' request that disposal be addressed and to support state discussions. *Section 8.0* identifies whether the GA location is being further considered as a disposal site. Resources and guidance documents used to prepare this document are summarized in *Section 9.0*.

Appendix A to the Background Volume includes the proposed offsite shipping agreements between DOE/OAK and offsite treatment facilities. *Appendix B* includes a glossary of terms.

1.5 RELATED DOCUMENTS

Other DOE efforts that may be closely linked to STP development include treatment options analysis; cost estimating for treatment options; the Mixed Waste Inventory Report (MWIR); activities conducted pursuant to the National Environmental Policy Act (NEPA), the California Environmental

Quality Act (CEQA), and RCRA permit status; and compliance and cleanup agreements containing commitments relevant to mixed waste.

1.5.1 Draft Site Treatment Plan Appendices

The appendices to the draft STP (DSTP, DOE/OAK, 1994a) present summaries and evaluations of treatment options initially identified for DOE/OAK mixed wastes identified at that time. In some cases, the likely preferred option identified in the DSTP for a waste has been changed due to technical considerations (e.g., trace contaminants found to be incompatible with the treatment process), or policy decisions (e.g., proposed treatment facility eliminated, or inconsistent with the overall DOE preferred mixed waste treatment configuration).

1.5.2 The Mixed Waste Inventory Report

The *Mixed Waste Inventory Report* (DOE, 1994a), which is required by the FFCAct contains inventories of (a) mixed waste currently stored or generated or expected to be generated during the next five years from DOE activities and (b) treatment capacities and technologies. The *Interim Mixed Waste Inventory Report* (DOE, 1993b), provided information on each waste stream for each site that generates or stores DOE mixed waste. Updated waste stream, treatment facility, and technology data was made available to the states and EPA in May 1994. The MWIR represents the best record of DOE's mixed waste inventory at the beginning of 1994. Because data are constantly being refined, waste stream information in DOE/OAK's proposed plan for GA may differ somewhat from the most recent inventory report. Any changes in waste stream information are documented in the Background Volume. An updated MWIR is currently being prepared and is expected to be released by DOE in July 1995.

1.5.3 The Programmatic Environmental Impact Statement for Waste Management (NEPA)

In compliance with NEPA (42 U.S.C. 4371 et seq) and its implementing regulations contained in 40 CFR 1500, DOE is preparing a Programmatic Environmental Impact Statement (PEIS). This PEIS will be used to formulate and implement a waste management program in a safe and environmentally sound manner and in compliance with applicable laws, regulations and standards. The PEIS is intended to present to the public, states, EPA, and DOE an understanding of impacts to human health and the environment together with the costs associated with a wide range of alternative strategies for managing DOE's environmental program. The PEIS is examining HLW, TRU waste, MLLW, low-level radioactive waste, and hazardous waste activities. The analysis for the Waste Management (WM) PEIS will evaluate decentralized, regional, and centralized approaches for storage

of HLW; treatment and storage of TRU waste; treatment and disposal of MLLW and low-level radioactive waste; and treatment of hazardous waste.

Development of the WM PEIS is being coordinated with the preparation of the STPs under the FFCAct. Information being generated to support the WM PEIS (e.g., hypothetical configurations, preliminary risk analyses, and cost studies) is shared with states to support STP discussions. The Draft WM PEIS will not identify a preferred alternative (i.e., configuration) for mixed waste facilities since this will be evolving in consultation with the states and EPA through the STP process. However, the WM PEIS analyses of potential environmental risks and costs associated with a range of possible waste management configurations will provide valuable insight as the public, states, and DOE discuss using existing facilities and constructing new mixed waste facilities to treat mixed waste.

The Draft WM PEIS is scheduled to be published in May 1995. The Final PEIS will be issued after a public comment period, at or near the time of issuance of the FFCAct Orders by the appropriate regulatory agencies. To remain flexible and accommodate potential changes, the WM PEIS Record of Decision (ROD) for mixed waste will be issued after the appropriate regulatory agencies have fulfilled their legislative requirement of issuing the FFCAct Orders.

1.5.4 The California Environmental Quality Act

CEQA, contained in California Public Resources Code Section 21000 et seq., as amended, is the principal statute mandating environmental impact review of governmental actions in the State of California. Guidelines for implementing the CEQA program are contained in 14 CCR 15000 et seq. CEQA was developed by the California legislature with the intent to: maintain a quality environment; take all actions necessary to protect and rehabilitate the environmental quality of the state; and require governmental agencies at all levels to develop standards and procedures necessary to protect environmental quality. The CEQA process provides opportunities for input and comment by other governmental agencies and the public.

The California DTSC has determined that approval of the PSTPs for DOE-managed waste located at California sites is subject to CEQA. An Initial Study will be prepared by DTSC for each of the sites to determine if implementation of the PSTPs may have a "significant effect on the environment." If an Initial Study indicates that no significant effects will occur, DTSC will issue a "Negative Declaration." If any aspect of an Initial Study reveals that a project may cause a significant effect on the environment, an Environmental Impact Report (EIR) must be prepared before the plan for that site is implemented.

1.5.5 RCRA/CERCLA Activities

Mixed waste generated at GA is stored at the Mixed Waste Management Facility (MWMF), which is an interim status (Part A) waste storage facility under RCRA. Treatment of mixed wastes at GA is conducted under RCRA interim status which allows neutralization, filtration, and stabilization treatment activities. Discharge of liquid effluent (e.g., following neutralization and filtration) is allowed in accordance with GA's Industrial Discharge Permit administered by the City of San Diego.

1.6 SUMMARY AND STATUS OF DOE/OAK MIXED WASTES AT GA

Current inventories of characterized DOE/OAK mixed wastes to be treated onsite at GA consist of contaminated waste waters (approximately 22 m³) resulting from the NPR program and Hot Cell D&D activities. Current inventories of DOE/OAK mixed wastes to be treated offsite at Hanford are relatively small, with total quantities not exceeding 6.5 m³. This includes about 3 m³ of organic liquids and organic debris that will be shipped to Hanford prior to October 6, 1995. The remainder of the mixed wastes proposed for treatment at Hanford includes approximately 4 m³ of inorganic sludges, approximately 0.5 m³ of inorganic debris, and approximately 2 m³ of elemental lead. Several recently identified mixed waste streams are still undergoing characterization.

Future generation of small quantities of DOE/OAK mixed wastes at GA is expected due to continued D&D and research activities. Future mixed wastes generated that do not meet RCRA Land Disposal Restriction (LDR) requirements will be characterized and addressed in updates to this plan as required.

A summary of DOE/OAK mixed wastes located at GA identified to date is shown in Table 1-1. This table is included as a tracking tool to indicate the status or disposition of mixed wastes that are subject to this PSTP. When a mixed waste no longer needs to be included in this PSTP (e.g., if further characterization indicates that it is not a RCRA waste, or when treatment is complete), discussions of the waste, schedule, and treatment information about the mixed waste stream will be deleted from this PSTP. The reference to the waste stream in Table 1-1 will be kept, however, to provide an final accounting of the waste stream disposition.

TABLE 1-1, continued

SUMMARY OF DOE/OAK MIXED WASTE STREAMS AT GA

Waste Stream No.	Waste Stream Description	Background Volume Section	Status
GA-W001	SVA: Paint sludge containing lead with peel away	1.6	COMPLETED Shipped Offsite
GA-W002	SVA: Nitric acid solution	1.6	COMPLETED Onsite Neutralization and Filtration
GA-W003	SVA: Lead contaminated sludge (sump water and sludge)	3.1	Hanford WRAP IIA Stabilization
GA-W004	NPR (Fuel Fabrication Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid	3.1	Onsite Neutralization and Stabilization
GA-W005	NPR (Fuel Fabrication Program): Davies-Gray wastes - Phosphoric and nitric acids containing chromium	3.1	Onsite Neutralization and Stabilization
GA-W006	NPR (Fuel Fabrication Program): Fume scrubber wastes - Spent NaOH solution containing chromium	3.1	Onsite Neutralization and Stabilization
GA-W007	Hot Cell D&D: Lead shot	3.1	Hanford WRAP IIA Macroencapsulation
GA-W008	Hot Cell D&D: Kerosene used for degreasing. For the purposes of this plan, this waste stream has been combined with GA-W038.	1.6	See GA-W038
GA-W009	Hot Cell D&D: Caustic decontamination solution	3.1	Onsite Neutralization and Filtration
GA-W010	Hot Cell D&D: Pump oil	3.3	Uncharacterized
GA-W011	Hot Cell D&D: Dye Penetrant solution. Further characterization determined that this was not a RCRA waste.	1.6	Non-RCRA
GA-W012	Hot Cell D&D: Wastewater containing zinc and possibly other metals. Further characterization determined that this was not a RCRA waste.	1.6	Non-RCRA
GA-W013	Hot Cell D&D: Lead bricks	3.1	Hanford WRAP IIA Macroencapsulation
GA-W014	Hot Cell D&D: Miscellaneous scrap metal	3.3	Uncharacterized
GA-W015	SVA: Phosphoric acid	1.6	COMPLETED Onsite Neutralization and Filtration
GA-W016	SVA: Hydrochloric acid	1.6	COMPLETED Onsite Neutralization and Filtration
GA-W017	SVA: Trichloroethylene and paint	1.6	COMPLETED Shipped Offsite

TABLE 1-1, continued

SUMMARY OF DOE/OAK MIXED WASTE STREAMS AT GA

Waste Stream No.	Waste Stream Description	Background Volume Section	Status
GA-W018	SVA: HEPA filters with Asbestos. Further characterization determined that this was not a RCRA waste.	1.6	Non-RCRA
GA-W019	SVA: Absorbed PCB Oils. Further characterization determined that this was not a RCRA waste.	1.6	Non-RCRA
GA-W020	NPR (Fuel Fabrication Program): Bromoform and methyl iodide. Further characterization determined that this was not a RCRA waste.	1.6	Non-RCRA
GA-W021	NPR (Fuel Fabrication Program): Kerosene and water	3.3	Uncharacterized
GA-W022	SVA: Elemental mercury on thorium pellets.	1.6	COMPLETED Amalgamation
GA-W023	SVA: Waste oil containing chrome	1.6	COMPLETED Shipped Offsite
GA-W024	SVA: HEPA filters contaminated with lead	1.6	COMPLETED Shipped Offsite
GA-W025	SVA: Lead scrap	1.6	COMPLETED Shipped Offsite
GA-W026	SVA: Thorium carbide. Material being held in inventory as potential product, hence does not meet the definition of "waste".	1.6	Non-RCRA
GA-W027	NPR (Fuel Fabrication Program): Oil	3.3	Uncharacterized
GA-W028	NPR (Fuel Fabrication Program): HEPA filters	3.3	Uncharacterized
GA-W029	NPR: Mop water. Further characterization determined that this was not a RCRA waste.	1.6	Non-RCRA
GA-W030	SVA: Filter media with nitrate and phosphate salts (from GA-W002 and GA-W015). Further characterization determined that this was not a RCRA waste.	1.6	Non-RCRA
GA-W031	SVA: Oily debris containing methylene chloride	1.6	To be Shipped Offsite prior to 10/95
GA-W032	NPR (Fuel Fabrication Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid/Mercury below TCLP level	3.1	Onsite Neutralization and Stabilization
GA-W033	NPR (Fuel Fabrication Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid/Chromium below TCLP level	3.1	Onsite Neutralization and Stabilization
GA-W034	Doublet III: Alcohol and tritium	3.3	Uncharacterized

TABLE 1-1, continued

SUMMARY OF DOE/OAK MIXED WASTE STREAMS AT GA

Waste Stream No.	Waste Stream Description	Background Volume Section	Status
GA-W035	Doublet III: Oil and tritium	3.3	Uncharacterized
GA-W036	Hot Cell D&D: HEPA Filters	3.3	Uncharacterized
GA-W037	Hot Cell D&D: Solid wastes contaminated with F-listed solvents	3.3	Uncharacterized
GA-W038	Hot Cell D&D: Miscellaneous liquid solvents	3.3	Uncharacterized
GA-W039	Hot Cell D&D: Corrosive liquids	3.3	Uncharacterized
GA-W040	Hot Cell D&D: Electrical components with lead solder	3.3	Uncharacterized
GA-W041	NPR (Lithium Target Technology Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid	3.1	Onsite Neutralization and Stabilization
GA-W042	NPR (Lithium Target Technology Program): Fume scrubber wastes - Spent NaOH solution containing chromium	3.1	Onsite Neutralization and Stabilization

Key: D&D = Decontamination and Decommissioning
 IPA = Isopropyl alcohol
 NPR = New Production Reactor
 SVA = Sorrento Valley Building A
 WRAP IIA = Waste Receiving and Processing Facility

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2.0 METHODOLOGY

2.1 ASSUMPTIONS

All sites used the following assumptions to ensure consistency among the STPs. The assumptions were developed as a part of the *Draft Site Treatment Plan Development Framework* (DOE, 1993c) and reflect review and comment from the states and EPA. Note that not all assumptions apply to every site.

1. HLW will continue to be managed according to current plans at each site (i.e., Hanford, West Valley, Savannah River, and INEL). Primarily due to potential safety concerns, HLW will not be transported offsite except as a treated, stable waste that is ready for disposal.
2. Regarding defense related MTRU waste, the PSTPs reflect DOE's current strategy that the Waste Isolation Pilot Plant (WIPP) will open and receive a No-Migration Variance. The PSTPs identify characterization, processing, and treatment of MTRU waste to meet the WIPP Waste Acceptance Criteria (WAC). Consistent with this policy, treatment of MTRU waste to meet LDR standards is not included in the PSTPs at this time.

However, the PSTPs recognize that DOE's policy regarding WIPP is under review and may change in the future. As such, the PSTPs provide for the flexibility to modify activities and milestones regarding MTRU waste to reflect potential future changes in DOE policy.

Under current DOE policy, nondefense-related MTRU waste will not be disposed of at WIPP. As such, the PSTPs reflect LDR treatment of nondefense-related MTRU waste.

3. DOE recognizes some states' preference for treatment of all wastes onsite. Where appropriate, existing onsite capacity will be utilized before new facilities are constructed. When onsite treatment or use of commercial or mobile facilities is not practicable, the use of existing offsite capacity, as well as the construction of new facilities, will be considered.
4. Sites in the same state will investigate the practicality of consolidated treatment facilities.
5. Mixed waste resulting from Environmental Restoration (ER) and decontamination and decommissioning (D&D) activities will be factored into planning activities and equity

discussions, particularly where facilities identified in the PSTPs are being considered for managing ER and D&D waste.

6. On a volume basis, the large majority of DOE's mixed waste will be treated onsite. Because of transportation concerns and costs, this generally includes process wastewater and some explosives and remote-handled wastes. In addition, other large volume waste streams will generally be treated onsite. At a minimum, Hanford, Oak Ridge National Laboratory (ORNL), the INEL, and the Savannah River Site (SRS) will have onsite facilities to treat the majority of their wastes.
7. The PEIS is being prepared in parallel with the development of the STPs. The PSTP process will provide input to the PEIS. Each site will prepare any necessary specific NEPA documentation before proceeding with a specific project or facility approved by the state or EPA as part of the STP process.

Each California site will prepare any necessary specific CEQA documentation before proceeding with a specific project or facility approved by the state or EPA as part of the STP process.

8. In support of DOE's cradle-to-grave waste management philosophy, disposal site location and criteria will be factored into state equity discussions, waste treatment facility designs, and the characteristics of the final waste forms to the extent practicable under the time frame for submitting the STP.
9. To provide target dates for schedules for offsite shipment of wastes, various assumptions are identified in Sections 3.0 and 4.0. Some assumptions specify time periods for actions by the offsite facilities that will receive the wastes; if these time periods are exceeded, the target date(s) may be affected. Assumptions for offsite shipment schedules include estimated time frames for receiving the treatment facility WAC, approval of certification plans and waste profiles, and identification of an approved shipping date.

Additionally, GA is currently permitted to store and conduct limited treatment of mixed wastes generated at GA facilities. The PSTP for DOE/OAK wastes located at GA reflects the fact that GA is a privately-owned non-DOE facility.

2.2 PREFERRED OPTION SELECTION PROCESS

The preferred option selection process was conducted in two phases. Phase 1 consisted of each site developing preferred options for their DOE mixed waste streams. This preferred option development process and the sites' preferred treatment options were detailed in Appendix A to the DSTP. In Phase 2 a DOE complex-wide Options Analysis Team evaluated the sites' preferred options and optimized the overall DOE preferred mixed waste treatment configuration. The OAT process and the resulting preferred treatment configuration are described in the *Proposed National Mixed Waste Treatment Configuration* (DOE, 1995a).

2.2.1 Preferred Option Selection Process: Phase 1

DOE prepared several guidance documents to assist the sites in identification of potential treatment options and the selection of preferred options. The overall process was described in the *Draft DSTP Framework*, which established common terminology, objectives and values, planning assumptions, and a recommended methodology for narrowing the alternatives presented in the conceptual STP. The *Treatment Selection Guides* (DOE, 1994b), provided information for selecting among treatment options based on a comparison of key criteria such as regulatory compliance, environmental health and safety, treatment effectiveness, implementability, stakeholder concerns, and life-cycle costs. The *Draft Site Treatment Plan Cost Information Guidance* (DOE, 1994c), provided a level of consistency in the draft cost information by providing common cost assumptions. In some cases, site-specific cost information was also used to develop cost estimates for the preferred treatment options. Drafts of these and other technical assistance documents were provided to the states, and the states' comments were incorporated into the final revision of these documents. Copies of these documents are available in the DOE/OAK Public Reading Room at 1301 Clay Street, Oakland, California.

DOE/OAK developed an option selection process consistent with the DOE's *Draft DSTP Framework*. The DOE/OAK process favored the use of existing onsite treatment capabilities or capabilities that could be readily implemented. Therefore, onsite treatment of wastes at existing facilities was considered a preferred treatment option. Onsite, "less than 90-day treatment" (as regulated under the state's tiered permitting program) and treatability studies were preferred treatment options when determined to be appropriate for a specific waste stream. If appropriate, existing commercial contracts for treatment of mixed waste were also identified as preferred treatment options.

If none of the preferred treatment options described above was identified for a given waste stream, then planned onsite and planned and existing offsite treatment facilities were evaluated. DOE's planned onsite facilities consist of mobile, fixed-base, or bench-scale treatment units. Mobile treatment units are comprised of small-scale units (which could include a series of units or "treatment train") that can be transported from site to site to allow waste treatment at the site where the waste is generated. Fixed-base treatment facilities are typically large-scale units permanently located at a site and are typically expensive to construct and operate. Additional information regarding fixed-base units is available in Section 3.3 of Appendix A to the DSTP. Bench-scale units are small-scale units that may require regulatory approval but are typically designed to treat very small quantities of waste. Additional discussion of bench-scale units is available in Section 3.0 of Appendix A to the DSTP. Planned and existing offsite facilities evaluated by DOE/OAK consisted of a hypothetical centralized treatment facility located in California and proposed to be operated at Lawrence Livermore National

Laboratory (LLNL) and other existing or planned treatment facilities at other sites in the DOE complex. The proposed centralized treatment option at LLNL would utilize several existing and planned treatment units. This centralized option was considered for treatment of waste generated from five DOE/OAK sites located in California. Evaluation of the mobile, fixed-base, bench-scale, and centralized treatment options was conducted using the following major categories of criteria: treatment effectiveness; environmental health and safety; implementability; regulatory concerns; stakeholder concerns; and life-cycle costs.

The results of these evaluations were used as an analytical tool to determine a preferred treatment option. The process is considered to be a subjective evaluation process that relied on the weighted scoring system and best professional judgments of the evaluators. (Additional data regarding how preferred treatment options were identified are outlined in Section 2.0 of Appendix A to the DSTP.)

In summary, the options selection process examined preferred treatment options, including existing onsite treatment (e.g., onsite fixed-base facility or mobile treatment), existing commercial agreements, potential modifications to existing facilities, treatability studies, or treatment of wastes in tanks and containers within 90 days of generation (generator treatment). If none of these options was available, planned onsite or existing or planned offsite facilities were evaluated to determine a preferred treatment option. The preferred treatment options identified as a result of these evaluations are summarized in Appendix A to the DSTP.

2.2.2 Options Selection Process: Phase 2

Because the DSTPs were prepared by the sites using a "bottom-up" approach, the resulting treatment configuration, when viewed from a national level, contained many redundancies and inefficiencies. In developing the PSTPs, an assessment was performed to determine what accommodations were necessary to blend the "bottom-up" DSTPs into a more sensible national configuration of treatment systems. To facilitate this assessment, DOE established an options analysis team comprised of site representatives and members of the Headquarters' FFCAct Task Force. The OAT coordinated their efforts with the states, through the National Governors' Association (NGA), to ensure the national mixed waste configuration reflects both the states' and DOE's concerns. As part of this evaluation, the impacts of implementing the emerging DSTP configuration, as well as alternative configurations, were evaluated.

