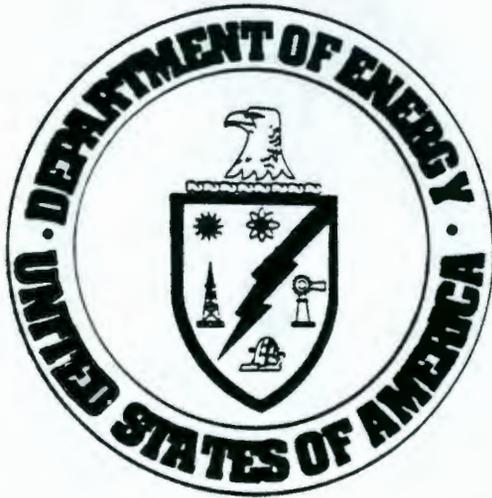


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PROPOSED SITE TREATMENT PLAN



**KNOLLS ATOMIC POWER
LABORATORY
NISKAYUNA, NEW YORK**

EXECUTIVE SUMMARY FOR THE KAPL-KNOLLS PROPOSED SITE TREATMENT PLAN

The Federal Facility Compliance Act of 1992 (FFCA) requires the U.S. Department of Energy (DOE) to prepare Site Treatment Plans (STPs) to address treatment of mixed radioactive and hazardous waste for each DOE site which generates and stores mixed waste. These plans are to be submitted to the states (or the U.S. Environmental Protection Agency (EPA) in cases where the state has not been delegated authority to regulate mixed waste) for approval. Owing to the joint Navy/DOE nature of the Naval Nuclear Propulsion Program (NNPP) and pursuant to the legislative history of the FFCA, NNPP facilities which generate and store mixed waste, including Knolls Atomic Power Laboratory (KAPL-Knolls), are included in the FFCA process and have prepared STPs. The KAPL-Knolls Proposed Site Treatment Plan (PSTP) is being provided to New York State Department of Environmental Conservation (NYSDEC) for approval in accordance with the FFCA.

KAPL-Knolls generates very small amounts of mixed waste as a result of research and development for the design and operation of Naval nuclear propulsion plants. KAPL-Knolls currently has approximately 1.57 cubic meters of mixed waste in storage and 7.58 cubic meters of mixed waste undergoing on-site processing, and projects to generate approximately 38.34 cubic meters over the next five years (28.81 cubic meters of the 38.34 cubic meters is expected to be placed in storage pending availability of treatment following completion of on-site processing.) These amounts represent less than 0.029 percent of the total amount of mixed waste stored and generated at DOE facilities.

As outlined in an April 6, 1993 Federal Register notice (58 FR 17875 as modified in 60 FR 10840, February 28, 1995), the STPs were developed in three stages. Conceptual Site Treatment Plans (CSTPs), which identified the range of potentially feasible treatment options for each mixed waste stream, were completed and submitted to state and EPA regulators in October 1993. Draft Site Treatment Plans (DSTPs), completed and submitted to state and EPA regulators in August 1994, discussed the evaluation of treatment options and identified the site's preferred treatment option for each waste stream. PSTPs, which contain DOE's preferred options developed after evaluation and integration with the site-specific options in other sites' DSTPs, are being submitted to state and EPA regulators in March 1995. This three step process was intended to facilitate early interaction with the regulators and other stakeholders to maximize the likelihood that the STPs will ultimately be approved by October 1995 as required by the FFCA.

Prior to submittal of the DSTPs in August 1994, KAPL-Knolls determined preferred treatment options for each waste stream by comparing all feasible treatment options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in several fundamental areas (including regulatory compliance, treatment effectiveness, environment/health/safety concerns, cost, and implementability). This approach was used by all sites. Based on the very small volumes of KAPL-Knolls waste streams requiring treatment following completion of on-site processing, these evaluations indicated

that off-site treatment at other DOE facilities is economically and technically preferable to other options. KAPL-Knolls identified potentially technically capable DOE facilities for each waste stream based on an evaluation of available treatment facility information, then coordinated with the other DOE sites to confirm treatment capability and select preferred options. Several of the preferred treatment options now identified in the PSTP have been changed from those identified in the DSTP based on further evaluations to resolve technical uncertainties and based on the DOE Options Analysis Team (OAT) evaluations to improve the efficiency of the complex wide treatment configuration.

In addition to identifying the proposed treatment option for each KAPL-Knolls mixed waste stream, the PSTP also identifies proposed schedules for shipment of each waste stream to the selected treatment facility, and proposed arrangements for pre-treatment storage and post-treatment residual management for each waste stream. A single schedule milestone, for shipment to the treatment facility within 18 or 24 months of the start of facility operations, is proposed for each waste stream. Thus, pre-treatment storage on-site at KAPL-Knolls until the selected treatment facilities are available is proposed. Projected schedules for the start of operation of selected treatment facilities are identified, except where this information was not available for inclusion in the PSTP. The PSTP also proposes commitments to perform additional evaluations and work with NYSDEC to determine whether alternative treatment options should be selected in the event completion of a targeted treatment facility is delayed (or in the event the initial projected schedule is not acceptable for cases where a projected schedule is not currently available).