The focus of the OAT's efforts has been on MLLW. While HLW and MTRU wastes are also covered by the FFCAct, the strategies for managing these wastes have already been established.

However, DOE recognizes that modifications of these strategies may be needed as the programs evolve and new information becomes available.

In combination, the DSTPs form a mixed waste treatment configuration which was the baseline for the OAT analyses. Changes to the DSTP configuration proposed by the OAT were based on the following analyses:

1. Review of the DSTP baseline configuration to identify redundant and technically inefficient proposed treatment options.
2. Identification of alternative treatment configurations that emphasized key state and DOE concerns.
3. Evaluation of the DSTP baseline and alternate configurations against key evaluation areas to determine what combination of treatment options resulted in a configuration that best met DOE's, the states', EPA's and other stakeholders' concerns.

The results of the initial OAT analysis were shared with each of the sites and the state regulators, as well as DOE management. The OAT worked for several more months responding to state requests for additional analysis, incorporating ongoing site analysis, and responding to comments. The resulting configuration, described in the *Proposed National Mixed Waste Treatment Configuration* (DOE, 1995a) and reflected in the PSTPs, is DOE's best attempt to balance competing DOE and stakeholder interests.

The overall DOE preferred mixed waste treatment configuration did not result in a change to the preferred treatment options identified in the DSTP for DOE/OAK mixed wastes at GA.

2.3 COORDINATION WITH REGULATORY AGENCIES AND OTHER STAKEHOLDERS

The FFCAct offers an opportunity for DOE, the state, and EPA regulators who will be approving the Plans to work cooperatively toward defining mixed waste treatment plans. As requested by the states, DOE signed a cooperative agreement in August 1993 with the NGA to facilitate the DOE-to-State interactions. The NGA has sponsored national meetings on a routine basis with DOE, the states, EPA, and the Indian Nations throughout the development of the STPs.

The FFCAct requires the states and EPA to provide for public involvement after the PSTPs are submitted. DOE has provided additional opportunities for public input into the development of the Conceptual and Draft Plans through existing public involvement mechanisms at the site.

DOE/OAK regularly conducts FFCAct Coordination meetings with the State of California DTSC, the State of California Department of Health Services (DHS), and EPA Region 9. In coordination with DTSC, two FFCAct Fact Sheets have also been developed. Volumes 1 and 2 in a series of three fact sheets were published in January and September 1994. The two fact sheets were sent to approximately 1,000 public recipients. The fact sheets provide answers to common questions regarding the FFCAct and the STP development and approval process; address how the public can become more involved; and provide contact names and repository locations where STP documents can be reviewed. Throughout the STP process, mixed waste issues have been included on the agenda at several meetings conducted by DOE/OAK. These meetings were attended by the public and a wide variety of regulatory agencies.

At the national level, DOE has presented information on the development of the STPs to the Environmental Management Advisory Board, and held an Open House in Washington, D.C. when the Draft Plans were released. DOE also met informally with representatives of Indian Tribes and separately with representatives of other groups that may have interest in Site Treatment Plan development. The purpose of the meetings was to determine if there are national issues that may not be identified through site-specific activities. Additional opportunities to obtain input at the National level may be offered in coordination with the States and EPA. The Center for Environmental Management provides information on FFCAct activities at the National level (1-800-736-3282; or 202-863-5084 in Washington, D.C.).

2.4 CHARACTERIZATION OF MIXED WASTES

2.4.1 DOE Treatability Groups

Treatability groups are used to characterize DOE waste stream information in a consistent and technically valid manner based on waste characteristics. Treatability groupings for waste streams in this PSTP are based on three parameters: (1) radiological, (2) waste stream matrix, and (3) regulated contaminants. Each of the three parameters are divided into subcategories based on the type of treatment required to meet RCRA LDR requirements for land disposal. DOE mixed waste streams are classified using the treatability group classification system outlined in *Waste Treatability Group Guidance* (DOE, 1994d). The three parameters that define a treatability group are defined as follows:

The *Radiological* parameter identifies up to four key elements including (1) radiological waste classification as low-level, TRU, high level, or mill tailings; (2) handling restrictions, noted as contact-handled (CH) or remote-handled (RH); (3) TRU alpha levels, indicating the presence and

activity level (if known) of alpha-emitting TRU radionuclides; and (4) non-TRU alpha levels, indicating the presence and activity level (if known) of other alpha-emitting radionuclides.

The waste *Matrix* identifies the overall bulk physical and chemical form of the waste. The matrix code is selected from a list containing approximately 100 codes, and consists of a title and a single character to describe the waste stream physical form (e.g., "S" for solids, "L" for liquids), plus a four-digit code describing the chemical form of the waste stream (if known).

The *Regulated Contaminant* parameter identifies up to three key elements to indicate the regulatory classification and types of regulated contaminants in the waste, including (1) the regulatory program that covers the waste (e.g., "RC" for RCRA-regulated); (2) the presence of any RCRA-regulated hazardous organics (code "O") and/or metals (code "M") for which LDR treatment standards have not been met or established; and (3) whether the waste exhibits a RCRA hazardous characteristic (code "C") for ignitable, corrosive, or reactive wastes.

Under this waste classification system, waste streams that fit the criteria for a specific treatability grouping will have the same or similar matrices, and the same or similar radiological and chemical contaminants. This allows site-wide comparisons and groupings of DOE waste streams in order to assess treatment technology, capacity, and technology development needs. Treatability groups have been identified, if known, for DOE/OAK mixed waste located at GA in Table 3-2 (for MLLW), and Table 4-2 (for MTRU wastes). Codes for treatability groups used in those tables are defined in Table 2-1.

2.4.2 Mixed Waste Characterization Practices at GA

The procedures and methodologies for characterizing wastes are designed to ensure safe handling and storage of wastes at GA. All mixed waste storage and treatment activities are performed at GA's Mixed Waste Management Facility. The MWMF operation staff are responsible for performing waste analyses. The objectives of the waste analyses are the following:

TABLE 2-1	
DOE TREATABILITY GROUP CODES FOR DOE/OAK MIXED WASTES AT GA	
Code	Definition
Radiological Parameters	
LL	Low-Level
CH	Contact-Handled
N20 T20	No Non-TRU Alpha (α) No TRU α
Matrix	
L1110 L1120 L1190 L2110 L2210 L2290 L2900	Acidic Waste Waters Basic Waste Waters Unknown/Other Waste Waters Aqueous/Halogenated Organic Carbon (HOC) Organic Liquids HOC Pure Organic Liquids Unknown/Other Pure Organic Liquids Unknown/Other Organic Liquids
S3129 S3132 S5111 S5390 S5410 S5420	Unknown/Other Inorganic Sludges Paint Sludges Metal Debris without Lead or Cadmium Unknown/Other Organic Debris Composite Filters Predominantly Inorganic Debris
X7100 X7211	Elemental Mercury Non-Activated Lead
Regulated Contaminant	
RC	RCRA-Regulated
C11 C12 C14 C90	Ignitable Corrosive Ignitable and Corrosive Not Ignitable, Corrosive, or Reactive
O11 O90	Organics Present No Organics Present
M11 M12 M90	Metals without Mercury Metals with Mercury No Metals

1. To ensure that sufficient information exists to ensure proper handling, storage, and disposition of all waste materials.
2. To establish uniform and comparable waste characterization requirements in accordance with applicable WAC.
3. To verify that incoming waste materials are properly described in the accompanying documentation;
4. To ensure that all information requirements specified in the applicable WAC are met; and
5. To ensure that sufficient waste characterization data is collected to support the treatment and disposal of the wastes.

The chemical and physical properties of wastes located at the MWMF are evaluated and documented to ensure safe storage and subsequent treatment and disposal. Onsite generators may obtain the necessary information either from "process knowledge" used in conjunction with existing published or documented data on the waste or on waste generated from similar processes, or from sampling and laboratory analysis of the waste. GA's *Waste Analysis Plan for the MWMF* (GA, 1994a) provides specific guidance regarding waste characterization.

Characterization of DOE/OAK mixed waste streams at GA is and has been conducted in accordance with EPA SW-846 (EPA, 1991a) analytical methods or other acceptable methods for the waste stream hazardous components. Detailed characterization is currently underway for uncharacterized waste streams, including any additional characterization to accurately identify radiological constituents and radiation levels for packaging and shipping.

2.5 WASTE MINIMIZATION

GA minimizes the volume of mixed waste generated at the facility through a combination of segregation and volume reduction. At the point of generation, mixed wastes are segregated from hazardous and nonhazardous wastes to avoid cross contamination of the waste streams. Next, where possible, the mixed waste goes through a volume reduction step. Corrosives are neutralized, precipitated, and filtered to reduce the radiological constituents. The filtrate is then released to the sewer if the radiological concentrations are within discharge limits. The remaining waste consists of the filters, which represents a volume reduction of approximately 90 per cent (filter media generated to date have not been determined to be mixed wastes, and are disposed of as low-level radioactive waste). Waste minimization strategies are specific to each mixed waste stream. However, the segregation and volume reduction elements are common to each strategy. These waste minimization

strategies are detailed in GA's *Nuclear Waste Packaging Facility Waste Minimization Plan* (GA, 1994b).

3.0 MIXED LOW-LEVEL WASTE STREAMS

The waste streams identified in this section are DOE/OAK MLLW located at GA, which contain both RCRA-hazardous wastes and radioactive constituents. MLLW is defined as mixed waste that does not satisfy the definition of HLW (see Section 5.0), nor is it a transuranic waste (see Section 4.0). Alpha-contaminated MLLW (α -MLLW), which is waste with TRU contamination > 10 nCi/g but ≤ 100 nCi/g, has historically been managed by DOE along with TRU waste, but is addressed in this document as MLLW. To date, waste characterization results for DOE/OAK mixed wastes at GA have not identified any HLW or wastes classified as α -MLLW.

Table 3-1 provides a summary of current DOE/OAK MLLW streams identified at GA (See Table 1-1 for a complete summary and status of all FFCAct-covered DOE/OAK mixed wastes identified at this site). Table 3-2 provides a brief description of DOE/OAK MLLW streams at GA that have been characterized sufficiently to identify a preferred treatment option. Preferred treatment options selected will meet RCRA LDR requirements for land disposal. Table 3-3 lists wastes that still require characterization, or that have been characterized but require a technology assessment.

Tables 3-4(a) through (e) contain the proposed treatment or characterization schedules for DOE/OAK MLLW at GA. Activities noted in boldface print in these tables are repeated in the Compliance Plan Volume as enforceable milestones and non-enforceable target dates. Other intermediate activities and dates shown in these Background Volume tables are for information only, and may be used to facilitate internal tracking of progress for each waste stream. For consistency in comparing activities for treating MLLW at any of the DOE/OAK sites required to prepare PSTPs, the tables have been assigned the following standard identification: (a) is reserved for onsite treatment schedules; (b) is reserved for offsite treatment schedules; (c) is reserved for technology development schedules; (d) is reserved for treatability studies; and (e) is reserved for schedules for waste streams requiring characterization or technology assessment. The tables are included in the PSTP only if applicable to this site at this time.

TABLE 3-1		
SUMMARY OF DOE/OAK MLLW STREAMS AT GA		
Waste Stream No.	Waste Stream Description	Status
GA-W003	SVA: Lead contaminated sludge (sump water and sludge)	Hanford WRAP IIA Stabilization
GA-W004	NPR (Fuel Fabrication Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid	Onsite Neutralization and Stabilization
GA-W005	NPR (Fuel Fabrication Program): Davies-Gray wastes - Phosphoric and nitric acids containing chromium	Onsite Neutralization and Stabilization
GA-W006	NPR (Fuel Fabrication Program): Fume scrubber wastes - Spent NaOH solution containing chromium	Onsite Neutralization and Stabilization
GA-W007	Hot Cell D&D: Lead shot	Hanford WRAP IIA Macroencapsulation
GA-W009	Hot Cell D&D: Caustic decontamination solution	Onsite Neutralization and Filtration
GA-W010	Hot Cell D&D: Pump oil	Uncharacterized
GA-W013	Hot Cell D&D: Lead bricks	Hanford WRAP IIA Macroencapsulation
GA-W014	Hot Cell D&D: Miscellaneous scrap metal	Uncharacterized
GA-W021	NPR (Fuel Fabrication Program): Kerosene and water	Uncharacterized
GA-W027	NPR (Fuel Fabrication Program): Oil	Uncharacterized
GA-W028	NPR (Fuel Fabrication Program): HEPA filters	Uncharacterized
GA-W030	SVA: Filter media with nitrate and phosphate salts (from GA-W002 and GA-W015).	Uncharacterized
GA-W032	NPR (Fuel Fabrication Program): Waste column liquid wastes: IPA/Ammonia/Nitric Acid/Mercury below TCLP level	Onsite Neutralization and Stabilization
GA-W033	NPR (Fuel Fabrication Program): Waste column liquid wastes: IPA/Ammonia/Nitric Acid/Chromium below TCLP level	Onsite Neutralization and Stabilization
GA-W034	Doublet III: Alcohol and tritium	Uncharacterized
GA-W035	Doublet III: Oil and tritium	Uncharacterized
GA-W036	Hot Cell D&D: HEPA Filters	Uncharacterized
GA-W037	Hot Cell D&D: Solid wastes contaminated with F-listed solvents	Uncharacterized

TABLE 3-1		
SUMMARY OF DOE/OAK MLLW STREAMS AT GA		
Waste Stream No.	Waste Stream Description	Status
GA-W038	Hot Cell D&D: Miscellaneous liquid solvents	Uncharacterized
GA-W039	Hot Cell D&D: Corrosive liquids	Uncharacterized
GA-W040	Hot Cell D&D: Electrical components with lead solder	Uncharacterized
GA-W041	NPR (Lithium Target Technology Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid	Onsite Neutralization and Stabilization
GA-W042	NPR (Lithium Target Technology Program): Fume scrubber wastes - Spent NaOH solution containing chromium	Onsite Neutralization and Stabilization

Key: WRAP IIA = Waste Receiving and Processing Facility

3.1 MLLW STREAMS FOR WHICH TECHNOLOGY EXISTS

Treatment schedules for those waste streams identified in Table 3-2 as having a preferred option using existing technology are included in Tables 3-4(a) or (b), as appropriate (the tables are included only if applicable to this site).

3.1.1 Characterized MLLW Streams

Characterized DOE/OAK MLLW streams at GA include acidic and basic waste waters, organic liquids, inorganic sludges, organic and inorganic debris, and non-activated elemental lead produced from several different programs at the site. The waste volumes noted in cubic meters in Table 3-2 reflect current volumes, and may differ from information contained in the MWIR database dated May 1994. Volumes noted in other units are included to provide a more practical description of the waste volume and configuration. The level of confidence in volume estimates is high because GA's waste streams are small and have already either been quantified at GA's MWMF, or they are generated at a known rate.

3.1.2 Description of Technology and Capacity Needs

3.1.2.1 Neutralization/Filtration/Stabilization

The BDAT identified for the corrosive wastes is deactivation (neutralization). Neutralization is used to eliminate the corrosivity of a waste acid or base by controlled addition of a proper reagent to adjust the pH to a level between 2.0 and 12.5. Neutralization of some wastes at GA is followed by precipitation and filtration to reduce the radiological constituent concentrations. Remaining liquids are either discharged to the public sewer system in accordance with the site industrial discharge permit, or are further treated for underlying contaminants as required by 22 CCR 66268.48. Alternatively, the neutralized liquids are stabilized in concrete with no filtration required. The total quantity of characterized DOE/OAK MLLW at GA to be neutralized is approximately 22 m³.

3.1.2.2 Stabilization

Stabilization is proposed to be utilized for inorganic debris and inorganic sludge/particulate waste streams. The BDAT for the inorganic debris waste is stabilization. The total quantity of this waste stream is less than 0.5 m³, and consists of metal-contaminated HEPA filters. The BDAT for inorganic sludges containing metals is also stabilization, transforming the waste into a form suitable for permanent disposal. The total quantity of sludges from GA waste streams is less than 5 m³, including paint sludge with peel away and sump water containing sludge.

3.1.2.3 Macroencapsulation

The BDAT for the elemental lead waste streams is macroencapsulation, in which solid wastes are enclosed in an inert material to reduce the potential for leaching of waste constituents in a landfill. The total quantity of elemental lead from DOE/OAK MLLW streams at GA is less than 3 m³, including lead shot and lead bricks from D&D of the Hot Cell Facility, and lead scrap from the SVA facility.

TABLE 3-2

TREATMENT OPTIONS FOR CHARACTERIZED DOE/OAK MLLW STREAMS AT GA

Waste Stream No.	Waste Stream Description and DOE Treatability Group	RCRA Waste Code(s)	Best Demonstrated Available Technologies (BDAT)	Universal Treatment Standard(s)	Preferred Treatment Option	Current Volume	Projected Additional Volume (thru '97)
MLLW, Waste Waters, CH							
GA-W004	NPR (Fuel Fabrication Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid LL-CH-T20-N20/L1190/RC-O90-M90-C14	D001 D002	Incineration Deactivation	Deactivation and (1) concentration-based treatment standard for underlying hazardous constituents per 22 CCR 66268.48, or (2) discharge to POTW.	Onsite at GA: Neutralization and Stabilization	11.5 m ³ , 51 - 55-gal drums	- 0 -
GA-W041	NPR (Lithium Target Technology Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid LL-CH-T20-N20/L1190/RC-O90-M90-C14	D001 D002	Incineration Deactivation	Deactivation and (1) concentration-based treatment standard for underlying hazardous constituents per 22 CCR 66268.48, or (2) discharge to POTW.	Onsite at GA: Neutralization and Stabilization	2.42 m ³ , 11 - 55-gal drums	
GA-W005	NPR (Fuel Fabrication Program): Davies-Gray wastes - Phosphoric and nitric acids containing chromium LL-CH-T20-N20/L1110/RC-O90-M11-C12	D001 D002 D007	Incineration Deactivation Stabilization	Deactivation and (1) concentration-based treatment standard for underlying hazardous constituents per 22 CCR 66268.48, or (2) discharge to POTW.	Onsite at GA: Neutralization and Stabilization	0.208 m ³ , 1 - 55-gal drum	- 0 -
GA-W006	NPR (Fuel Fabrication Program): Fume scrubber wastes - Spent NaOH solution containing chromium LL-CH-T20-N20/L1120/RC-O90-M11-C12	D001 D002 D007	Incineration Deactivation Stabilization	Deactivation and (1) concentration-based treatment standard for underlying hazardous constituents per 22 CCR 66268.48, or (2) discharge to POTW.	Onsite at GA: Neutralization and Stabilization	4.0 m ³ , 19 - 55-gal drums	- 0 -
GA-W042	NPR (Lithium Target Technology Program): Fume scrubber wastes - Spent NaOH solution containing chromium LL-CH-T20-N20/L1120/RC-O90-M11-C12	D001 D002 D007	Incineration Deactivation Stabilization	Deactivation and (1) concentration-based treatment standard for underlying hazardous constituents per 22 CCR 66268.48, or (2) discharge to POTW.	Onsite at GA: Neutralization and Stabilization	3.7 m ³ , 18 - 55-gal drums	

TABLE 3-2

TREATMENT OPTIONS FOR CHARACTERIZED DOE/OAK MLLW STREAMS AT GA

Waste Stream No.	Waste Stream Description and DOE Treatability Group	RCRA Waste Code(s)	Best Demonstrated Available Technologies (BDAT)	Universal Treatment Standard(s)	Preferred Treatment Option	Current Volume	Projected Additional Volume (thru '97)
GA-W009	Hot Cell D&D: Caustic Decontamination Fluid LL-CH-T20-N20/L1120/RC-O90-M90-C12	D002	Deactivation	Deactivation and (1) concentration-based treatment standard for underlying hazardous constituents per 22 CCR 66268.48, or (2) discharge to POTW.	Onsite at GA: Neutralization and Filtration	0.004 m ³ , 0.5 gal	- 0 -
GA-W032	NPR (Fuel Fabrication Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid/Mercury below TCLP level LL-CH-T20-N20/L1190/RC-O90-M12-C14	D001 D002	Incineration Deactivation	Deactivation and (1) concentration-based treatment standard for underlying hazardous constituents per 22 CCR 66268.48, or (2) discharge to POTW.	Onsite at GA: Neutralization and Stabilization	0.208 m ³ , 1 - 55-gal drum	- 0 -
MLLW, Waste Waters, CH (continued)							
GA-W033	NPR (Fuel Fabrication Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid/Chromium below TCLP level LL-CH-T20-N20/L1190/RC-O90-M11-C14	D001 D002	Incineration Deactivation	Deactivation and (1) concentration-based treatment standard for underlying hazardous constituents per 22 CCR 66268.48, or (2) discharge to POTW.	Onsite at GA: Neutralization and Stabilization	0.208 m ³ , 1 - 55-gal drum	- 0 -
MLLW, Inorganic Sludges, CH							
GA-W003	SVA: Lead contaminated sludge (sump water and sludge) LL-CH-T20-N20/S3129/RC-O90-M11-C90	D008	Stabilization	Concentration-based standard for D008.	Hanford: WRAP IIA Stabilization	1.47 m ³ , 10 - 55-gal drums	- 0 -
MLLW, Non-Activated Elemental Lead, CH							
GA-W007	Hot Cell D&D: Lead shot LL-CH-T20-N20/X7211/RC-O90-M11-C90	D008	Macro-encapsulation	Radioactive lead solids subcategory; Technology-based standard (macroencapsulation).	Hanford: WRAP IIA Macroencapsulation	0.208 m ³ , 1 - 55-gal drum	- 0 -

TABLE 3-2

TREATMENT OPTIONS FOR CHARACTERIZED DOE/OAK MLLW STREAMS AT GA

Waste Stream No.	Waste Stream Description and DOE Treatability Group	RCRA Waste Code(s)	Best Demonstrated Available Technologies (BDAT)	Universal Treatment Standard(s)	Preferred Treatment Option	Current Volume	Projected Additional Volume (thru '97)
GA-W013	Hot Cell D&D: Lead bricks LL-CH-T20-N20/X7211/RC-O90-M11-C90	D008	Macro-encapsulation	Radioactive lead solids subcategory; Technology-based standard (macroencapsulation).	Hanford: WRAP IIA Macroencapsulation	1.04 m ³ , 5 - 55 gal drums, 1000 bricks	- 0 -

Notes: -RESERVED-

Treatability Group Key: See Table 2-1 of this Background Volume for Treatability Group Codes

Key: CH = Contact-Handled
 D&D = Decontamination and Decommissioning
 NPR = New Production Reactor
 SVA = Sorrento Valley Building "A"
 TBD = To Be Determined

3.1.3 Treatment Facility Descriptions and Schedules

Limited capabilities for treating mixed waste are currently available at GA. Preferred treatment options for currently characterized mixed waste streams involve onsite neutralization and filtration or stabilization at GA and offsite treatment at the Hanford site.

Storage of mixed waste at the Hanford site while treatment capacity is being developed will be in compliance with RCRA LDR storage prohibition in accordance with Hanford's Tri-Party Agreement signed by DOE, the EPA, and the State of Washington. Therefore, any DOE/OAK mixed wastes shipped to Hanford for future treatment will be in compliance with the LDR storage prohibition when they are accepted for storage at Hanford. Facilities proposed for treatment of the DOE/OAK MLLW at GA include the following:

- **GA Neutralization, Filtration, and Stabilization Units.** These treatment units are currently operational and accept only mixed waste generated at GA. Wastes must meet the applicable WAC for each treatment unit.
- **WRAP IIA.** The Hanford Site is proposing to seek treatment services from the private sector for waste streams, including wastes from other DOE sites, that were to be treated in the proposed Waste Receiving and Processing (WRAP) IIA facility. Accordingly, the DOE Richland Operations Office has requested that the Milestone M-19-00, "Complete WRAP II Module Construction and Initiate Operations," in the Hanford Tri-Party Agreement be amended. The proposed amendment would not change the milestone date for initiating operations on September 30, 1999. If the amendment is approved, the specific nature and location of the facility will be determined through the contracting process. The status of the privatization effort, progress in securing treatment services by DOE-Richland and any change to the facility title will be reported in subsequent Annual Updates to this plan.

3.2 MLLW STREAMS FOR WHICH TECHNOLOGY EXISTS BUT NEEDS ADAPTATION OR FOR WHICH NO TECHNOLOGY EXISTS

No DOE/OAK MLLW streams at GA have currently been identified for a treatability study. Any future treatability studies will be shown in Table 3-2, with schedule information shown in Tables 3-4(c) or (d), as appropriate (the tables are included only if applicable to this site).

3.3 MLLW STREAMS REQUIRING FURTHER CHARACTERIZATION

Table 3-3 summarizes the DOE/OAK MLLW streams at GA that require characterization or technology assessment, with schedule information for these waste streams presented in Table 3-4(e) (the table is included only if applicable to this site). The volumes noted in cubic meters in Table 3-3 reflect current volumes and may differ from those listed in Phase 2 of the MWIR database dated May 1994. The volumes noted in other units are included to provide a more practical description of the

waste volumes and configurations. These volumes are subject to change as the waste streams are further evaluated.

TABLE 3-3

UNCHARACTERIZED DOE/OAK MLLW STREAMS AT GA

Waste Stream No.	Waste Stream Description and DOE Treatability Group (if Known)	Current Volume	Projected Additional Volume (thru '97)
Organic Liquids			
GA-W010	Hot Cell D&D: Pump oil Preliminary Group: LL-CH-T20-N20/L2290/RC-011-M90-C90	0.004 m ³ , 1.0 L	- 0 -
GA-W021	NPR (Fuel Fabrication Program): Kerosene and water Preliminary Group: LL-CH-T20-N20/L2110/RC-011-M90-C11	Volume TBD, (≈ less than 1 gal)	- 0 -
GA-W027	NPR (Fuel Fabrication Program): Oil Preliminary Group: LL-CH-T20-N20/L2290/RC-011-M90-C90	Volume TBD, (≈ 4 gal)	- 0 -
GA-W034	Doublet III: Alcohol and tritium	Volume TBD, (≈ 15 gal)	TBD, (≈ 45 gal)
GA-W035	Doublet III: Oil and tritium	Volume TBD, (≈ 125 gal)	TBD, (≈ 165 gal)
GA-W038	Hot Cell D&D: Miscellaneous liquid solvents	Volume TBD, (≈ 2 - 55 gal drums)	- 0 -
GA-W039	Hot Cell D&D: Corrosive liquids	Volume TBD, (≈ 2 -55 gal drums)	- 0 -
Inorganic Debris			
GA-W014	Hot Cell D&D: Miscellaneous scrap metal Preliminary Group: LL-CH-T20-N20/S5111/RC-090-M11-C90	Volume TBD, (≈ 4 - 55-gal drums)	10 m ³
GA-W028	NPR (Fuel Fabrication Program): HEPA Filters Preliminary Group: LL-CH-T20-N20/S5410/RC-090-M11-C90	7.93 m ³ , 280 ft ³	10 m ³
GA-W036	Hot Cell D&D: HEPA Filters	Volume TBD	- 0 -
GA-W037	Hot Cell D&D: Solid wastes contaminated with F-listed solvents	Volume TBD, (≈ 2 - 55 gal drums)	- 0 -
GA-W040	Hot Cell D&D: Electrical components with lead solder	Volume TBD	- 0 -

TABLE 3-4 (a)				
SCHEDULE: MLLW STREAMS TO BE TREATED ONSITE WITH EXISTING TECHNOLOGIES				
Activity	Waste Stream No.			
	GA-W004, W005, W006 NPR Fuel Fabrication Program Corrosive Solutions	GA-W041, GA-W042 NPR Fabrication Program Corrosive Solutions	GA-W009 HCF Basic Solutions	GA-W032, W033 NPR Acidic Organics w/ Metals
Onsite Treatment	Neutralization and Stabilization	Neutralization and Stabilization	Neutraliza tion and Filtration	Neutralization and Stabilization
Submit RCRA Part A permit application to the State of California.	Completed	Completed	Completed	Completed
Procure Construction Contracts	Completed	Completed	Completed	Completed
Initiate Construction	Completed	Completed	Completed	Completed
Conduct System Testing	Completed	Completed	Completed	Completed
Complete Neutralization	12/31/95	10/31/96	12/31/95	12/31/95
Complete Waste Treatment. (Filter and/or stabilize)	8/31/96	6/31/97	8/31/96	8/31/96

Items noted in boldface are reflected as milestones/target dates in the Compliance Plan Volume.

Assumptions:

1. A RCRA Part A permit application was submitted to the California Department of Toxic Substances Control. The permit application included the treatment units to be used to comply with this schedule.
2. Liquids remaining after neutralization and filtration will be discharged to the POTW in accordance with GA's Industrial Discharge Permit administered by the City of San Diego.

TABLE 3-4 (b)		
SCHEDULE: MLLW STREAMS TO BE TREATED OFFSITE WITH EXISTING TECHNOLOGIES		
Activity	GA-W003 SVA Inorganic Sludges	GA-W007, W013, HCF Elemental Lead
	Offsite Treatment Location	Hanford WRAP IIA
Request WAC from selected offsite treatment facility.	Completed	Completed
Submit a written certification plan to the offsite facility.	Completed	Completed
Conduct sampling and analysis of waste generated if required, and submit resulting wastes profiles to the offsite facility.	Completed	Completed
Request an acceptable shipping schedule from offsite facility for offsite transport of waste(s).	8/31/96	8/31/96
Complete shipment of waste(s) offsite.	Assumption #7	Assumption #7

Items noted in boldface are reflected as milestones/target dates in the Compliance Plan Volume.

Assumptions:

1. Waste Acceptance Criteria (WAC) Timing: Hanford requires 3 months following request.
2. A certification plan is required by DOE Order 5820.2A and includes packaging requirements, waste form acceptance criteria, and constituent acceptance criteria. The plan is developed from the information established in the offsite facility's WAC.
3. The offsite facility may or may not require additional sampling and analysis prior to waste acceptance; sampling and analysis would be conducted in accordance with the procedures established in the approved certification plan.
4. The offsite facility will approve the certification plan within 6 months of submittal.
5. The offsite facility will approve the waste profile within 6 months of submittal.
6. The shipment date will be provided by the offsite facility.
7. Wastes will be shipped within 6 months after the approved shipping date provided by the treatment facility (in response to GA's request shown as the first milestone).

TABLE 3-4 (e)
SCHEDULE: MLLW STREAMS REQUIRING CHARACTERIZATION

Activity	Waste Stream No.				
	GA-W021, W027 NPR Kerosene and Oil	GA-W028, NPR HEPA Filters	GA-W010 W038, W039 HCF Pump Oil, Solvents, Corrosives	GA-W014, W036, W037, W040 HCF Inorganic Debris	GA-W034, W035 Doublet III Tritiated wastes
Complete necessary characterization to allow the identification of treatment option.	6/30/96	6/30/96	6/30/96	6/30/96	6/30/96
Select a treatment option and submit a treatment schedule with the STP Annual Update.	3/31/97	3/31/97	3/31/97	3/31/97	3/31/97

Items noted in boldface are reflected as milestones/target dates in the Compliance Plan Volume.

Assumptions: -RESERVED-

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4.0 MIXED TRANSURANIC WASTE STREAMS

DOE/OAK has not generated or stored MTRU wastes at GA, nor are MTRU wastes anticipated to be generated at GA in the future. MTRU waste, by definition, is waste, regardless of source or form, that is contaminated with (1) alpha-emitting transuranium nuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g at time of assay and (2) RCRA-regulated waste.

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5.0 MIXED HIGH LEVEL WASTE STREAMS

DOE/OAK has not generated or stored HLW at GA, nor are HLW anticipated to be generated at this site in the future. HLW is defined as the highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation.

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6.0 FUTURE GENERATION OF MIXED WASTE STREAMS

Future generation of large quantities of DOE/OAK mixed wastes at GA is not anticipated as a result of active processes or experiments. Future generation of mixed waste that is also subject to land disposal restrictions is expected to be limited to low level waste streams generated by continued decontamination, decommissioning, demolition, and dismantling of contaminated structures; and small quantities of potential mixed wastes from the DOE Doublet III fusion research program. For any mixed waste that is not addressed under an existing agreement with the State of California and the EPA, the waste stream will be incorporated into the STP following generation only if it does not meet LDR requirements, regardless of the time of generation. Waste stream additions will be made in accordance with the procedure outlined in Section 2 of the Compliance Plan Volume.

Table 6-1 provides a summary of currently identified potential future DOE/OAK mixed waste streams at GA.

6.1 FUTURE MIXED WASTE STREAMS FROM ENVIRONMENTAL RESTORATION

Future generation of DOE-related mixed waste from ER activities that is also subject to LDRs is not anticipated at GA. Any future mixed waste streams from ER activities will be identified in Table 6-1.

6.2 FUTURE MIXED WASTE STREAMS FROM DECONTAMINATION AND DECOMMISSIONING

Future generation of DOE/OAK mixed waste that is also subject to land disposal restrictions is expected to be limited to low level waste streams generated by continued decontamination, decommissioning, demolition, and dismantling of contaminated structures at GA.

TABLE 6-1			
SUMMARY OF FUTURE POTENTIAL DOE/OAK MIXED WASTES AT GA			
Waste Stream No. or Source	Waste Stream Description	Current Volume	Projected Additional Volume (thru '97)
ER Activities			
—	None identified at this time.	—	—
D&D Activities			
GA-W014 and GA-W036	Hot Cell D&D: Miscellaneous scrap metal and electrical components with lead solder	TBD (≈ 6 -55 gal drums)	10 m ³
GA-W028	NPR (Fuel Fabrication Program): HEPA Filters	7.93 m ³ (280 ft ³)	10 m ³
TRIGA Complex D&D	TBD	TBD	TBD
Other Activities			
GA-W038	Doublet III: Miscellaneous liquid solvents	TBD (≈ 2 - 55 gal drums)	TBD (≈ 45 gal)
GA-W039	Doublet III: Oil and tritium	TBD (≈ 2 -55 gal drums)	TBD (≈ 165 gal)

6.3 OTHER POTENTIAL MIXED WASTE STREAMS

Potential future mixed waste streams from other DOE-related activities at GA include two waste streams contaminated with tritium from the Doublet III fusion research program. The current inventory of these waste streams has not yet been fully characterized to determine whether these wastes satisfy the definition of mixed wastes. No other DOE/OAK potential mixed waste streams have been identified at GA at this time.

6.4 RECYCLABLE MATERIALS

No future potential DOE/OAK mixed wastes that would be recyclable materials have been identified at GA at this time.

7.0 STORAGE REPORT

DOE is committed to storing waste in compliance with RCRA storage requirements in 22 CCR 66264 or 22 CCR 66265, pending the development of treatment capacity and implementation of the STPs.

7.1 STORAGE FOR CURRENT INVENTORY AND FUTURE WASTES

Mixed wastes generated at GA are stored at the Mixed Waste Management Facility (MWMF) at GA. The MWMF is an interim status waste storage facility operated in accordance with RCRA requirements contained in 22 CCR 66265. The MWMF consists of three areas, MWMF1, MWMF2, and MWMF3, which are designated as container storage areas for mixed wastes. The total storage capacity for these three areas is approximately 580 m³ (equivalent to roughly 2,758 55-gallon drums). This storage capacity far exceeds the current and projected waste inventory at GA, so no additional storage will need to be provided for these wastes.

7.2 STORAGE FOR WASTES PRIOR TO TREATMENT

Wastes to be treated at offsite facilities may be shipped and stored at the receiving facility prior to treatment. DOE/OAK believes that the small volume of wastes to be stored will have a negligible impact on the offsite receiving facility's compliant storage capacity. Detailed information regarding the proposed offsite temporary storage location is included in the proposed agreements with the offsite treatment facilities (contained in Appendix A to this PSTP Background Volume).

7.3 STORAGE FOR WASTE TREATMENT RESIDUALS PRIOR TO DISPOSAL

It is anticipated that all residuals from the onsite treatment of DOE/OAK mixed waste at GA will meet the definition of non-RCRA low-level radioactive waste and therefore will not require further management as a RCRA waste. DOE/OAK's approach for treatment residuals from wastes shipped offsite for treatment consists of the following two options, in order of preference:

- (1) Treatment residuals will be stored in an approved storage location at the treatment site, pending final decisions regarding disposal. The status of storage for residuals at offsite treatment sites is noted in the tables contained in Appendix A to this volume.
- (2) If the above option is not feasible, treatment residuals will be shipped back to a DOE/OAK site located in California, pending final decisions regarding disposal.

8.0 MIXED WASTE DISPOSAL ISSUES

This section discusses the overall DOE process for evaluating issues related to the disposal of residuals from the treatment of MLLW subject to the FFCAct. GA is not among the sites being analyzed further for potential development as a disposal site for residuals from the treatment of MLLW subject to the FFCAct. This section outlines the disposal planning process developed by DOE, in consultation with the states, for evaluating potential options for the disposal of residuals from the treatment of MLLW. Importantly, because DOE is not currently developing MLLW disposal sites (with the exception of the Hanford Site) preferred alternatives or final destinations for disposal of treatment residuals are not known at this time. The results of this process are intended to be considered during subsequent planning activities and discussions between DOE and regulatory agencies.

8.1 BACKGROUND

The FFCAct requires DOE to develop a plan for the treatment of mixed wastes. The FFCAct does not impose any similar requirement for the disposal of mixed wastes after they have been treated; however, DOE recognizes the need to address this final phase of mixed waste management. The following process reflects DOE's current strategy for evaluating the options for disposal; the evaluation will increase understanding of the strengths and weaknesses of a site's potential for disposal but is not a site selection process. Ultimately the identification of sites that may receive mixed waste for disposal will follow state and federal regulations for siting and permitting, and will include appropriate public involvement.

HLW and MTRU wastes are among the mixed waste subject to the FFCAct. Options for disposal of these mixed wastes are not identified by this process because there are established processes for studying, designing, constructing, and operating disposal facilities for these wastes. The DOE has historically planned to develop MLLW disposal facilities at the six DOE sites currently disposing of low-level waste. These sites are Hanford, Savannah River, Oak Ridge Reservation, Idaho National Engineering Laboratory, Nevada Test Site, and Los Alamos National Laboratory.

Currently, the Hanford Site has the only active permitted facility operated by DOE for the disposal of residuals from the treatment of MLLW. This plan has been re-directed in conjunction with the planning efforts of the FFCAct to include the results of the disposal planning process (see Figure 8-1), and the WM PEIS. The sites subject to evaluation under this process are the 49 sites reported to Congress by DOE in the April 1993 MWIR that are currently storing or expected to generate mixed waste.

8.2 DISPOSAL PLANNING PROCESS

Although the FFCAct does not specifically address disposal of treated mixed wastes, both DOE and the states have recognized that disposal issues are an integral part of treatment discussions. A process was established to evaluate and discuss the issues related to the potential disposal of the residuals from the treatment of DOE MLLW at the sites subject to the FFCAct, shown in Figure 8-1. The focus of this process has been to identify, from among the 49 sites that currently store or are expected to generate mixed waste, sites that are suitable for further evaluation of their potential as disposal sites. Sites determined to have marginal or no potential for disposal will be removed or deferred from further evaluation under this process. The remaining sites will be evaluated more extensively. Ultimately, a number of sites are expected to be identified that are technically acceptable for disposal of treated residuals.

8.2.1 Activities to Date

Site Grouping. The initial step in this process was to examine each of the 49 sites to determine which sites, while individually listed in the MWIR, were in such geographic proximity that further analysis could address them as a single site. This grouping reduced the number of sites to 44, as follows:

- Idaho National Engineering Laboratory and Argonne National Laboratory West are located on a single federally-owned reservation near Idaho Falls, Idaho;
- The Sandia National Laboratories, California, and Lawrence Livermore National Laboratory are located on adjoining, federally-owned properties near Livermore, California;
- The Inhalation Toxicology Research Institute and Sandia National Laboratories, New Mexico, are located on the same federally-owned reservation, and;
- The Oak Ridge National Laboratory, Oak Ridge K-25 Site, and Oak Ridge Y-12 are all located within the federally-owned Oak Ridge Reservation, near Oak Ridge, Tennessee.