The KAPL-Knolls PSTP proposes that treatment residuals from KAPL-Knolls mixed waste streams be stored at the treatment sites until DOE complex-wide mixed waste disposal arrangements are established. This proposal is based on the very small volumes of KAPL-Knolls' mixed waste streams, the desire to minimize shipments, and technical concerns associated with different radionuclides and hazardous constituents in the residues. Given the very small volumes of KAPL-Knolls' mixed waste streams, these streams will likely be blended with other waste streams at the treatment sites to facilitate treatment. Therefore, treatment residuals will likely be a mixture of KAPL-Knolls' and other sites' residuals which may contain different radionuclides and hazardous constituents from the original KAPL-Knolls waste streams. KAPL-Knolls and the NNPP consider this technical justification supports having very small volumes of treatment residuals remain at the treatment sites vice being returned to KAPL-Knolls.

The following table contains a listing of the mixed waste streams and proposed treatment options identified in the KAPL-Knolls PSTP. The table also identifies the proposed schedule milestones, projected shipping dates, and estimated costs for implementing each proposed treatment option. If the targeted treatment facilities are completed according to currently identified schedules, the majority of KAPL-Knolls' mixed waste streams will be treated by 2001, and the total cost for treating all waste streams will be about \$770,000. KAPL-Knolls and the NNPP believe the KAPL-Knolls PSTP balances the concerns of expeditious completion of treatment, cost/efficiency, minimizing shipments, and minimizing risk/liability, and represents the best overall plan for achieving compliance with Land Disposal Restriction requirements for KAPL-Knolls mixed waste.

Waste Stream ID #	Waste Stream Name	Current Inventory (M3)	5 Year Projected Inventory (M3)	Preferred Option	Facility Name	Projected Start Date of Facility Operation	Proposed Milestone	Projected Shipping Date	Estimated Cost
KA-W001	Miscellaneous Laboratory Chemicals without Metals	0.00	2.00	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	\$36,825
KA-W002	Cutting Oils and Liquids	0.00	0.10	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	\$10,812
KA-W003	Trichloroethylene	0.20	0.10	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	\$9,792
KA-W005	Asbestos Contaminated with Mercury	0.20	0.00	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	\$24,477
KA-W006	Freon 113 on Rags	0.40	0.00	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	\$9,983
KA-W007	Oils	0.23	2.00	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	\$45,490
KA-W008	Miscellaneous Laboratory Chemicals	0.00	0.60	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	\$30,051
KA-W009	Organic Debris	0.05	2.00	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	\$11,795
KA-W010	Inorganic Debris and Equipment	0.021	0.90	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	\$40,694
KA-W011	Elemental Lead (Lead Bricks, Sheets or Wool)	0.35	1.20	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	\$134,712
KA-W012	Inorganic Sludges and Particulates	0.00	0.60	RL-S007	Hanford WRAP IIA Facility	Sep. 1999	Start of ops. + 18 months	Mar. 2001	\$31,038
KA-W013	Organic Debris without Metals	0.00	0.40	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	\$13,663
KA-W014	Organic Sludges and Particulates	0.00	0.40	SR-S018	Savannah River CIF	Feb. 1996	Start of ops. + 24 months	Feb. 1998	\$16,983
KA-W015	Soils	0.00	16.80	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	\$218,817
KA-W016	Transuranic Debris	0.00	0.18	WP-S001	Waste Isolation Pilot Project	Dec. 1997	Jun. 1999	Jun. 1999	TBD
KA-W018	Mercury Contaminated Organics	0.00	1.00	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	\$46,560
KA-W019	Mercury Contaminated Inorganics	0.10	0.30	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	\$25,440
KA-W020	Elemental Mercury	0.02	0.08	IN-S128	INEL WEDF Mercury Retort Facility	Apr. 1999	Start of ops. + 18 months	Oct. 2000	\$39,960
KA-W021	PCB Contaminated Waste	0.00	0.15	IN-S015	INEL IWPF Incinerator	Not Available	Start of ops. + 18 months	Not Available	\$22,471

Proposed Site Treatment Plan For Knolls Atomic Power Laboratory

Background Volume

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Proposed Site Treatment Plan For Knolls Atomic Power Laboratory

Background Volume

1.0 Introduction

1.1 Purpose and Scope

The Department of Energy (DOE) is required by section 3021(b) of the Resource Conservation and Recovery Act (RCRA), as amended by the Federal Facility Compliance Act (FFCAct), to prepare Site Treatment Plans (STPs) describing the development of treatment capacities and technologies for treating mixed waste. Plans are required for facilities at which DOE generates or stores mixed waste, defined by the FFCAct as waste containing both a hazardous waste subject to RCRA, and a source, special nuclear or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.). The Knolls Atomic Power Laboratory (KAPL-Knolls) Proposed Site Treatment Plan (PSTP) is being provided to the New York State Department of Environmental Conservation (NYSDEC) for approval in accordance with the FFCAct.