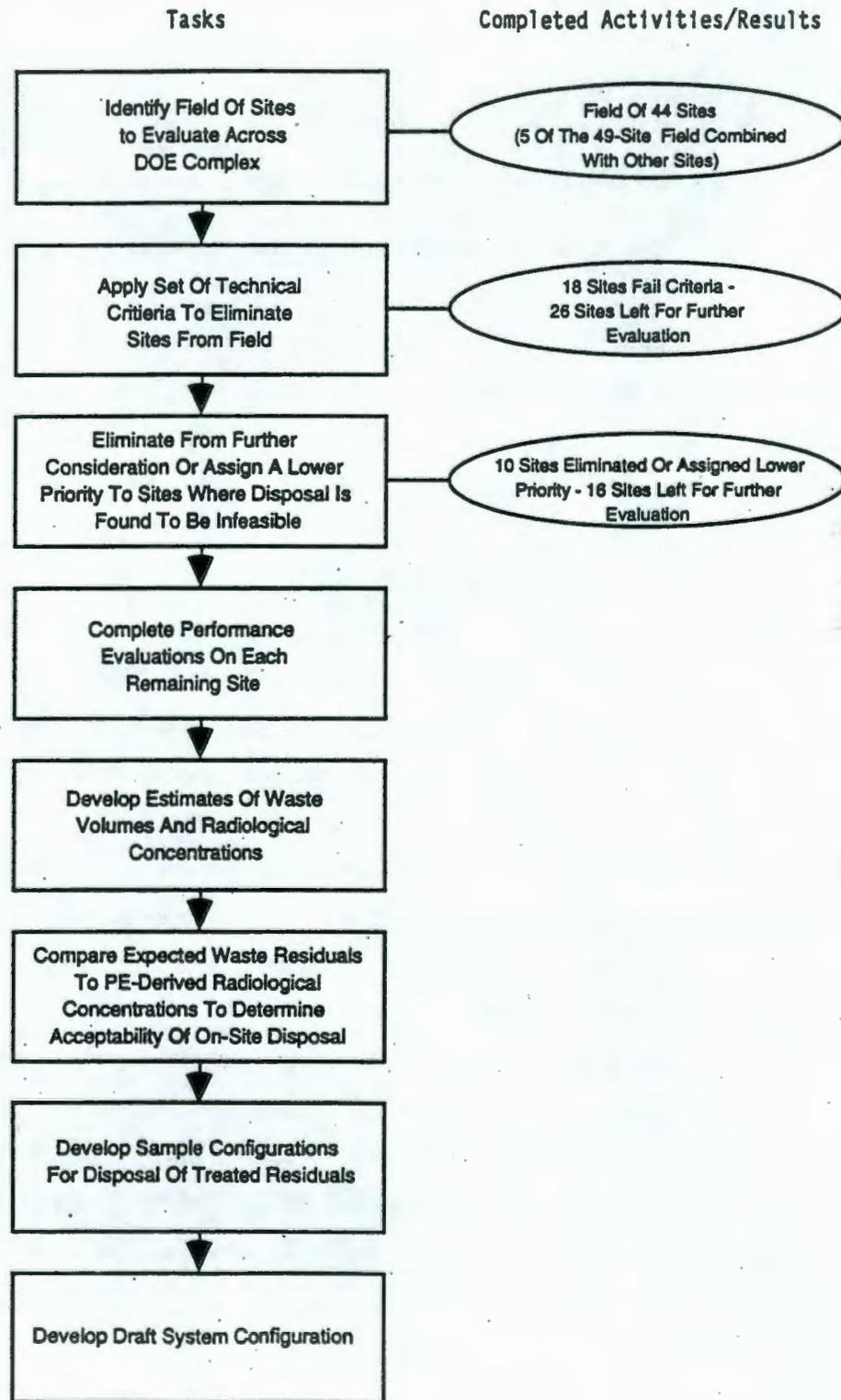


FIGURE 8-1 Disposal Planning Process

Initial Site Screening. At a joint meeting on March 3-4, 1994, DOE and the states agreed on three exclusionary criteria for further screening the 44 remaining sites. These criteria were developed by reviewing federal and state requirements regarding the siting of waste treatment, storage, and disposal facilities. In order to be evaluated further, a site must:

- Not be located within a 100-year floodplain;
- Not be located within 61 meters (200 feet) of an active fault, and;
- Have sufficient area to accommodate a 100-meter buffer zone.

The first criterion (100-year flood plain) is derived from both NRC and RCRA requirements. The second criterion (active fault) was selected from requirements found in RCRA which restrict the location of waste treatment, storage, and disposal facilities. The third criterion (sufficient area for 100-meter buffer) is derived from guidance from the EPA, NRC, and DOE for the proper operation of waste facilities.

Evaluation of the 44 sites resulted in identification of 26 sites meeting the above criteria. At a joint meeting on March 30-31, 1994, DOE and the states agreed to remove from further evaluation those sites not meeting the screening criteria. Also at that meeting, DOE agreed to collect additional, more detailed information on the remaining 26 sites to identify additional strengths and weaknesses of the sites. It was agreed that DOE or any affected state may propose further elimination of sites from consideration following the site-specific evaluation.

Evaluation of the Remaining 26 Sites. DOE and the states met on July 26-27, 1994, to discuss the site-specific data on the remaining 26 sites, and to consider proposals for eliminating additional sites from further evaluation. The focus of these discussions was to identify sites suitable for further evaluation under this process.

The criteria that DOE and the states used to eliminate sites from further evaluation at this stage were derived from three main groupings of considerations: technical considerations, potential receptor considerations, and practical considerations. Each of the remaining 26 sites were evaluated against criteria in these groupings that included soil stability and topography, precipitation and evapotranspiration, population, proximity to sensitive environment, land acquisition, government presence at the site, and regulatory constraints.

Sites with marginal or no potential for disposal, based on these criteria, were recommended for removal or postponement from further evaluation. As a result of the meeting, DOE and the states

agreed to eliminate five sites from further evaluation due to their limited potential for disposal (See Table 8-1).

Site	State
Energy Technology Engineering Center	California
General Atomics	California
General Electric Vallecitos Nuclear Center	California
Pinellas Plant	Florida
Site A/Plot M	Illinois

Additionally, DOE and the states agreed to merge the evaluation of Knolls Atomic Power Laboratory at Niskayuna, New York, and Knolls Atomic Power Laboratory at Kesselring, New York, due to their close, geographic proximity.

While not eliminated from further evaluation, it was agreed to lower the evaluation priority of an additional four sites. Issues such as the technical capabilities of the site, the volume of mixed waste that may be generated by the sites, and the acceptability of off-site waste contributed to a conclusion that further evaluation of some sites should not be a high priority. DOE and the states agreed to evaluate these sites in terms of their capability to dispose of their own mixed waste if no other off-site disposal options could be identified. These sites, identified in Table 8-2, will not be considered for disposal of wastes from other sites, and may be eliminated from further analysis if sufficient evidence suggests the potential for disposal is too limited.

Performance Evaluation. The performance evaluation being conducted for the 16 sites identified for further evaluation entails the collection of more detailed site-specific data related to the site characteristics. The performance evaluation methodology is based on the principles of radiological performance assessments and was developed by DOE performance assessment experts. Additionally, the evaluation will be based on RCRA-compliant engineered facilities. This information will be used to evaluate the sites and estimate the radionuclide concentration limits of waste that may be disposed at a given site. The performance evaluations were initiated in August 1994. The 16 sites for which performance evaluations are being prepared are identified in Table 8-3.

TABLE 8-2	
SITES WITH LOW PRIORITY FOR CONSIDERATION AS DISPOSAL LOCATIONS	
Site	State
Weldon Spring Remedial Action Project	Missouri
Brookhaven National Laboratory	New York
Mound Plant	Ohio
Bettis Atomic Power Laboratory	Pennsylvania

TABLE 8-3	
REMAINING POTENTIAL DISPOSAL SITES UNDER CONSIDERATION	
Site	State
Lawrence Livermore National Laboratory, Site 300	California
Rocky Flats Environmental Technology Site	Colorado
Idaho National Engineering Laboratory	Idaho
Argonne National Laboratory	Illinois
Paducah Gaseous Diffusion Plant	Kentucky
Nevada Test Site	Nevada
Los Alamos National Laboratory	New Mexico
Sandia National Laboratories, NM	New Mexico
Knolls Atomic Power Laboratory-Kesselring	New York
West Valley Demonstration Project*	New York
Fernald Environmental Management Project	Ohio
Portsmouth Gaseous Diffusion Plant	Ohio
Savannah River Site	South Carolina
Oak Ridge National Laboratory	Tennessee
Pantex Plant	Texas
Hanford	Washington

* Because the West Valley Demonstration Project Act does not authorize the site to accept off-site wastes, the site will only be evaluated for disposal of on-site wastes.

8.2.2 Next Steps in the Evaluation Process

As illustrated in Figure 8-1, progress has been made in the planning of the disposal process. The following steps outline future activities that are either ongoing or are to be completed to facilitate an informed decision about the disposal of DOE MLLW. Coordination with the states will continue to ensure stakeholder input and to resolve concerns at the earliest possible stage.

Complete Remaining Performance Evaluations. To date, 10 performance evaluations have been completed for the following sites: Savannah River, Oak Ridge Reservation, Idaho National Laboratory, Hanford, Sandia National Laboratories, Rocky Flats Environmental Technology Site, Los Alamos National Laboratory, Pantex Plant, Nevada Test Site, and Lawrence Livermore Laboratory. Performance evaluations for the remaining 6 sites are scheduled to be completed by June 1995. A progress report for the performance evaluation activities has been issued at approximately the same time frame as the final PSTPs in order to keep the states and other interested parties informed of the progress.

Develop Estimates of Waste Volumes and Radionuclide Concentrations in Treated Residuals. Once treatment methods for the MLLW waste streams are finalized through the FFCAct process, estimates of the volumes and radionuclide concentrations of the treated residuals will be developed for all waste streams. This analysis will take place after the PSTPs have been approved by the appropriate regulatory agencies. These estimates are needed to compare to the performance evaluation-derived radionuclide concentration guides.

Compare Estimates of Radionuclide Concentration in Treated Residuals to Performance Evaluation-Derived Radionuclide Concentration Guides. Radionuclide concentrations for each treated residual will be compared to those disposal values derived in the performance evaluation in this step. Comparing radionuclide concentrations in treated residuals with performance evaluation concentration guides will compare MLLW stream characteristics to potential disposal sites' capabilities. This evaluation will also include offsite DOE and commercial disposal site candidates for those treated waste streams that do not have onsite capabilities. Confirmation of the candidates streams and sites will be attained through detailed performance assessment efforts.

Develop Sample Configurations for Disposal of Treated Residuals. An options analysis team approach will be employed to develop sample complex-wide configurations for the disposal of treated MLLW residuals. These configurations will take into account such technical issues as compatibility of radionuclides (both for those handled at the site and those considered acceptable by the performance evaluations), capacity to handle projected residual volumes, etc. Under the OAT approach, other types of issues will be weighed during the configuration discussions such as transportation costs and distances.

Develop a Draft Disposal System Configuration. Using the sample configurations as a starting point, DOE will develop a draft disposal system configuration with state and stakeholder input. This configuration will be the basis for determining future funding and schedules for proposed disposal facilities. The Final WM PEIS will provide bounding analysis of potential environmental impacts for the range of sample configurations considered. It will identify preferred sites for further development as disposal facilities. Following the issuance of the ROD for the WM PEIS, DOE may initiate site-specific NEPA evaluations for the proposed disposal facilities; initiate performance assessment analyses for compliance with DOE Order 5820.2A; and initiate processes for permitting disposal facilities.

8.3 INTEGRATION WITH THE STP PROCESS

The FFCAct does not require disposal to be included in the STPs. Given the complex issues involved however, DOE recognizes the importance of state input to facilitate resolution of issues related to disposal. Section 8 information is provided in the PSTP to continue to involve the states and inform them of DOE's continued work on the disposal issue. For more detailed information on the ongoing performance evaluation process, refer to DOE's *Progress Report on Performance Evaluation of DOE Sites' Capabilities for Mixed Low-Level Waste Disposal*. As the disposal planning process moves forward, further information will be provided and coordination with the states will continue.

9.0 REFERENCES

U.S. Department of Energy, 1992a, *Technical Area Status Report for Low-Level Mixed Waste Final Waste Forms*, DOE/MWIP-3, June 1992, Washington, D.C.

_____, 1993a, *Schedule for Submitting Plans for the Treatment of Mixed Waste Generated or Stored at Each Site*, *Federal Register* (58 FR 17875), April 6, 1993, Washington, D.C.

_____, 1993b, *Interim Mixed Waste Inventory Report*, April 1993, Washington, D.C.

_____, 1993c, *Draft Site Treatment Plan Development Framework, Revision 7*, April 1994, Washington, D.C.

_____, 1993d, *Technical Area Status Report for Chemical/Physical Treatment*, DOE/MWIP 8, May 1993.

_____, 1994a, *Mixed Waste Inventory Report*, May 1994, Washington, D.C.

_____, 1994b, *Treatment Selection Guides, Revision 0*, March 1994, Washington, D.C.

_____, 1994c, *Draft Site Treatment Plan Cost Information Guidance*, April 1994, Washington, D.C.

_____, 1994d, *DOE Waste Treatability Groups Guidance, Final Draft*, November 1994, Washington, D.C.

_____, 1995a, *Proposed National Mixed Waste Treatment Configuration*, January 13, 1995, Washington, D.C.

U.S. Department of Energy, Oakland Operations Office, 1993a, *Conceptual Site Treatment Plan for General Atomics*, October 1993, Oakland, California.

_____, 1994a, *Draft Site Treatment Plan for General Atomics*, DOE/OAK Doc. No. 94-W 282/5400.2.a.3.6, August 1994, Oakland, California.

U.S. Environmental Protection Agency, 1991a, *Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods*, EPA-SW-846, 1991.

General Atomics, 1994a, *Waste Analysis Plan for the MWMF*, Document No. PC-0004020, April 1994, San Diego, California.

_____, 1994b, *Nuclear Waste Packaging Facility Waste Minimization Plan*, Document No. PC-0004080, April 1994, San Diego California.

Appendix A

**PROPOSED OFFSITE TREATMENT FACILITY AGREEMENTS
FOR DOE/OAK MIXED WASTES**

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PROPOSED OFFSITE TREATMENT FACILITY AGREEMENTS

Mixed waste streams have been identified for treatment at offsite facilities in some of the DOE/OAK Proposed Site Treatment Plans. For these options, it was necessary for DOE/OAK to initiate discussions with the offsite treatment facility(s) to develop an offsite shipping agreement for implementation of the option.

DOE/OAK initiated the process for developing an offsite shipping agreement by developing a proposed agreement. The proposed agreement was transmitted to the DOE Operations Office responsible for the respective offsite treatment facility. The proposed offsite shipping agreement(s) related to this PSTP are included in this Appendix. The proposed agreements include all DOE/OAK managed waste streams planned for treatment at the respective offsite treatment facility, not just those identified in this PSTP.

DOE/OAK is presently coordinating activities with the offsite treatment facilities to obtain formal approval or concurrence on the proposed offsite shipping agreements. Major issues that still require resolution are the pre-treatment storage of wastes and the storage of post-treatment residuals at the treatment site. Treatment options that involve pre- and/or post-treatment storage at the treatment site may require additional discussions between DOE, States, regulators, and interested members of the public. These discussions could impact the schedule dates for shipping the affected waste streams to the receiving site. For example, one resolution of the pre- and/or post-treatment storage issue could be that mixed waste will not be shipped to an offsite treatment facility until the treatment facility becomes operational and/or treats the existing onsite mixed waste backlog first. This resolution could result in a delay in the actual shipping date.

DOE/OAK recognizes that although these proposed offsite shipping agreements may require further discussions prior to approval or concurrence, such proposals should be presented in the PSTPs.

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memorandum

DATE: February 9, 1995

REPLY TO
ATTN OF: DOE Oakland Operations Office

SUBJECT: Federal Facility Compliance Act Proposed Site Treatment Plans: Proposed Offsite Shipping Agreement with Hanford for Pre-treatment Storage, Treatment, and Post-treatment Residual Management of DOE/OAK Mixed Wastes

TO: Ed MacAlister, DOE/Richland (DOE/RL)

As required under the Federal Facility Compliance Act of 1992, DOE is required to prepare Site Treatment Plans (STPs) for sites which generate and store DOE mixed waste subject to the RCRA LDR storage prohibition. Consistent with DOE Headquarters protocol for finalizing offsite waste treatment options, the DOE Oakland Operations Office (DOE/OAK) and its proposed receiving sites have agreed to develop "Offsite Shipping Agreements" which will be incorporated (along with supporting documentation), as an Appendix into applicable DOE/OAK Proposed Site Treatment Plans (PSTPs).

This memorandum requests concurrence from DOE/RL on the attached Offsite Shipping Agreement, addressing the shipment, pre-treatment storage, treatment, and post-treatment management of residuals of DOE/OAK mixed wastes. Table 1 of the Shipping Agreement has been developed to include: Shipping and Receiving Site Contacts; Waste Stream ID Numbers and Volumes; Pre-treatment and Post-treatment Storage Locations; Treatment Facilities; and Milestone Dates for "Requesting Shipping Schedules" (from Hanford), as well as "Approved Shipping Dates." An Approved Shipping Date will be added to Column 5 of Table 1 based upon DOE/RLs response to this memorandum.

The following information request and proposed terms of the Offsite Shipping Agreement include:

WRAP IIA Scheduling Information: Consistent with DOE Headquarters guidance regarding the development of treatment options in the PSTPs, DOE/OAK is requesting treatment schedule information for the WRAP IIA Facility. Treatment schedule data will be incorporated into the PSTP Background Volumes for the DOE/OAK sites proposing to ship to WRAP IIA.

Pre-treatment Storage: Please note that DOE/OAK is proposing pre-treatment storage of its mixed wastes at Hanford. Based on the small volume of waste to be shipped, it is DOE/OAKs position that compliant storage capacity at Hanford should not be significantly impacted.

Approved Shipping Dates: In order to develop PSTP Milestones and/or Target Dates for shipment of mixed wastes to Hanford, DOE/OAK is requesting acceptable shipping dates for each waste stream. The information provided by DOE/RL will be added to Table 1, and will be incorporated into both the PSTP Background and Compliance Plan Volumes of the applicable DOE/OAK sites' as an acceptable Milestone and/or Target Date.

Post-treatment Residual Storage: DOE/OAK is also proposing that post-treatment residuals be managed at the Hanford site pending the outcome of the DOE disposal-site evaluations (described in Section 8.0 of the PSTPs). DOE/OAK believes that until the outcome of the disposal issue is resolved, post-treatment storage of residuals at the treatment site is a technically and economically sound management approach, especially when considering the very small volumes likely to be generated.

In order for DOE/OAK to submit its PSTPs to DOE Headquarters according to schedule (March 3, 1995), DOE/OAK is requesting a response to this memorandum no later than February 17, 1995. Should you have any questions, please contact me at (510) 637-1625, or Dave Osugi at (510) 637-1628.

Sincerely,



Alex E. Dong
Deputy Director,
Waste Management Division

Enclosures (2): -DOE/OAK - DOE/RL Offsite Shipping Agreement
 -Table 1: DOE/OAK Mixed Waste Identified for Treatment at
 the Hanford Site

cc w/ encl: Patty Bubar, EM-352
 Dan Ruge, GC-51

DOE/OAK / DOE-RL Off-Site Shipping Agreement

Transportation Safety Standards: DOE/OAK will assure that the shipping sites identified in the following table, adhere to all appropriate shipping requirements including those identified by the Hanford Site.

Off-site Pretreatment Storage: The attached Table identifies waste streams to be treated at the WRAP IIA Facility. These waste streams will be shipped to the Hanford Site prior to the operation of the WRAP IIA facility. The waste streams identified for treatment at the WRAP IIA Facility are currently located at 4 sites in California and 1 site in Missouri.

Shipping Date: DOE/OAK has identified in the accompanying table the date that the site will request a shipping date from the Hanford Site. This request is to take place after all technical issues regarding the shipment of the waste stream to the Hanford Site have been addressed. The date identified for "the request of a shipment date" coincides with the date for this milestone included in the DOE/OAK Proposed Site Treatment Plan. Additionally, it is indicated in the DOE/OAK PSTPs that the shipment of mixed waste to the Hanford Site for treatment will take place no later than 6 months after the approved shipping date provided by the Hanford Site.

Treatment Residuals Management Plan: The treatment residuals will be stored at the Hanford Site pending the outcome of the disposal investigations (as described in Section 8 of the Proposed Site Treatment Plan Background Volume). Following the completion of the disposal investigation, DOE/OAK will work with DOE-RL to identify the appropriate disposal site for the DOE/OAK treatment residuals. If a California disposal site is selected, it is likely that the disposal of the DOE/OAK treatment residuals would be disposed at this site.

Funding Requirements: DOE/OAK agrees to provide funding to DOE-RL for the purpose of pretreatment storage, treatment and management of the treatment residuals for the mixed wastes described in the attached table. The amount of funding provided by DOE/OAK will be consistent with the Hanford Site treatment costs for off-site waste.

**Table 1 - DOE/OAK Mixed Waste Identified
For Treatment at the Hanford Site**

Shipping Site / Contact	Waste ID / Volume (M ³)	Projected Annual Future Generation (M ³) ¹	Receiving Site / Contact	Pretreatment Storage Facility / Treatment Facility	Request Shipping Schedule (MM/YY) / Approved Shipping Date (MM/YY)	Treatment Residuals Storage Facility
LBL/Maxwell Yao	LB-W005/0.42	0.0	Hanford/	Hanford/Hanford	6/98 / TBD	Hanford
LLNL/Glenn May	LL-W015/3.0	3.0	Hanford/	Hanford/Hanford	10/98 / TBD	Hanford
LLNL/Glenn May	LL-W007/3.9	1.0	Hanford/	Hanford/Hanford	10/98 / TBD	Hanford
GA/Brian Laney	GA-W007/0.208	0.0	Hanford/	Hanford/Hanford	8/96 / TBD	Hanford
GA/Brian Laney	GA-W013/1.04	0.0	Hanford/	Hanford/Hanford	8/96 / TBD	Hanford
GA/Brian Laney	GA-W003/1.47	0.0	Hanford/	Hanford/Hanford	8/96 / TBD	Hanford
Univ. of Mo. / Mike Azizi	MU-W001/1.0	1.33	Hanford/	Hanford/Hanford	12/96 / TBD	Hanford
ETEC/Ravnesh Amar	ET-W009/0.64	0.0	Hanford/	Hanford/Hanford	3/96 / TBD	Hanford
ETEC/Ravnesh Amar	ET-W019/2.45	0.0	Hanford/	Hanford/Hanford	3/96 / TBD	Hanford
ETEC/Ravnesh Amar	ET-W026/0.1	0.0	Hanford/	Hanford/Hanford	3/96 / TBD	Hanford

Footnote:

- 1 - The annual mixed waste projection identifies waste to be generated after October 1995. These wastes will be shipped to the Hanford site pursuant to updated agreements as necessary. Updated mixed waste volumes will be provided in the Annual Updates to the STP.

Appendix B

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The terms defined below (a) have been collected or derived from documentation for regulatory agencies and U.S. Department of Energy (DOE) sites and environmental and other sources of regulations and documents or (b) were written as part of the Site Treatment Plan development. The words and phrases are listed alphabetically. Common abbreviations, if any, follow the term. In cases where the regulatory definition differs from the definition provided in this section, the regulatory definition has been used.

Amalgamation - Amalgamation is achieved by mixing, at room temperature, the liquid mercury with powdered reagents such as copper, zinc, tin, nickel, gold, and/or sulfur to yield a metal alloy with no free mercury.

Aqueous Liquids (as a waste matrix) - Liquids/slurries with a Total Organic Carbon (TOC) content less than 1%. Slurries must be pumpable (e.g., suspended/settled solids can be up to approximately 35-40%). Only liquids/slurries packaged/stored in bulk form (i.e., tank-stored, drummed, bulk free liquids) are included in this category. Liquids packaged in a laboratory pack-type configuration are categorized as "lab packs."

Best Available Technology (BAT) or Best Demonstrated Available Technology (BDAT) - (1) The preferred technology for treating a particular process liquid waste selected from among others after taking into account factors related to technology, economics, public policy, and other parameters. As used in DOE Order 5400.5, BAT is not a specific level of treatment but the conclusion of a selection process that includes several treatment alternatives. (2) Treatment technologies that have been shown through actual use to yield the greatest environmental benefit among competing technologies that are practically available.

Biodegradation (BIODG) - The degradation of organics or non-metallic inorganics (i.e., inorganics that contain the elements of phosphorous, nitrogen, and sulfur) in units operated under either aerobic or anaerobic conditions such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., TOC can often be used as an indicator parameter for the biodegradation of many organic constituents that cannot be directly analyzed in wastewater residues).

Capacity (of a facility) - The annual process throughput, in cubic meters per year (m^3/yr) under normal operating conditions. "Normal operating conditions" are defined as the shift schedule under which the facility normally operates (i.e., one 8-hour shift/day, five days per week; two shifts/day, five days per week; 24 hours/day, seven days per week).

Carbon Adsorption (CARBN) - A treatment technology used to treat wastewaters containing dissolved organics at concentrations less than about 5% and, to a lesser extent, dissolved metal and other inorganic contaminants. The most effective metals removal is achieved with metal complexes. The two most common carbon adsorption processes are Granular Activated Carbon (GAC), which is used in packed beds, and Powdered Activated Carbon (PAC), which is added loosely to wastewater.

Cemented Solids (as a waste matrix) - Sludges or solids (e.g., particulates) that have been solidified/stabilized with cement or other solidifying agents but do not meet Land Disposal Restriction

(LDR) treatment standards. These wastes may require pretreatment (e.g., crushing/grinding) before subsequent LDR treatment.

Characterization - The determination of waste contents and properties, whether by review of process knowledge, Nondestructive Examination/Nondestructive Assay (NDE/NDA), or sampling and analysis.

Chemical Fixations - Any waste treatment process that involves reactions between the waste and certain chemicals and results in solids that encapsulate, immobilize, or otherwise tie up hazardous components in the waste to minimize the leaching of such components and to render the waste nonhazardous and more suitable for disposal.

Chemical Oxidation (CHOXD) - Chemical or electrolytic oxidation utilizing the following oxidation reagents (or waste reagents) or combinations of reagents: (a) hypochlorite (e.g., bleach), (b) chlorine, (c) chlorine dioxide, (d) ozone or UV- (ultraviolet light-) assisted ozone, (e) peroxides, (f) persulfates, (g) perchlorates, (h) permanganates, and/or (i) other oxidizing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals. For example, TOC can often be used as an indicator parameter for the adsorption of many organic constituents that cannot be directly analyzed in wastewater residues. Chemical oxidation specifically includes what is commonly referred to as alkaline chlorination.

Chemical Reduction (CHRED) - Chemical reduction utilizing the following reducing reagents (or waste reagents) or combination of reagents: (a) sulfur dioxide or (b) sodium, potassium, or alkali salts of sulfites, bisulfites, metabisulfates, and polyethylene glycols (e.g., Total Organic Halogens can often be used as an indicator parameter for the reduction of many halogenated organic constituents that cannot be directly analyzed in wastewater residues). Chemical reduction is commonly used for the reduction of hexavalent chromium to the trivalent state.

Cleanup - (1) Actions undertaken during a removal or remedial response to physically remove or treat a hazardous substance that poses a threat or potential threat to human health and welfare, the environment, and/or real and personal property. Sites are considered cleaned up when removal or remedial programs have no further expectation or intention of returning to the site and threats have been mitigated or do not require further action. (2) Actions taken to deal with a release or threat of release of a hazardous substance that could affect humans and/or the environment. The term "cleanup" is sometimes used interchangeably with either remedial action, removal action, response action, or corrective action.

Closure - Operational Closure: Those actions that are taken upon completion of operations to prepare the disposal site or disposal unit for custodial care (e.g., addition of cover, grading, drainage, erosion control). **Final Site Closure:** Those actions that are taken as part of a formal decommissioning or remedial action plan, the purpose of which is to achieve long-term stability of the disposal site and to eliminate to the extent practical the need for active maintenance so that only surveillance, monitoring, and minor custodial care are required.

Compliance Agreements - Legally binding agreements between regulators and regulated entities that set standards and schedules for compliance with environmental statutes. Includes Consent Order and Compliance Agreements, Federal Facilities Agreements, and Federal Facility Compliance Agreements.

Concentration-Based Standard - A restricted waste for which a concentration-based standard has been developed for an extract of the waste or treatment residue, or the constituent concentration in the waste or treatment residue. Concentration-based standards are based on BDAT and the waste, waste extract, or treatment residue must not exceed these concentrations if the waste is to be land disposed.

Contact-Handled Waste (CH Waste) - Waste or waste containers whose external surface dose rate does not exceed 200 millirems (mrem) per hour at the surface of the container.

Corrosive/Corrosivity - (1) A solid waste exhibits corrosivity if (a) a sample of the waste is either aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, or (b) it is a liquid and corrodes steel at a rate greater than 6.35 millimeters (mm) (0.25 inch) per year at a test temperature of 55°C (130°F). (2) A chemical agent that reacts with the surface of a material causing it to deteriorate or wear away. (3) Identifies waste that must be segregated because of its ability to extract and solubilize toxic contaminants (especially heavy metals) from other waste; identifies waste that requires the use of corrosion-resistant containers for disposal.

Deactivation (DEACT) - The removal of the hazardous characteristics of a waste due to its ignitability, corrosivity, and/or reactivity.

Debris - Materials that are primarily nongeologic in origin such as grass, trees, stumps, and man-made materials such as concrete, clothing, partially buried whole or empty drums, capacitors, and other synthetic manufacturing items (such as liners). (Debris does not include synthetic organic chemicals but may include materials contaminated with these chemicals.)

Decommissioning - (1) Actions taken to reduce the potential health and safety impacts of contaminated DOE facilities, including activities to stabilize, reduce, or remove radioactive materials or to demolish the facilities. (2) Preparations taken for retirement of a nuclear facility from active service, accompanied by the execution of a program to reduce or stabilize radioactive contamination. (3) The process of removing a facility or area from operation and decontaminating and/or disposing of it or placing it in a condition of standby with appropriate controls and safeguards.

Decontamination - The removal of unwanted material (typically radioactive material) from facilities, soils, or equipment by washing, chemical action, mechanical cleaning, or other techniques.

Delist - Use of the petition process to have a waste stream's toxic designation rescinded.

Delisting - According to 40 Code of Federal Regulations (CFR) 260.20 and 260.22, to be exempted from the Resource Conservation and Recovery Act (RCRA) hazardous waste "system," a listed hazardous waste, a mixture of a listed and solid waste, or a derived-from waste must be delisted. Characteristic hazardous wastes never need to be delisted but can be treated to no longer exhibit the characteristic. A contained-in waste also does not have to be delisted; it only has to "no longer contain" the hazardous waste.

Department of Energy Waste - Radioactive waste generated by activities of the DOE (or its predecessors); waste for which DOE is responsible under law or contract; or other waste for which the DOE is responsible.

Derived-From Rule - The derived-from rule states that any solid waste derived from the treatment, storage, or disposal of a listed RCRA hazardous waste is itself a listed hazardous waste (regardless of the concentration of hazardous constituents). For example, ash and scrubber water from the

incineration of a listed waste are hazardous wastes on the basis of the derived-from rule. Solid wastes derived from a characteristic hazardous waste are hazardous wastes only if they exhibit a characteristic.

Disposal - The permanent isolation of waste with no intent of recovery.

Disposal Facility - (1) The land, structures, and equipment used for the disposal of waste. (2) A facility or part of a facility at which waste is intentionally placed into or on the land or water and at which waste will remain after closure.

Effluent - (1) Airborne and liquid wastes discharged from a DOE site or facility following such engineering waste treatment and all effluent controls, including onsite retention and decay, as may be provided. This term does not include solid wastes, wastes for shipment offsite, wastes that are contained (e.g., underground nuclear test debris) or stored (e.g., in tanks), or wastes that are to remain onsite through treatment or disposal. (2) Wastewater (treated or untreated) that flows out of a treatment plant, sewer, or industrial outfall. May refer to wastes discharged into surface waters.

Elemental Lead (activated and non-activated, as a waste matrix) - Both surface-contaminated and activated elemental lead. Activated lead includes lead from accelerators or other neutron sources that may result in irradiation. Surface-contaminated lead materials include bricks, counterweights, shipping casks, and other shielding materials.

Environmental Impact Statement (EIS) - (1) A document prepared in accordance with the requirements of Section 102(2)(C) of the National Environmental Policy Act (NEPA). (2) A tool for decision making; it describes the positive and negative effects of the undertaking and lists alternative actions. A draft environmental impact statement (DEIS) is prepared by the U.S. Environmental Protection Agency (EPA), or under EPA guidance, and attempts to identify and analyze the environmental impacts of a proposed action and feasible alternatives. DEIS is circulated for public comment before preparation of the final environmental impact statement (FEIS).

Environmental Restoration (ER) - Measures taken to clean up and stabilize or restore a site that has been contaminated with hazardous substances during past production or disposal activities to previolation conditions.

Environmental Restoration Waste - Waste generated by environmental restoration program activities.

Existing Facility - (1) Any equipment, structure, system, process, or activity that fulfills a specific purpose. Examples include accelerators, storage areas, fusion research devices, nuclear reactors, production or processing plants, coal conversion plants, magnetohydrodynamics experiments, windmills, radioactive waste disposal systems and burial grounds, testing laboratories, research laboratories, transportation activities, and accommodations for analytical examinations of irradiated and unirradiated components. (2) Buildings and other structures; their functional systems and equipment, including site development features such as landscaping, roads, walks, and parking areas; outside lighting and communications systems; central utility plants; utilities supply and distribution systems; and other physical plant features. (3)(a) Any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft or (b) any site or area where a hazardous substance has been deposited, stored, disposed of, placed, or otherwise come to be located but does not include any consumer product in consumer use or any vessel.

Facilities - Buildings and other structures; their functional systems and equipment, including site development features such as landscaping, roads, walks, and parking areas; outside lighting and communications systems; central utility plants; utilities supply and distribution systems; and other physical plant features.

Federal Facility Compliance Agreement (FFCA or FFA) - An agreement between the DOE and a host state with respect to how and/or when some waste-related activity will be conducted to achieve compliance with applicable regulations in a timely manner. A major driver or constraint on activities that a particular site must undertake for waste operations.

Filtration - Removal/separation of particles from a mixture of fluid and particles by a medium that permits the flow of the fluid but retains the particles. Usually, the larger the particles, the easier they are to remove from the fluid.

Generation - Includes the wastes resulting from new production, rework operations, wastes generated from decontamination and decommissioning (D&D) operations and the wastes resulting from environmental restoration operations, including the recovery of pre-1970 wastes, should their recovery be determined to be necessary.

Generator - Refers to current or previously operated facilities that have produced or are producing RCRA-regulated waste.

Glovebox - (1) A sealed volume penetrated by leaded-rubber gloves that allow safe manipulation of some alpha-emitting materials. (2) A windowed, low-leakage enclosure equipped with one or more pairs of flexible gloves to allow personnel on the outside to handle radioactive material within the enclosure.

Hazardous Waste (HW) - Solid waste that possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity) or that is listed as described by 40 CFR 261.

Heterogeneous Debris (as a waste matrix) - Wastes with matrices meeting the definition of debris pursuant to the August 18, 1992, LDR debris rulemaking (57 Federal Register [FR] 37194, August 18, 1992). This category includes debris that does not meet the criteria for categorization as either *Organic Debris* or *Inorganic Debris*. This category also includes mixtures of debris and solid process residues and soil, provided debris constitutes no more than 50% of the waste.

Ignitability - A waste property describing waste with a flash point lower than 140°F.

Immobilization - Treatment of waste through macroencapsulation, microencapsulation, or sealing to reduce surface exposure to potential leaching media or to reduce the leachability of the hazardous constituents.

Immobilized Materials - Materials that are fixed in a matrix.

Incineration - (1) The controlled process by which combustible solid, liquid, or gaseous wastes are burned and changed into noncombustible gases and solid ash. (2) A treatment technology using combustion to destroy organic constituents and reduce the volume of wastes.

Inorganic Debris (as a waste matrix) - Wastes with matrices meeting the definition of debris pursuant to the August 18, 1992, LDR debris rulemaking (57 FR 37194, August 18, 1992). More specifically, inorganic debris is defined as wastes that contain greater than 90% inorganic debris. Inorganic debris

includes metal shapes (e.g., equipment, scrap), metal turnings, glass (e.g., light tubes, leaded glass), ceramic materials, concrete, and rocks.

Inorganic Sludges/Particulates (as a waste matrix) - Solid process residues with a predominately inorganic matrix. Solid process residues are solids that do not fit the definition of debris. Typically, these solids are sludge or particulate materials. Wastes in this category may also contain some debris materials, provided the amount of debris is less than 50% (based on the LDR debris rule). The solids in this category may be contaminated with or contain organics such that thermal treatment is required. However, the matrices are predominantly inorganic such that thermal treatment would result in a high residue. Waste materials in this category include sludges, ashes, sand-blasting media, absorbed aqueous or organic liquids (or inorganic particulate absorbents), ion exchange resins, and paint chips/residues.

Ion Exchange - A process used to separate a mixed waste into its radioactive and hazardous constituents if the radioactive components are ionic. It will also concentrate the radioactive ionic species into a small volume, leaving a nonradioactive aqueous phase. The principal mixed waste application of this process is to recover metallic radionuclides from wastewaters or acid leach liquors.

Key Decision (KD) - DOE projects proceed through several discrete phases: research, design, and operation. These phases are separated by KD points, which are numbered consecutively from KD-0 to KD-4.

Lab Packs with Metals and Lab Packs without Metals (as waste matrices) - Wastes with one or more small containers of free liquids or solids surrounded by solid materials (virgin or waste materials) within a larger container. These categories include scintillation fluids that are packaged in vials. These categories are differentiated by contaminants in the wastes. Wastes contaminated with toxicity characteristic (TC) metals are categorized as "Lab packs with Metals." Wastes that are not contaminated with TC metals are categorized as "Lab packs without Metals."

Land Disposal Restrictions (LDRs) - (1) Provisions of the Hazardous and Solid Waste Amendments (HSWA) requiring phased-in treatment of hazardous wastes before disposal. (2) A RCRA program that restricts land disposal of RCRA hazardous wastes and requires treatment to promulgated treatment standards. (See **Thirds Rule**.)

Leachate - (1) Any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste. (2) A contaminated liquid resulting when water percolates or trickles through waste materials and collects components of those wastes. Leaching may occur at landfills and may result in hazardous substances entering soil, surface water, or groundwater.

Legacy Waste - The backlog of stored waste remaining from the development and production of U.S. nuclear weapons, about which a permanent disposal determination remains to be made (i.e., waste that is currently in warehouse storage, retrievable storage on bermed pads, or disposed of in trenches and that has not been examined by DOE's Environmental Management, Environmental Restoration Group (EM-40) and determined to be permanently disposed of). Also called backlog waste.

Listed Waste - Wastes, listed as hazardous under RCRA, that have not been subjected to the Toxic Characteristics Listing Process because the dangers they present are considered self-evident.

Liquid-Liquid Extraction (LLEXT) - Extraction (often referred to as solvent extraction) of organics from liquid wastes into an immiscible solvent for which the hazardous constituents have a greater

solvent affinity, resulting in (a) an extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and (b) a raffinate (extracted liquid waste) proportionately low in organics that must undergo further treatment as specified in the standard.

Liquid Mercury (as a waste matrix) - Any wastes containing bulk volumes of elemental liquid mercury. The category includes lab packs of strictly liquid mercury or other containers containing bulk mercury.

Low-Level Radioactive Waste (LLW) - (1) Waste that contains radioactivity and is not classified as high-level waste, transuranic (TRU) waste, or spent nuclear fuel or the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source-material content. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as LLW provided the concentration of TRU elements is less than 100 nanocuries/gram (nCi/g).

(2) Radioactive waste not classified as high-level waste, TRU waste, spent nuclear fuel, or by-product material.

Macroencapsulation (MACRO) - Application of surface-coating materials such as polymeric organics (e.g., resins and plastics) or a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media. Macroencapsulation specifically does not include any material that would be classified as a tank or container according to 40 CFR 260.10.

Metals Recovery (RMETL) - Recovery of metals or inorganics utilizing one or more of the following direct physical/removal technologies: ion exchange, resin or solid (i.e., zeolites) adsorption, reverse osmosis, chelation/solvent extraction, freeze crystallization, ultrafiltration, and/or simple precipitation (i.e., crystallization). Note: This does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation when used in conjunction with the direct physical/removal technologies.

Microencapsulation - Stabilization of the debris with the following reagents (or waste reagents) such that the leachability of the hazardous contaminants is reduced: portland cement or lime/pozzolans (e.g., fly ash and cement kiln dust). Reagents (e.g., iron salts, silicates, clay) may be added to enhance the set/cure time and/or compressive strength or to reduce the leachability of the hazardous constituents.

Mixed Low-Level Waste (MLLW) - Low-level waste that also includes hazardous materials as identified in 40 CFR 261, Subparts C and D.

Mixed Waste - (1) Radioactive waste [as defined by the Atomic Energy Act (AEA)] that contains material listed as hazardous waste in Subpart D of 40 CFR 261 or that exhibits any of the hazardous waste characteristics identified in Subpart C of 40 CFR 261. (2) Waste that contains both radioactive and hazardous components as defined by the AEA and RCRA. The term "radioactive component" refers only to the actual radionuclides dispersed or suspended in the waste substance.

Mixture Rule - Under the mixture rule, when any solid waste and a listed hazardous waste are mixed, the entire mixture is a listed hazardous waste. Mixtures of solid wastes and characteristic hazardous wastes are hazardous only if the mixture exhibits a characteristic [40 CFR 261.3(a)(2)].

Neutralization (NEUTR) - Use of the following reagents (or waste reagents) or combinations of reagents: acids, bases, or water (including wastewaters) resulting in a pH greater than 2 but less than 12.5 as measured in the aqueous residuals.

Onsite - (1) Within a single research or production site of the DOE complex; for example, Lawrence Livermore National Laboratory (LLNL) is a site, as is the Lawrence Berkeley Laboratory (LBL), the Sandia National Laboratory-California (SNLC). (2) The contaminated area and all potential areas in very close proximity to the contamination that must be taken into account for effective implementation of the response action.

Onsite Facility - A hazardous waste treatment, storage, or disposal area that is located on the generating site.

Operable Unit (OU) - (1) A discrete action that consists of an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration or eliminates or mitigates a release, threat of release, or pathway of exposure. The cleanup of a site can be divided into a number of OUs, depending on the complexity of the problems associated with the site. OUs may address geographical portions of a site, specific site problems, or initial phases of an action or may consist of any set of actions performed over a period of time or any actions that are concurrent but located in different parts of a site. (2) A discrete portion of a site consisting of one or more release sites considered together for assessment and cleanup activities. The primary criteria for placement of release sites into an OU include geographic proximity, similarity of waste characteristics and site type, and the possibilities for economy of scale. (3) An overall response action that by itself eliminates or mitigates a release, a threat of a release, or an exposure pathway.

Organic Debris (as a waste matrix) - Wastes with matrices meeting the definition of debris pursuant to the August 18, 1992, LDR debris rulemaking (57 FR 37194, August 18, 1992). More specifically, organic debris is defined as wastes that contain greater than 90% organic debris. Organic debris includes rags (including "solvent rags") plastic/rubber, paper, wood, glovebox gloves (including lead-lined), and animal carcasses.

Organic Liquids (as a waste matrix) - Liquids/slurries with a TOC content greater than or equal to 1%. Slurries must be pumpable (e.g., suspended/settled solids can be up to approximately 35-40%). Only liquids/slurries packaged or stored in bulk form (i.e., tank-stored, drummed, bulk free liquids) are included in this category. Liquids packaged in a lab pack-type configuration are categorized as lab packs.

Organic Sludges/Particulates (as a waste matrix) - Solid process residues with an organic matrix. Solid process residues are solids that do not fit the definition of debris. Typically, these solids are sludges or particulate materials. Waste in this category may also contain some debris materials provided the amount of debris is less than 50% (based on the LDR debris rule). As opposed to inorganic sludges/particulates, wastes in this category would not leave a large residue when thermally treated. Waste materials in this category include organic sludges (e.g., sewage sludges), activated carbon, organic resins, and absorbed liquids (organic particulate absorbents).

Package - A barrel, box, or other container into which waste is initially placed. A waste is placed in packaging before transportation.

pH - (1) Used to describe the hydrogen-ion activity of a system. The logarithm (the exponent that indicates the power to which a number must be raised to produce a given number) of the reciprocal of hydrogen-ion concentration ($-\log_{10}[\text{H}^+]$, where $[\text{H}^+]$ is hydrogen-ion concentration in moles per liter). (2) A symbol for the degree of acidity or alkalinity.

Precipitation (PRECP) - Treatment of metals and other inorganics to form insoluble precipitates of oxides, hydrides, carbonates, sulfides, sulfates, chlorides, fluorides, or phosphates. The following reagents (or waste reagents) are typically used alone or in combination: lime (i.e., containing oxides and/or hydroxides of calcium and/or magnesium), caustic (i.e., sodium and/or potassium hydroxides), soda ash (i.e., sodium carbonate), sodium sulfide, ferric sulfate or ferric chloride, alum, or sodium sulfate. Additional flocculating, coagulating, or similar reagents/processes that enhance sludge dewatering characteristics are not precluded from use.

Pretreatment Processes - Processes (e.g., shredding, grinding, physical separation) that make the waste amenable to the treatment process, which ultimately destroys, removes, or immobilizes the hazardous contaminants or characteristics.

Radiation - (1) Ionizing radiation that includes any or all of the following: gamma rays and x-rays, alpha and beta particles, high-speed electrons, neutrons, high-speed protons, and other atomic particles. This definition does not include nonionizing radiations, such as soundwaves, microwaves, radiowaves or visible, infrared, or ultraviolet light. (2) The process of emitting energy in the form of rays or particles that are thrown off by disintegrating atoms. The rays or particles emitted may consist of alpha, beta, or gamma radiation.

Radioactive Waste - (1) Solid, liquid, or gaseous material that contains radionuclides regulated under the AEA of 1954, as amended, and that is of negligible economic value considering costs of recovery. (2) A solid, liquid, or gaseous material of negligible economic value that contains radionuclides in excess of threshold quantities. Does not include material contaminated by radionuclides from nuclear weapons testing.

Radioactivity - (1) The spontaneous nuclear decay of a material with a corresponding release of energy in the form of particles and/or electromagnetic radiation. (2) The property or characteristic of radioactive material to spontaneously "disintegrate" with the emission of energy in the form of radiation. The unit of radioactivity is the curie (or becquerel).

Radionuclide - (1) A species of atom having an unstable nucleus that is subject to spontaneous decay. (2) Any nuclide that emits radiation. A nuclide is a species of atom characterized by the constitution of its nucleus, hence by the number of protons, the number of neutrons, and the energy content.

Reactive Metals (as a waste matrix) - Bulk reactive metals and equipment contaminated with reactive metals. Bulk reactive metals include sodium, alkali metal alloys, aluminum fines, uranium fines, zirconium fines, and other pyrophoric materials. Contaminated equipment includes piping, pumps, and other materials with a residue or reactive metals that cannot be separated from the equipment medium.

Reactivity - (1) A characteristic of a waste that is explosive, reacts violently with water, or generates toxic gases when exposed to water or liquids that are moderately acidic or alkaline. (2) An EPA characterization of hazardous waste that identifies waste that, under routine management, presents a hazard because of instability or extreme reactivity.

Remote-Handled Waste (RH Waste) - Packaged waste with an external surface dose rate that exceeds 200 mrem per hour.

Resource Conservation and Recovery Act (RCRA) Part A Permit - The first part of a RCRA permit application that identifies treatment, storage, and disposal units within a to-be-permitted facility.

Resource Conservation and Recovery Act (RCRA) Part B Permit - The second part of a RCRA permit application that describes in detail waste to be managed, waste quantities, and facilities.

Segregation - The separation of waste materials to facilitate handling, storage, treatment, transportation, or disposal.

Site - (1) A geographic entity comprising land, buildings, and other facilities required to perform program objectives. Generally a site has, organizationally, all the required facilities for management functions; that is, it is not a satellite of some other site. (2) For the purposes of the Environmental Restoration and Waste Management (ER&WM) Five-Year Plan, sites are lands, installations, and/or facilities for which DOE has or shares responsibility for ER&WM activities. (3) An area or a location at which hazardous substances have been stored, treated, disposed of, placed, or otherwise come to be located. This includes all contiguous land, structures, other appurtenances, and improvements on the land used for treatment, storage, or disposal of hazardous substances. A site may consist of several treatment, storage, or disposal facilities (e.g., impoundments, containers, buildings, equipment).

Stabilization (STABL) - A broad class of treatment processes that immobilize hazardous constituents in a waste. For treatment of metals in mixed low-level wastes and for TRU wastes containing low-level radioactive components, stabilization technologies will reduce the leachability of the hazardous metal constituents (regardless of whether the metals are radioactive) in non-wastewater matrices.

Storage - (1) Temporary holding of waste pending treatment or disposal. Storage may include containers, tanks, waste piles, and surface impoundments. (2) The containment of hazardous waste, either on a temporary basis or for a period of years, in such a manner as not to constitute disposal of such hazardous waste. (3) Retrievable retention of waste pending disposal.

Storage Facility - Land area, structures, and equipment used for the storage of waste.

Storage Unit - A discrete part of the storage facility in which waste is stored.

Supercompaction - A volume-reduction method relying on mechanical compaction.

Technology-Based Standard - A restricted waste for which a technology-based standard is specified may be land-disposed after it is treated using that specified technology or an equivalent treatment method approved by the EPA Administrator.

Thermal Treatment - The treatment of hazardous waste in a device that uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste. Examples of thermal treatment processes are incineration, pyrolysis, calcination, wet air oxidation, and microwave discharge.

Transuranic (TRU) Waste - The following core definition appears in modified form in various relevant documents: Waste containing alpha-emitting radionuclides with an atomic number greater than 92, half-lives greater than 20 years, and at concentrations greater than 100 nCi/g of waste. Modifications include

the following. (1) DOE Order 5820.2A, for purposes of management, (a) considers TRU waste, as defined above, "without regard to source or form" [the proposed revision to the Order (DOE Order 5820.2A, "Major Issues for Revision," May 6, 1992) contemplates removing this clause]; (b) allows heads of field elements to determine whether wastes containing other alpha-emitting radionuclides must be managed as TRU waste; and (c) adds "at time of assay," implying both that the classification of a waste as TRU is to be made based on an assay and that such classification can be superseded only by another assay. (2) For purposes of setting standards for management and disposal, 40 CFR 191.02(i) adds "except for: (a) high-level radioactive wastes; (b) wastes that the DOE has determined, with the concurrence of the EPA Administrator do not need the degree of isolation required by this part; or (c) wastes that the [Nuclear Regulatory] Commission (NRC) has approved for disposal on a case-by-case basis in accordance with 10 CFR 61 ["Licensing Requirements for Land Disposal of Radioactive Wastes"].

Treatability Group - Based on the radioactive characteristics, hazardous components, and physical/chemical matrices (see relevant discussions elsewhere in this Glossary), DOE has grouped its wastes to reflect salient treatment considerations for each waste stream. These "treatability groups" are used to relate waste streams and waste quantities to treatment facilities and technology development needs.

Treatment - (1) Any method, technique, or process designed to change the physical or chemical character of waste to render it less hazardous; safer to transport, store, or dispose of; or reduced in volume. (2) Any activity that alters the chemical or physical nature of a hazardous waste to reduce its toxicity, volume, or mobility, or render it amenable for transport, storage, or disposal.

Treatment Facility - The specific area of land, structures, and equipment dedicated to waste treatment and related activities.

Treatment, Storage, and Disposal (TSD) Facility - Any building, structure, or installation where a radioactive or hazardous substance has been treated, stored, or disposed of.

Treatment System - The equipment and processes used for similar waste types at treatment facilities. A treatment system is the unit treatment operation or sequence of unit treatment operations carried out on all wastes that enter the system (e.g., a treatment system may consist of chemical reduction followed by precipitation, or an incinerator and a vitrification unit for the ash).

Volatile Organic Compound (VOC) - (1) Any reactive organic compound as defined in 40 CFR 60.2. (2) An organic (carbon-containing) compound that evaporates (volatilizes) readily at room temperature.

Waste Acceptance Criteria (WAC) - The criteria used to determine whether waste and waste packages are acceptable for treatment, storage, transportation, and disposal purposes.

Waste Characterization - Activities to determine the extent and nature of the waste. Note: Waste characterization may be based on process knowledge, nonintrusive or nondestructive (NDE, NDA) examination, or intrusive examination, such as sampling and analysis.

Waste Form - The physical form of the waste (e.g., sludges, combustibles, metals).

Waste Isolation Pilot Plant (WIPP) - (1) The project authorized under Section 213 of the DOE National Security and Military Applications of Nuclear Energy Authorization Act of 1980 (Public Law 96-164; 93 Stat. 1259, 1265) to demonstrate the safe disposal of radioactive waste materials generated by atomic energy defense activities. (2) A research and development facility, located near Carlsbad, New Mexico, to be used for demonstrating the safe disposal of TRU wastes from DOE activities.

Waste Management - The planning, coordination, and direction of those functions related to generation, handling, treatment, storage, transportation, and disposal of waste, as well as associated surveillance and maintenance activities.

Waste Minimization - (1) An action that effectively avoids or reduces the generation of waste by source reduction, improving energy usage, or by recycling. This action is consistent with the general goal of minimizing present and future threats to human health and safety and the environment. (2) The reduction, to the extent feasible, of hazardous waste that is generated before treatment, storage, or disposal of the waste. Waste minimization includes any source reduction or recycling activity that results in either reduction of total volume of hazardous waste or reduction of toxicity of hazardous waste, or both.

Waste Segregation - The separation of waste materials before the packaging or repackaging process to facilitate handling, storage, treatment, transportation, or disposal.

Waste Stream - A flow of waste materials with specific definable characteristics that remain the same throughout the life of the process that generates the waste stream. A waste stream is produced by a single process or subprocess; however, that process or subprocess may be one that combines two or more input waste streams together to produce a single output waste stream.

Wastewaters - Wastes that contain less than 1% by weight TOC and less than 1% by weight Total Suspended Solids (TSS) with the following exception: F001, F002, F003, F004, or F005 wastewaters are solvent-water mixtures that contain less than 1% by weight TOC or less than 1% by weight total F001, F002, F003, F004, or F005 solvent constituents listed in 40 CFR 286.41, Table CCWE (Constituent Concentrations in Waste Extract).

Wet Air Oxidation (WETOX) - A treatment technology applicable to wastewaters containing organics and oxidizable inorganics such as cyanide. The basic principle of operation for WETOX is that the enhanced solubility of oxygen in water at high temperatures and pressures aids in the oxidation of organics.

**FEDERAL FACILITY COMPLIANCE ACT
PROPOSED SITE TREATMENT PLAN
FOR DOE MIXED WASTES AT
GENERAL ATOMICS
SAN DIEGO, CALIFORNIA**

COMPLIANCE PLAN VOLUME

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Addendum

Milestone Approach and Environmental Management Budget Formulation Process

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1.0 PURPOSE AND SCOPE OF THE COMPLIANCE PLAN VOLUME

- 1.1 The U.S. Department of Energy (DOE) is required to prepare a plan for developing treatment capacities and technologies for each facility at which DOE generates or stores mixed waste, pursuant to Section 3021(b) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6939c(b), as amended by Section 105(a) of the Federal Facility Compliance Act (P.L. 102-386, FFCAct). Upon submission of the plan to the appropriate regulatory agency, the FFCAct requires the recipient agency to solicit and consider public comments and approve, approve with modification, or disapprove the plan within 6 months. The agency is to consult with the U.S. Environmental Protection Agency (EPA) and any state in which a facility affected by the plan is located. Upon approval of a plan, the regulatory agency must issue an order (FFCAct Order) requiring compliance with the approved plan.
- 1.2 The DOE Oakland Operations Office (DOE/OAK) has prepared this Site Treatment Plan (STP) for mixed waste at General Atomics (GA) to identify how DOE/OAK proposes to obtain treatment for this mixed waste or develop technologies where technologies do not exist or need modification. For some waste streams, a plan and schedules for characterizing wastes, undertaking technology assessments, and for providing the required plans and schedules for developing capacities and technologies, as appropriate, are provided.
- 1.3 The purposes of this STP include:
 - 1.3.1 Fulfilling the requirements of the FFCAct;
 - 1.3.2 Establishing an enforceable framework in conjunction with the FFCAct Order in which DOE/OAK will develop and treat or otherwise meet RCRA land disposal restrictions (LDRs) for all covered LDR mixed wastes currently in storage or that will be generated or received in the future; and

- 1.3.3** Allowing for storage of current and projected covered LDR mixed wastes at GA during implementation of this STP and the FFCAct Order.
- 1.4** The Compliance Plan Volume, in conjunction with the Background Volume and its Appendices, comprises the STP. The Compliance Plan Volume provides overall schedules with milestones and target dates for achieving compliance with LDRs, a general framework for the establishment and review of milestones and target dates and the conversion of target dates into milestones, and other provisions for implementing the approved STP that will be enforced under the FFCAct Order. Discussion in the Background Volume and its Appendices is provided for informational purposes only.
- 1.5** When this STP is approved and an FFCAct Order issued, the requirements contained in the Federal Facility Compliance Act of 1992, RCRA Section 3021 will be fulfilled. Therefore, pursuant to Section 105(a) of the FFCAct (RCRA Section 3021(b)(5)), this STP and FFCAct Order shall stand in lieu of any other interpretations of DOE/OAK's requirement to develop and submit a plan for the development of treatment capacities and technologies pursuant to RCRA Section 3021.

2.0 IMPLEMENTATION OF THE SITE TREATMENT PLAN

This section establishes the mechanisms and procedures for administering and implementing the treatment plans and schedules in Sections 3.0 through 5.0 of the Compliance Plan Volume of the STP.

2.1 COVERED MATTERS

The Compliance Plan Volume and implementing FFCAct Order of the STP address LDR requirements pertaining to storage and treatment of covered wastes, whether such wastes were generated or accumulated in the past, present or future. Covered wastes are all mixed waste at GA identified in the STP or added to the STP in accordance with Section 2.4, except those mixed wastes that (1) meet LDR requirements, regardless of the time of generation or that (2) are being stored or will be stored when generated solely for the purpose of accumulating sufficient quantities of mixed waste necessary to facilitate proper recovery, treatment, or disposal.

2.2 COMPLIANCE SCHEDULES

2.2.1 The Compliance Plan Volume of the STP provides overall schedules for achieving compliance with LDR requirements for mixed wastes at GA. The schedules include those activities required to bring existing waste treatment facilities or technologies into operation and those required to develop new facilities and capacity for treatment. The Compliance Plan Volume shows target dates and milestones for treatment technologies and facilities for wastes covered under the STP. The schedules symbolically depict and differentiate between milestones and target dates that will be converted to milestones. Other schedule information may be depicted in the Background Volume of the STP, but such information is provided solely for informational purposes.

2.2.1.1 For the purposes of this STP, milestones and target dates shall identify dates or time frames by which a certain activity (including an event such as submittal of a deliverable) is scheduled to occur, as set forth in the Compliance Plan Volume, or any other dates or deliverables that are properly incorporated into the approved STP.

2.2.1.2 The assumptions upon which individual schedules are dependent are contained in Sections 3.0 through 5.0 of the Background Volume and this Compliance Plan Volume. The schedules may be affected if the underlying assumptions are incorrect or change.

2.2.1.3 *Milestones* are fixed, firm, and enforceable dates as set forth in the Compliance Plan Volume. Milestones correspond to the categories of milestones set forth in Section 2.2.3. Changes or revisions to milestones are subject to approval, approval with modifications, or disapproval by California Department of Toxic Substances Control (DTSC) according to the process and framework set forth in this STP. Milestones are set based on target dates, defined in Section 2.2.1.4 below, in accordance with the process in Section 2.2.2.

2.2.1.4 *Target dates* mark the anticipated completion of tasks that have not been designated as milestones. Target dates correspond to the categories of milestones set forth in Section 2.2.3. Target dates are not requirements and are not enforceable. Target dates are converted into enforceable milestones in accordance with the process in Section 2.2.2.

2.2.2 Approach to Setting Milestones and Target Dates. DOE proposes using the rolling milestone approach outlined in the Addendum to this Compliance Plan Volume, "Milestone Approach and Environmental Management Budget Formulation Process."

2.2.3 Categories of Milestones and Target Dates. Examples of categories of activities for which milestones and target dates will be provided for different types of treatment approaches in the Compliance Plan Volume are listed in the Tables 2-1 through 2-4 and in other provisions below. The categories of activities are based on Section 3021(b)(1)(B)(i), (ii) and (iii) of RCRA, to the extent appropriate. Depending upon the status of the facility (e.g., operating under interim status or at differing stages of development), certain types of target dates or

milestones may not be necessary, the activities may appear in a different order, or an alternative activity more appropriate to the facility or treatment approach may be provided.

2.2.3.1 Plans Where Treatment Technology Exists Onsite. For some of the mixed wastes, treatment technologies have been identified and developed. For wastes that will be treated onsite, the categories of milestones and target dates identified in Table 2-1, "Schedule For Wastes With Existing Treatment Technologies" shall apply.

TABLE 2-1
SCHEDULE FOR WASTES WITH EXISTING TREATMENT TECHNOLOGIES
<p>Categories of Milestones/Target Dates:</p> <ul style="list-style-type: none">a. Submit RCRA permit applications to DTSC.b. Procure contracts.c. Initiate construction.d. Commence systems testing.e. Commence operations.f. Submit a schedule for processing backlogged and currently generated mixed wastes.

2.2.3.2 Plans Where Technology Must Be Developed. For some mixed wastes, no treatment technologies have been identified and developed, or treatment technology must be modified or adapted to be made applicable for mixed waste. For wastes which will be treated onsite, the categories of milestones and target dates identified in Table 2-2, "Schedule for Waste Without Existing Treatment Technologies" shall apply.

TABLE 2-2

SCHEDULE FOR MIXED WASTES WITHOUT EXISTING TREATMENT TECHNOLOGIES

Categories of Milestones/Target Dates:

- a. Identify funding requirements for identification and development of technology.
- b. Identify and develop technology.
- c. Submit treatability study exemption application.
- d. Submit Research, Development, and Demonstration (RD&D) permit applications.
- e. Submit schedule in accordance with Table 2-1 or new schedule for development of alternative treatment technologies in accordance with this section.

2.2.3.3 Requirements Pertaining to Radionuclide Separation. The FFCAct sets additional requirements in cases where DOE intends to conduct radionuclide separation of mixed waste. Should DOE/OAK determine to conduct radionuclide separation of such mixed wastes onsite, DOE/OAK will provide those milestones and target date categories identified in Table 2-3, "Schedule for Radionuclide Separation of Mixed Waste."

TABLE 2-3

SCHEDULE FOR RADIONUCLIDE SEPARATION OF MIXED WASTES

Categories of Milestones/Target Dates:

- a. Complete an estimate of the volume of waste generated by each case of radionuclide separation.
- b. Complete an estimate of the volume of waste that would exist or be generated without radionuclide separation.
- c. Complete an estimate of the costs of waste treatment and disposal if radionuclide separation is used compared to the estimated costs if it is not used.
- d. Provide the assumptions underlying such waste volume and cost estimates.
- e. Submit a plan for treatment or management of residues, as appropriate, in accordance with this section.

2.2.3.4. Plans for Other Types of Activities. The Compliance Plan Volume may contain additional milestones and target dates for other types of situations related to treatment of DOE/OAK's mixed wastes, including:

- a. For mixed waste that shall be shipped offsite for treatment, two activities are identified. First, GA must request approval from the offsite treatment facility to ship the waste. This request will result in the offsite treatment facility providing a shipping date to GA. The shipping date will identify when GA will be allowed to ship the waste to the offsite treatment facility. In some cases, the shipping date is currently unknown because the approval to ship the waste(s) has not been requested. GA will obtain this date as a result of completing the first milestone. The completion of the waste shipment will be accomplished no later than 6 months following the designated date for shipment provided by the offsite treatment facility. Information supporting development or use of offsite treatment capacity or technology for treatment of such wastes is provided in the background volume of the STP. In the event that changes in the schedule of the offsite treatment facility impact the schedule in DOE/OAK's Compliance Plan Volume, DOE/OAK shall notify DTSC, and DOE/OAK and DTSC shall negotiate necessary changes in accordance with Sections 2.5, "Revisions," or 2.6, "Extensions," as appropriate, and subject to Section 2.10, "Disputes." Table 2-4 contains some examples of milestones/target dates that may be provided for mixed wastes shipped offsite for treatment.

TABLE 2-4

SCHEDULE FOR MIXED WASTE TO BE SHIPPED OFFSITE FOR TREATMENT

Examples of Milestones/Target Dates:

- a. Request approval to ship the waste offsite.
- b. Complete shipment of waste(s) offsite.

- b. In the event that DOE decides to treat waste at an offsite facility in lieu of plans to treat such waste onsite, DOE shall so notify DTSC, and the schedules, target dates and pre-existing milestones pertaining to management of that particular waste will no longer be applicable or enforceable. DOE shall propose a new schedule with milestone and target dates, as appropriate, as part of the notice, which shall be subject to approval by DTSC under Section 2.8, "Procedures for Review and Approval," and, if applicable, shall also be subject to Section 2.5, "Revisions." Where waste will be shipped to another DOE facility, it is the expectation that DOE/OAK shall ensure notification (or DTSC shall notify if so

agreed) of the proposed shipment to the regulatory agency of the state in which the receiving facility is located.

- c. For mixed wastes that are not sufficiently characterized to allow identification of appropriate treatment or for which technology assessment has not been completed, the Compliance Plan Volume will contain schedules for characterizing such wastes and/or completing the technology assessment. The final milestone/target date for such a schedule will be the requirement for DOE/OAK to either identify the facility that will receive the waste and any necessary changes to the pertinent schedule for that facility or submit a proposed schedule as described in this section.
- d. Notwithstanding any other provision of this Compliance Plan Volume, the provisions of Section 4 shall apply regarding schedules for mixed transuranic (MTRU) wastes destined for the Waste Isolation Pilot Plant (WIPP) in lieu of other schedule requirements of this Section.
- e. Storage of mixed wastes for purposes of allowing for radioactive decay of the radioactive portion of the mixed waste shall be considered to be storage for the purpose of accumulation of such quantities of waste as are necessary to facilitate proper recovery, treatment, or disposal in compliance with RCRA Section 3004(j). Such storage may be included in the schedules of the Compliance Plan Volume, as appropriate, including treatment schedules or schedules related to radionuclide separation.

2.3 ANNUAL SITE TREATMENT PLAN UPDATES

2.3.1 This section provides a mechanism to (1) communicate and exchange information about schedule, technology development, funding and other concerns that affect the implementation of the STP; (2) update the Background Volume to the STP in a timely fashion, including information on new waste streams; and (3) propose and establish the next ensuing milestones, and (4) update and propose revisions to the Compliance Plan Volume.

2.3.2 Each fiscal year after the fiscal year in which this STP is approved and accompanying FFCAct Order executed, DOE/OAK shall provide an Annual Update to the STP to DTSC for review and comment. The Annual Update shall (1) provide DTSC with information to track progress on milestones and target dates; (2) allow input from the public, affected states, and EPA to be obtained when revisions to the STP are proposed; (3) bring the STP current to the end of the previous fiscal year (September 30); and will minimize the paperwork necessary to document changes, which will be handled by page changes to the extent practicable. These changes will be marked for comparison to the previous STP. If there are no changes to the information,

milestones, or target dates in the STP, a letter to that effect will be sent to DTSC in lieu of an Annual Update.

[A date for submittal of the Annual Update will be added that allows all sites to submit Updates in a consistent time frame to facilitate coordination of necessary site-to-site and state-to-state interactions. The date will be consistent with the framework outline in the addendum to this STP, "Milestone Approach and Budget Formulation Process."]

2.3.3 The Annual Update of the STP shall update the Background Volume and the Compliance Plan Volume.

2.3.3.1 The update to the Background Volume will provide the following information:

- a. The amount of each covered waste stored at GA as follows: (1) the estimated amount in storage at the end of the previous fiscal year, and (2) the estimated amount anticipated to be placed in storage in the next five fiscal years.
- b. A description of progress made up to the end of the last fiscal year on treatment or technology development of each treatment facility or activity scheduled in the STP. If applicable, DOE will also describe current or anticipated alternative treatment technology which is being evaluated for use in lieu of treatment technologies or capacities identified in the STP. This description will include potential alternate commercial treatment and offsite DOE treatment capacity or technology development.
- c. An evaluation of characterization, packaging, and/or treatment capabilities and/or plans for MTRU waste to ensure that the activities and commitments included in the STP remain consistent with the Waste Isolation Pilot Plant (WIPP) waste acceptance criteria (WAC), No-Migration Variance petition, RCRA Part B permit, and/or compliance certification development.
- d. A description of DOE's funding for STP-related activities and any funding issues that may impact the schedule.
- e. The status of any pending or planned extension, treatability variance, or no-migration petition.
- f. Information that has changed or has not been previously included regarding waste form, waste code, technology, and capacity needs, including new waste streams in accordance with Section 2.4.2.
- g. Notification of the deletion of waste streams in accordance with Section 2.7.1.

2.3.3.2 The Annual Update will update the Compliance Plan Volume and may also contain notification of changes or requests for approval of changes to the Compliance Plan Volume. These notifications or requests for approval may include, as appropriate:

- a. Any changes to the Compliance Plan Volume incorporated since the previous Annual Update;
- b. Any proposed revisions or conditionally approved revisions;
- c. Any proposed new milestones, in accordance with Section 2.2; and
- d. Any other changes to the overall schedules.

The Annual Update would clearly identify proposed changes requiring approval under Sections 2.8, "Procedures for Review and Approval," and 2.5, "Revisions."

2.3.4 DOE shall make the Annual Update publicly available. When the update includes proposed revisions to the Compliance Plan Volume, the provisions of Section 2.5, "Revisions," also apply to such proposed revisions.

2.4 INCLUSION OF NEW WASTE STREAMS

2.4.1 This section establishes a method for including new mixed waste streams at GA in the STP, including mixed wastes that are newly discovered, identified, generated, or received from offsite and mixed wastes that are generated through environmental restoration (ER) and decontamination and decommissioning (D&D) activities to the extent such wastes are expected to become a covered waste.

2.4.2 DOE/OAK shall notify DTSC of additional or new mixed wastes or waste streams that have been generated or stored and may notify DTSC of mixed wastes that are anticipated to be generated or stored at GA, and that are expected to be covered wastes. Unless otherwise specified in the notification, the mixed waste will be a covered waste and subject to the requirements of this Compliance Plan Volume upon receipt of such notification or when generated or stored at GA, whichever is later. To the extent practicable, DOE/OAK shall provide a description of the waste code, waste form, volumes, technology, and capacity needs, and similar pertinent information in the notification. In general, additional detail on

the waste and the proposed plan and schedules consistent with Section 2.2, "Compliance Schedules," will be provided in the next regularly scheduled Annual Update, or a date for submittal of such a proposed plan and schedules will be provided if additional time is required for its preparation. The information provided pursuant to this subsection is subject to DTSC approval to the extent provided for in Section 2.4.4.

2.4.3 If DOE/OAK cannot provide such information or schedules as required by Section 2.4.2 because of inadequate characterization or because it is otherwise impracticable, DOE/OAK shall include appropriate justification, supporting information, and proposed plans for approval as a deliverable under Section 2.8, "Procedures for Review and Approval," for developing such information and schedules consistent with Section 2.2, "Compliance Schedules."

2.4.4 DOE/OAK may propose changes to the Compliance Plan Volume of the STP to accommodate new waste streams. If any such changes are required, DOE/OAK shall submit the changes for approval as a deliverable under Section 2.8, "Procedures for Review and Approval." Also, DOE/OAK may propose revisions to the Compliance Plan Volume of the STP as necessary to accommodate new waste streams subject to Section 2.5, "Revisions."

2.5 REVISIONS

2.5.1 A revision is a change to the Compliance Plan Volume of the STP that requires, for those affected portions of the STP, publication of a notice of availability to the public and consultation with affected states and EPA pursuant to this STP and Section 3021(b)(2) and (3) of RCRA. A revision is (1) the addition of a treatment facility at GA or technology development not previously included in the Compliance Plan Volume to the STP; or (2) an extension to a milestone (including an extension by mutual agreement under Section 2.6 or a proposed milestone converting a target date under Section 2.2) for a period greater than one year. Changes in waste volume; the addition or deletion of wastes or waste types; extensions; changes to milestones for a period less than a year; or changes to target dates shall not, by themselves, constitute a revision.

2.5.2 Revisions to the STP shall be made as follows:

2.5.2.1 DOE/OAK shall identify to DTSC the need to revise the Compliance Plan Volume of the STP and provide supporting information on the basis for the revision as a deliverable pursuant to Section 2.8, "Procedures for Review and Approval." Under these procedures, within 30 days of receipt, DTSC may conditionally approve the revision, return it to DOE/OAK with comments so that changes can be made for resubmittal, or disapprove it. In reviewing the revision, DTSC shall consider the need for regional treatment facilities. Conditional approval of a revision is a determination by DTSC that the revision is acceptable subject to the results of public comment and consultation with affected states and EPA.

2.5.2.2 Within 30 days subsequent to conditional approval, DTSC shall publish a notice of availability and make the revision to the STP available to the public for review and comment and to affected states and EPA for consideration and consultation. Revisions shall be approved or approved with modification by DTSC within 6 months after DTSC's receipt of the proposed revision. DTSC shall either (1) notify DOE/OAK that the revision has final approval or (2) notify DOE/OAK that DTSC received comments from the public, affected states, or EPA indicating that such revision should be modified before approval. Any proposed modifications to the revision shall include supporting explanation and information. DOE/OAK shall have 30 days to discuss the proposed modifications with DTSC. If agreement is not reached on the proposed modifications in this 30-day period, the procedures of Section 2.10, "Disputes," will apply.

2.5.3 To the extent practicable, comments from the public, affected states, and EPA on conditionally approved revisions will be obtained in conjunction with the Annual Update to the STP, governed by Section 2.3, "Annual Site Treatment Plan Updates." However, in the event a conditionally approved revision is proposed to become effective before it could be addressed in the regularly scheduled Annual Update, DTSC shall publish a Notice of Availability and consult with affected states and EPA, as appropriate, within 30 days of such conditional approval.

[Additional or revised procedures may need to be added to Section 2.5, "Revisions," that involve schedules to ensure consistency with the framework outlined in the addendum to this STP, "Milestone Approach and Budget Formulation Process."]

2.6 EXTENSIONS

2.6.1 DOE/OAK shall implement this STP in accordance with the milestones set forth in the STP, as well as milestones subsequently developed pursuant to this STP. DOE/OAK further agrees to adopt all reasonable measures to avoid or minimize any delays in the implementation of this STP.

2.6.2 A milestone that is established according to the provisions of the FFCAct Order shall be extended upon receipt by the DTSC of a timely request for extension, provided good cause, as defined in this section, exists for the requested extension. Any request for extension by DOE/OAK shall be made to the DTSC prior to the milestone date in the manner described below and shall specify:

- a. The milestone that is sought to be extended;
- b. The length of the extensions sought;
- c. The good cause(s) for the extension; and
- d. Any related milestone or target date that would be affected if the extension were granted.

2.6.3 Good cause for an extension includes, but is not limited to:

- a. An event of *force majeure* (as defined in Section 2.6.6 below);
- b. A delay caused by the DTSC's failure to meet any requirement of this STP;
- c. A delay caused by the good faith invocation of dispute resolution or the initiation of administrative or judicial action; and
- d. A delay caused, or which is likely to be caused, by the grant of an extension in regard to another milestone;
- e. A delay caused by additional work agreed to by DOE/OAK and the DTSC;
- f. Circumstances that are unforeseen at the time this STP was prepared and that significantly affect the work required under the STP;

- g. Delay in the DTSC's review of a permit application or issuance of a permit required to conduct the work specified in the STP or to meet a milestone;
- h. Inconsistency with the requirements of any other existing permit, order, or agreement to which DOE is a party;
- i. A delay caused by a change to a planning assumption, as specified in the STP, that results from either a request by the DTSC or is identified by DOE but does not represent a failure of DOE or its contractor to properly manage the work specified in the STP;
- j. A stop-work order by the DTSC; or
- k. Any other event or series of events mutually agreed upon by DOE/OAK and the DTSC as constituting good cause.

2.6.4 In the absence of agreement between the DOE/OAK and the DTSC with respect to the existence of good cause, the parties may seek and obtain a determination through the dispute resolution process, Section 2.10, whether good cause exists.

2.6.5 For extension requests by DOE/OAK, except for extensions sought on the basis of *force majeure* (defined in Section 2.6.6), the following procedures shall apply:

- a. DOE/OAK requests for an extension for one or more milestones shall be made to the DTSC no less than thirty (30) days prior to the date of the first milestone for which the extension is sought, either in writing or orally with a written follow-up request within ten (10) business days of the request.
- b. Within fifteen (15) business days of receipt of a written request for an extension of a milestone, the DTSC shall advise DOE/OAK in writing whether it shall approve, approve in part, or deny the request. Any failure by the DTSC to respond within the fifteen (15) day period shall be deemed to constitute the DTSC's approval of the requested extension. If the DTSC approves in part or denies the requested extension, it shall explain in its written response to DOE/OAK its reasons for the partial approval or denial of the requested extension.
- c. If the DTSC approves the requested extension, then the affected milestone(s) shall be extended accordingly. If the DTSC approves in part or denies the requested extension, then the affected milestone(s) shall not be extended except as set forth in Paragraph b of this section, or in accordance with a determination resulting from the dispute resolution process.
- d. Within fifteen (15) business days of receipt of the DTSC's written determination to approve in part or deny DOE/OAK's extension request, the DOE/OAK may invoke dispute resolution. If DOE/OAK does not invoke dispute resolution within this time period, then DOE/OAK shall be deemed to have accepted the DTSC's determination and the existing milestone schedule set forth in the STP.

2.6.6 *Force Majeure*

2.6.6.1 The DOE/OAK shall perform the requirements of this FFCAct Order within the time limits set forth in the STP, unless performance is prevented or delayed by events which constitute a *force majeure*. A *force majeure* is defined as any event arising from a cause not foreseeable and beyond the control of the DOE/OAK, which could not be avoided or overcome by due diligence and which delays or prevents performance by a date required by the FFCAct Order. Such a cause shall be considered an event of *force majeure* and shall include, but not be limited to:

- a. Acts of God, fire, war, insurrection, civil disturbance, or explosion;
- b. Adverse weather conditions that could not be reasonably anticipated;
- c. Unusual delays in transportation beyond the control of DOE/OAK;
- d. Unanticipated malfunction or breakdown of, or accident to, machinery, equipment, or lines of pipe not due to negligence, inadequate maintenance, or improper operation;
- e. Restraint by court order or order of public authority;
- f. Inability to obtain, at reasonable cost and after exercise of reasonable diligence, any necessary authorizations, approval, permits, or licenses due to untimely action or failure to act of any governmental agency or authority other than the DOE/OAK;
- g. Delays caused by compliance with applicable statutes or regulations such as those governing contracting, procurement, or acquisition procedures, despite the exercise of reasonable diligence;
- h. A strike, lockout, or other labor difficulty whether or not within the control of the DOE/OAK;
- i. Unavailability of equipment despite reasonable diligence used to obtain the equipment in a timely manner;
- j. Lack of or inability to obtain raw materials, labor, fuel, or supplies; or
- k. Unanticipated condition or hazard posed to persons or property.

2.6.6.2 To claim *force majeure* the DOE/OAK shall give prompt oral notification to the DTSC within forty-eight (48) hours after the event which the DOE/OAK knows or

should know constitutes a *force majeure*, and shall serve written notice on the DTSC not less than seven (7) days after such oral notification. The written notice shall contain an estimate of the anticipated length of delay, a description of the cause of delay, a plan for implementing measures to correct the problem and avoid such delays in the future, and an estimated schedule for implementation of these measures. The DOE/OAK shall adopt all reasonable measures to avoid and minimize the delay. If the suspension of obligation(s) under this section would, in the DTSC's opinion, render compliance with this FFCAct Order impossible or impracticable, the DTSC reserves the right to terminate this FFCAct Order or to seek judicial enforcement, or both.

2.6.6.3 Except as otherwise provided in this FFCAct Order, the DTSC shall notify the DOE/OAK in writing of the DTSC's determination regarding the asserted claims of *force majeure*. If the DTSC agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this FFCAct Order that are affected by the *force majeure* event shall be extended by the DTSC for such time as corresponds to the delay shown to have resulted from the *force majeure* event or for such longer period of time that is reasonable under the circumstances. An extension of the time for performance of the obligations affected by the *force majeure* event shall also extend the time for performance of any subsequent obligation that is affected by such delay. If the DTSC does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, the DTSC shall notify the DOE/OAK in writing of its decision.

2.6.6.4 If the DOE/OAK elects to invoke the dispute resolution procedures set forth in this FFCAct Order in response to the DTSC's determination that a delay or anticipated delay has not been or will not be caused by a *force majeure* event, the DOE/OAK shall do so no later than thirty (30) days after receipt of this written determination from the DTSC. In any such proceeding, the DOE/OAK shall have the burden of demonstrating, by a preponderance of the evidence, that the delay or anticipated delay has been or will be caused by a *force majeure* event, that reasonable efforts were exercised to avoid and mitigate the effects of the delay, and that the DOE/OAK reasonably complied with all requirements imposed by this section. If

the DOE/OAK carries this burden, the delay at issue shall not be deemed to be a violation by the DOE/OAK of the affected obligation of this FFCA Act Order.

2.6.7 A timely and good faith request for extension shall toll any assessment of penalties or the initiation of any action to enforce the affected milestone(s) until a decision by DTSC is reached on whether to approve, approve in part, or deny the requested extension. If dispute resolution is invoked and the contested portion of the extension request is denied, penalties may be assessed based on an accrual date of the original milestone(s) for which the extension request was sought. Following the approval of an extension request, the DTSC may assess penalties or initiate any action to enforce the affected milestone(s) based on the most recently approved new milestone(s).

2.6.8 Extension requests made in writing by the DTSC to DOE/OAK shall be deemed approved if the DOE/OAK does not invoke dispute resolution within fifteen (15) business days after receiving written notice of the request.

2.7 DELETION OF WASTES AND TERMINATION OF THE STP

2.7.1 Deletion of Wastes. The requirements of this Compliance Plan Volume shall terminate with regard to any covered waste upon DOE/OAK's notice to DTSC of the following:

- a. Completion of activities required pursuant to a milestone under the Compliance Plan Volume for treatment of such waste;
- b. Shipment of wastes offsite for treatment, disposal, or storage pending treatment or disposal;
- c. Changes to statute or regulation or determinations of the regulatory authority that causes a waste or waste categories to be no longer subject to the requirements of RCRA or the LDR requirements of RCRA;
- d. Storage for the sole purpose of accumulating such quantities of covered wastes as are necessary to facilitate proper recovery, treatment, or disposal;
- e. Information demonstrating the waste meets the treatment standards of RCRA, Section 3004 (m);
- f. Treatment in accordance with the conditions of an approved LDR treatability variance; or
- g. Mutual agreement between DOE/OAK and DTSC.

2.7.2 Inasmuch as the intent of the FFCAct requirement to develop an STP is to address compliance with RCRA Section 3004(j), this STP shall terminate either at such time as (1) there is no longer any mixed waste, regardless of when generated, being stored or generated at GA which does not meet LDR requirements or (2) the mixed waste being stored or generated at GA is being stored, or will be stored when generated, solely for the purpose of accumulating sufficient quantities of mixed wastes as are necessary to facilitate proper recovery, treatment, or disposal.

2.7.3 DOE/OAK will notify DTSC of such termination independently and/or in the Annual Updates to the STP. DTSC will provide DOE/OAK with a written response to the notification within 30 days. DTSC's response to this notice shall be subject to the provisions of Section 2.10, "Disputes."

2.8 PROCEDURES FOR REVIEW AND APPROVAL

[Additional or revised procedures may need to be added to Section 2.8, "Procedures for Review and Approval," that involve schedules to ensure consistency with the framework outlined in the addendum to this STP, "Milestone Approach and Budget Formulation Process."]

2.8.1 Deliverables developed by DOE/OAK pursuant to this Compliance Plan Volume shall be submitted by DOE/OAK to DTSC for review and comment as provided in this section. Deliverables include documents or notices signifying completion of milestones, identifying new wastes, and supporting proposed revisions as required or permitted under this Compliance Plan Volume. Where DTSC approval of a deliverable is expressly required in this Compliance Plan Volume, the approval provisions in this section apply. Permit applications and National Environmental Policy Act (NEPA) documents shall not be subject to the procedures of this section. Permit applications shall be submitted and reviewed under applicable regulations, and NEPA documents shall be submitted and reviewed under the DOE regulations implementing NEPA. Each submittal of a deliverable shall specify the milestone or other provision of this Compliance Plan Volume requiring submittal of that deliverable.

2.8.2 Unless otherwise noted, each deliverable shall be transmitted directly to the project manager of DTSC responsible for implementation of this STP.

2.8.3 DTSC will promptly review each deliverable submitted by DOE/OAK required to be approved pursuant to this Compliance Plan Volume, within the time frames established in this section unless other time frames are agreed to in writing. In the course of their review, DTSC will consult with DOE/OAK regarding the adequacy of each deliverable. Oral comments made during these discussions shall not require a written response.

2.8.4 Deliverables that do not require DTSC approval shall be provided to DTSC for review and comment. In the event that DOE/OAK disagrees with DTSC's comments, DOE/OAK shall respond to DTSC's comments in writing explaining the DOE/OAK's position. If DOE/OAK has not received comments from DTSC within 30 days of submittal of the deliverable, it will be deemed that DTSC has no comments.

2.8.5 For any deliverable that requires DTSC approval under the provisions of this Compliance Plan Volume, the following procedures shall apply:

2.8.5.1 DTSC shall, within 30 days of receipt, take action as follows: (1) approve, conditionally approve (if the deliverable is a revision), or disapprove the deliverable as submitted; or (2) return the deliverable to DOE/OAK with comments so that changes can be made for resubmittal. Conditionally approved revisions will be approved or approved with modification after public review and comment and consultation with affected states and EPA pursuant to Section 2.5, "Revisions." DTSC may extend this review period by an additional 30 days by notifying DOE/OAK. This period may be further extended for an additional period of time, as may be agreed to by DTSC and DOE/OAK. Comments on the deliverable shall be provided with adequate specificity so that DOE/OAK can make the appropriate changes to the document. To the extent applicable, comments should refer to specific paragraphs of any sources of authority or references on which the comments are based; and upon request of DOE/OAK, DTSC shall provide a copy of the cited authority or reference.

2.8.5.2 If DTSC fails to take one of the actions specified above within the time frames required by this STP, the deliverable shall be considered approved or conditionally approved as submitted. If DTSC extends the review period for a deliverable, any milestones or target dates dependent upon the results of deliverable review will

automatically be extended an equivalent amount of time as the time taken beyond the specified time frame for review. DOE/OAK will notify DTSC in writing of any enforceable milestones that will need to be extended or revised.

2.8.5.3 In the event that DTSC returns the deliverable to DOE/OAK with comments, within thirty (30) days of receipt, DOE/OAK shall incorporate the comments and shall retransmit the deliverable. DOE/OAK may extend this period by an additional 30 days by notifying DTSC. This period may be further extended for an additional period of time, as may be agreed to by DTSC and DOE/OAK. In the event DOE/OAK disagrees with DTSC's comments and the parties are unable to resolve their disagreement, DOE/OAK may invoke the dispute resolution provisions of Section 2.10, "Disputes."

2.9 FUNDING

2.9.1 DOE proposes DTSC an opportunity to input into formulating the DOE/OAK budget and setting the DOE/OAK budget priorities as outlined in the addendum to this STP, "Milestone Approach and Budget Formulation Process." Nothing in the STP affects DOE's authority over its budget and funding level submissions. Further, it is DOE's position that any requirement for the payment or obligation of funds by DOE established by the terms of the STP and FFCAct Order requiring compliance with the STP would be subject to the availability of appropriated funds, and that no provision of the STP or FFCAct Order should be interpreted to require the obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. Section 1341, as amended. In cases where the payment or obligation of funds would constitute a violation of the Anti-Deficiency Act, the dates established requiring the payment or obligation of such funds should be appropriately adjusted.

2.10 DISPUTES

[Additional or revised procedures may need to be added to Section 2.10, "Disputes," that involve schedules to ensure consistency with the framework outlined in the addendum to this STP, "Milestone Approach and Budget Formulation Process."]

2.10.1 Except as specifically set forth elsewhere in this STP, any action which leads to or generates a dispute regarding compliance with this STP, is subject to resolution under this section.

DOE/OAK and DTSC must exhaust the dispute resolution process prior to seeking any administrative or judicial relief.

2.10.2 DOE/OAK and DTSC shall make reasonable efforts to informally resolve disputes as expeditiously as possible at the project manager/division director levels. If resolution cannot be achieved informally, the disputing party may elevate the dispute for formal resolution in accordance with this section.

2.10.3 To initiate formal dispute resolution, the disputing party shall submit to the other party a written Notice of Dispute specifying:

- a. The nature of the dispute;
- b. The work affected by the dispute;
- c. The disputing party's position; and
- d. The information the disputing party is relying upon to support its position.

2.10.4 Upon receipt of the Notice of Dispute, the DTSC Assistant Director for Hazardous Waste Management shall notify the DOE/OAK Assistant Manager for Environmental Management and Support to begin attempts at formal dispute resolution. The parties (or their respective delegates) shall have thirty (30) days from the date of the receipt by DTSC of the Notice of Dispute to resolve the dispute. If the parties cannot agree on a resolution of the dispute, the dispute shall be escalated by the disputing party to the Director, DTSC. Within thirty (30) days of escalation, the DTSC Director shall consult with the Manager, DOE/OAK, and issue a final written determination of DTSC. This 30-day period may be extended by mutual agreement of the parties. The decision of DTSC shall be binding upon the parties unless timely appeal is taken.

2.10.5 DOE shall have the right to seek administrative or judicial relief from DTSC's final determination under this section, as provided for by law. During the pendency of any dispute, DOE/OAK agrees that it shall continue to implement those portions of this STP affected by the dispute that can be reasonably implemented pending final resolution of the issue(s) in dispute. All elements of work required by this Compliance Plan Volume that are not affected by the dispute shall continue and be completed in accordance with the applicable schedule.

2.10.6 Unless timely appeal is made, DOE/OAK shall incorporate the resolution and final determination into the appropriate plan, schedule, or procedure and proceed with implementation in accordance with the amended plan, schedule, or procedure within forty-five (45) days after resolution of the dispute pursuant to the procedures specified in this section, in order for Section 2.11, "Covenants and Reservations," to remain effective for the affected waste stream.

2.10.7 States affected by the dispute and/or EPA may be consulted by the parties as part of the dispute resolution process, as appropriate.

2.11 COVENANTS AND RESERVATIONS

2.11.1 This STP and implementing FFCAct Order shall stand in lieu of any administrative, legal, and equitable remedies which are available to the DTSC against DOE, its contractors and subcontractors at any tier and all persons bound by this STP and implementing FFCAct Order with respect to the matters covered by this STP and implementing Order, so long as DOE and all parties bound by this STP and implementing FFCAct Order are in compliance with the STP and implementing FFCAct Order as determined by DTSC or a court of competent jurisdiction.

2.11.2 Except as specifically set forth herein, DOE reserves and does not waive any rights, authority, claims or defenses, including sovereign immunity, that it may have or wish to pursue in any administrative, judicial or other proceeding with respect to any person; nor does DOE waive any claim of jurisdiction over matters which may be reserved to DOE by law, including the Atomic Energy Act. Nothing in this STP and implementing FFCAct Order shall constitute an admission on the part of DOE, in whole or in part, in any proceeding except in a proceeding to enforce the FFCAct Order implementing this STP. DOE specifically reserves all rights it may have by law to seek and obtain administrative or judicial review or appeal according to law of any determination made by DTSC during DOE/OAK's performance of its obligations under this STP and implementing FFCAct Order. DOE also specifically reserves all rights it may have by law to seek and obtain administrative or judicial review or appeal of permit requirements.

3.0 MIXED LOW-LEVEL WASTE TREATMENT PLAN AND SCHEDULES

This section describes the proposed treatment plans and schedules for DOE/OAKs mixed low-level waste (MLLW) streams at GA. These schedules represent enforceable milestones for the purposes of the FFCAct. More detailed information regarding the preferred treatment options, including additional breakdowns of schedules and target dates, is provided in the Background Volume. It is DOE/OAK's intention to develop enforceable milestones only as specifically required by the FFCAct.

Table 3-1 provides information regarding the preferred treatment options for characterized DOE/OAK MLLW streams at GA. Table 3-2 is reserved to provide the treatment options for MLLW requiring technology development, and Table 3-3 provides a list of MLLW that still require characterization, or that have been characterized but require a technology assessment.

Tables 3-4(a) through (e) contain the proposed treatment or characterization schedules for MLLW. For consistency in comparing activities for treating MLLW at any of the several DOE/OAK sites required to prepare Proposed STPs (PSTPs), the tables have been assigned the following standard identification: (a) is reserved for onsite treatment schedules; (b) is reserved for offsite treatment schedules; (c) is reserved for technology development schedules; (d) is reserved for treatability studies; and (e) is reserved for schedules for waste streams requiring characterization or technology assessment. The tables are included in the PSTP only if applicable to this site at this time.

3.1 MLLW STREAMS FOR WHICH TECHNOLOGY EXISTS

The preferred treatment options for GA waste streams for which technology exists are identified in Table 3-1, with detailed schedule information provided in Tables 3-4(a) or (b), as appropriate (the tables are included only if applicable to this site). Additional schedule information and a description of the interim steps needed to bring these wastes into compliance with RCRA LDR requirements are included in Section 3.1 of the Background Volume. Preferred treatment options selected will meet RCRA LDR requirements for land disposal.

TABLE 3-1 TREATMENT OPTIONS FOR CHARACTERIZED DOE/OAK MLLW STREAMS AT GA		
Waste Stream No.	Waste Stream Description	Status
GA-W003	SVA: Lead contaminated sludge (sump water and sludge)	Hanford WRAP IIA Stabilization
GA-W004	NPR (Fuel Fabrication Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid	Onsite Neutralization and Stabilization
GA-W005	NPR (Fuel Fabrication Program): Davies-Gray wastes - Phosphoric and nitric acids containing chromium	Onsite Neutralization and Stabilization
GA-W006	NPR (Fuel Fabrication Program): Fume scrubber wastes - Spent NaOH solution containing chromium	Onsite Neutralization and Stabilization
GA-W007	Hot Cell D&D: Lead shot	Hanford WRAP IIA Macroencapsulation
GA-W009	Hot Cell D&D: Caustic decontamination solution	Onsite Neutralization and Filtration
GA-W013	Hot Cell D&D: Lead bricks	Hanford WRAP IIA Macroencapsulation
GA-W032	NPR (Fuel Fabrication Program): Waste column liquid wastes: IPA/Ammonia/Nitric Acid/Mercury below TCLP level	Onsite Neutralization and Stabilization
GA-W033	NPR (Fuel Fabrication Program): Waste column liquid wastes: IPA/Ammonia/Nitric Acid/Chromium below TCLP level	Onsite Neutralization and Stabilization
GA-W041	NPR (Lithium Target Technology Program): Waste column liquid wastes - IPA/Ammonia/Nitric Acid	Onsite Neutralization and Stabilization
GA-W042	NPR (Lithium Target Technology Program): Fume scrubber wastes - Spent NaOH solution containing chromium	Onsite Neutralization and Stabilization

Key: WRAP IIA = Waste Receiving and Processing Facility

3.2 MLLW STREAMS FOR WHICH TECHNOLOGY EXISTS BUT NEEDS ADAPTION OR FOR WHICH NO TECHNOLOGY EXISTS

No DOE/OAK MLLW streams at GA are currently identified for technology development.

Table 3-2 is reserved to provide the preferred treatment option for any future DOE/OAK MLLW

streams at GA for which technology exists but needs adaptation or for which no technology exists. Detailed schedule information will be provided in Tables 3-4(c) or (d), as appropriate (the tables will be included only if applicable to this site). Additional schedule information and a description of the interim steps needed to bring these wastes into compliance with RCRA LDR requirements will be included in Section 3.2 of the Background Volume.

TABLE 3-2 -RESERVED- TREATMENT OPTIONS FOR DOE/OAK MLLW STREAMS AT GA REQUIRING TECHNOLOGY DEVELOPMENT OR TREATABILITY STUDIES		
Waste Stream No.	Waste Stream Description	Preferred Treatment Option
(Treatability Group)		
	None identified at this time.	

3.3 MLLW STREAMS REQUIRING FURTHER CHARACTERIZATION, OR FOR WHICH TECHNOLOGY ASSESSMENTS HAVE NOT BEEN DONE

DOE/OAK MLLW streams at GA requiring further characterization are identified in Table 3-3, with detailed schedule information in Table 3-4(e) (the table is included only if applicable to this site). Following the completion of the characterization process, DOE/OAK will either identify the facility that will receive the waste or it will submit a proposed schedule as described in Section 2.0 of the Compliance Plan Volume. Additional schedule information and a description of the interim steps needed to bring these wastes into compliance with RCRA LDR requirements are included in Section 3.3 of the Background Volume.

TABLE 3-3	
UNCHARACTERIZED DOE/OAK MLLW STREAMS AT GA	
Waste Stream No.	Waste Stream Description
Organic Liquids	
GA-W010	Hot Cell D&D: Pump oil
GA-W021	NPR (Fuel Fabrication Program): Kerosene and water
GA-W027	NPR (Fuel Fabrication Program): Oil
GA-W034	Doublet III: Alcohol and tritium
GA-W035	Doublet III: Oil and tritium
GA-W038	Hot Cell D&D: Miscellaneous liquid solvents
GA-W039	Hot Cell D&D: Corrosive liquids
Inorganic Debris	
GA-W014	Hot Cell D&D: Miscellaneous scrap metal
GA-W028	NPR (Fuel Fabrication Program): HEPA Filters
GA-W036	Hot Cell D&D: HEPA filters
GA-W037	Hot Cell D&D: Solid wastes contaminated with F-listed solvents
GA-W040	Hot Cell D&D: Electrical components with lead solder

TABLE 3-4 (a)

SCHEDULE: MLLW STREAMS TO BE TREATED ONSITE WITH EXISTING TECHNOLOGIES

Activity	Waste Stream No.			
	GA-W004, W005, W006 NPR Fuel Fabrication Program Corrosive Solutions	GA-W041, GA-W042 NPR Lithium Target Technology Program Corrosive Solutions	GA-W009 HCF Basic Solutions	GA-W032, W033 NPR Acidic Organics w/ Metals
Onsite Treatment	Neutralization and Stabilization	Neutralization and Stabilization	Neutralization and Filtration	Neutralization and Stabilization
Milestone				
Complete Waste Treatment. (Filter and/or stabilize)	8/31/96	-	8/31/96	8/31/96
Target Date				
Complete Waste Treatment. (Filter and/or stabilize)		6/31/97		

1. A RCRA Part A permit application was submitted to the California Department of Toxic Substances Control. The permit application included the treatment units to be used to comply with this schedule.
2. Liquids remaining after neutralization and filtration will be discharged to the POTW in accordance with GA's Industrial Discharge Permit administered by the City of San Diego.

TABLE 3-4 (b)

**SCHEDULE: MLLW STREAMS TO BE TREATED OFFSITE
WITH EXISTING TECHNOLOGIES**

Activity		
	GA-W003 SVA Inorganic Sludges	GA-W007, W013, HCF Elemental Lead
Offsite Treatment Location	Hanford WRAP IIA	Hanford WRAP IIA
Milestone		
Request an acceptable shipping schedule from offsite facility for offsite transport of waste(s).	8/31/96	8/31/96
Target Date		
Complete shipment of waste(s) offsite.	Assumption #1	Assumption #1

1. Wastes will be shipped within 6 months after the approved shipping date provided by the treatment facility (in response to GA's request shown as the first milestone).

TABLE 3-4 (e)

SCHEDULE: MLLW STREAMS REQUIRING CHARACTERIZATION

Activity	Waste Stream No.				
	GA- W021, W027 NPR Fuel Fabrication Program Kerosene and Oil	GA-W028 NPR Fuel Fabrication Program HEPA Filters	GA-W010, W038, W039 HCF Pump Oil, Solvents, Corrosives	GA- W014, W036, W037, W040 HCF Inorganic Debris	GA- W034, W035 Doublet III Tritiated wastes
Milestone					
Complete necessary characterization to allow the identification of treatment option.	6/30/96	6/30/96	6/30/96	6/30/96	6/30/96
Target Date					
Select a treatment option and submit a treatment schedule with the STP Annual Update.	3/31/97	3/31/97	3/31/97	3/31/97	3/31/97

Assumptions: -RESERVED-

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4.0 MIXED TRANSURANIC WASTE MANAGEMENT PLAN AND SCHEDULES

DOE/OAK has not generated or stored MTRU wastes at GA, nor are MTRU wastes anticipated to be generated as a result of DOE/OAK activities at GA in the future. MTRU waste, by definition, is waste, regardless of source or form, that is contaminated with (1) alpha-emitting transuranium nuclides with half-lives greater than 20 years and concentrations greater than 100 nanoCuries per gram (nCi/g) at time of assay and (2) RCRA-regulated waste.

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5.0 MIXED HIGH-LEVEL WASTE STREAMS

DOE/OAK has not generated or stored mixed high-level waste (HLW) at GA, nor are mixed HLW anticipated to be generated as a result of DOE/OAK activities at GA in the future. HLW is defined as the highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including the liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation.

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Addendum

**MILESTONE APPROACH AND ENVIRONMENTAL MANAGEMENT BUDGET
FORMULATION PROCESS**

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-ADDENDUM-

**MILESTONE APPROACH AND ENVIRONMENTAL MANAGEMENT
BUDGET FORMULATION PROCESS**

In view of recent budget cuts and future budget uncertainties, the Department of Energy (DOE) faces a significant challenge in maintaining an environmental program that complies with environmental laws, including the Federal Facility Compliance Act (FFCAct), in a manner that maximizes use of DOE's resources and addresses the most serious risks first. DOE must work closely with regulatory agencies and stakeholders to develop less costly and more efficient approaches to achieving compliance while recognizing fiscal constraints. DOE is moving forward on several fronts to meet this challenge, including initiatives to improve internal efficiency and productivity, to involve regulatory agencies and stakeholders in a "bottom-up" process for setting environmental management budgets and priorities, and to seek increased flexibility in the appropriation process for DOE's Environmental Management Program. A key element in meeting this challenge is the development of a process for setting milestones that provides accountability, focuses resources on high priority activities, and recognizes fiscal and technical uncertainties.

To meet these objectives, DOE proposes using a two-year rolling milestone approach to implement the schedules provided in the Compliance Plan Volume of the Site Treatment Plan. Under this approach, schedule dates are designated as either "milestones" or "target dates." Milestones and target dates would be established in accordance with available Environmental Management funding for the site. Milestones are enforceable deadlines for near-term activities (i.e., the current fiscal year plus one additional year). Milestones are established for near-term activities because there is greater fiscal and technical certainty about these activities. Target dates are non-enforceable deadlines for longer-term activities and would be converted to milestones on an annual basis. Each year, after receipt of the Approved Funding Program that reflects the final Congressional appropriation for that fiscal year, existing milestones would be reviewed, and adjusted if necessary, based on funding availability, new technical information, and other factors. An additional year of milestones would also be established by converting upcoming target dates to milestones, adjusting the target dates as necessary before converting them to milestones. Affected out-year target dates would also be adjusted as necessary. To the extent practical, this process would coincide with the process

for the Annual Site Treatment Plan Updates and would be conducted in a consistent time-frame across the DOE sites (for example, no later than March 31 of each year).

During the annual review and establishment of milestones and target dates, DOE and the regulatory agencies would consider a variety of factors, including: funding availability; latest information on cost estimates; site priorities identified through consultations among DOE, regulatory agencies, and stakeholders; new or emerging technologies; and other relevant factors.

Because the process for modifying and extending milestones is resource-intensive for both DOE and regulatory agencies, only major project activities required by the FFCAct and other statutes should be designated as enforceable milestones. Other mechanisms, such as submission of the Annual Site Treatment Plan Updates, would provide regulatory agencies with information on progress on enforceable milestones and interim activities.

Target dates would be established using realistic assumptions. DOE and the regulatory agencies must recognize the uncertainties associated with long-term target dates which set forth DOE's strategic vision of how it plans to accomplish the project.

DOE will work with the regulatory agencies to resolve disputes concerning the establishment of milestones. DOE proposes that the parties agree to exhaust all available dispute resolution mechanisms prior to resorting to formal enforcement actions for disputes involving insufficient funding.

As noted above, DOE will provide the regulatory agencies and other stakeholders an opportunity to participate in developing the Environmental Management budget and priorities. Open discussions between DOE, regulatory agencies, and other stakeholders will facilitate the development of a sensible Environmental Management program and budget proposal that uses DOE's resources wisely in light of budget constraints confronting DOE.