KAPL-Knolls' PSTP is the result of a "bottom-up" process described in an April 6, 1993, Federal Register notice (59 FR 17875). DOE has followed an iterative process in developing the STPs, working closely with State regulatory agencies and EPA at the site and national level throughout the process. This PSTP follows two interim versions - a Conceptual Site Treatment Plan (CSTP) submitted in October 1993 and a Draft Site Treatment Plan (DSTP) submitted in August 1994, which were provided to regulatory agencies and made publicly available. The CSTP identified a range of preliminary options for treating the mixed waste at KAPL-Knolls. The DSTP identified site-specific preferred treatment options which had not been evaluated for impacts to other DOE sites or to the overall DOE program. DOE initially planned to submit the PSTPs at the end of February 1995. However, DOE revised its submittal date with the support of the States and EPA to allow for additional discussions. (See 60 FR 10840, February 28, 1995) KAPL-Knolls' CSTP and DSTP and other related information are available at the Schenectady Public Library.

This PSTP contains DOE's preferred options developed after evaluation and integration of the site-specific treatment options contained in the DSTPs of the other sites with DOE mixed waste. The process DOE followed was coordinated with State and EPA regulators and is described in Section 2.2. DOE believes the treatment options contained in the PSTPs represent a sensible national configuration for mixed waste treatment systems that balances DOE's interests and concerns and the input DOE received on the DSTPs from the regulatory agencies and others.

The PSTP identifies specific treatment facilities for treating each KAPL-Knolls' mixed waste stream and proposes schedules as set forth in the FFCAct. Schedules for alternative activities such as waste characterization and technology assessment are provided as appropriate. All schedule information regarding off-site treatment facilities presented in section 3.0 of this Background Volume is based on the best available information but still is subject to change.

For new facilities, the schedules are dependent upon decisions made during the design phase. Assumptions and professional judgements related to the type of treatment technology, location of the treatment facility, contracting mechanism, project approval process, cost, negotiations, etc. were used to develop the proposed schedules. Any variation from these assumptions will impact the proposed schedules. In addition, DOE faces increasingly tight budgets throughout the DOE complex and anticipates that funding will continue to be constrained. The schedules for development of treatment facilities identified in this and other sites' PSTPs reflect those constraints. DOE is providing currently available schedules to support further discussions, with the expectation that schedules in the approved STPs may differ for some treatment facilities from the schedules in the PSTPs based on the sites' efforts to work with their regulatory agencies to prioritize activities in light of budget constraints. Cost estimates for implementing the proposed off-site treatment options and schedules provided in the PSTP represent a concrete commitment of KAPL-Knolls' budgetary resources.

After the PSTPs are approved, DOE anticipates that modifications may be necessary because of technical and funding uncertainties. For example, emerging or new technologies not yet considered may be identified in the future that provide opportunities to manage waste more safely, effectively, or at lower cost than the current technologies identified in the PSTP. Working closely with regulators and other interested parties during the implementation of the PSTP, 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 costs. Should more promising technologies be identified, DOE may request a modification of its treatment plan in accordance with provisions of the final STP and/or the Order.

This "Background Volume" is one of two volumes that constitute the PSTP. It provides a detailed discussion of the preferred option for each waste stream and gives explanatory information for the "Compliance Plan Volume." The Compliance Plan Volume identifies specific information, including schedules, as required by the FFCAct.

1.2 Site History and Mission

KAPL is operated by KAPL, Inc., a wholly owned subsidiary of the Martin Marietta Corporation under contract to DOE. KAPL consists of 3 sites: the Knolls and Kesselring Sites in New York and the Windsor Site in Connecticut. These sites are engaged in research and development for the design and operation of naval nuclear propulsion plants. Activities relating to naval nuclear propulsion systems are performed in accordance with the requirements and authority of the Naval Nuclear Propulsion Program (NNPP), which is a joint Navy/DOE program. Per the joint DOE/Navy nature of the program and the legislative history of the FFCAct, all NNPP mixed waste, including mixed waste at KAPL is included with DOE mixed waste.

The Kesselring prototype site is also used to provide full scale testing of propulsion plant hardware, and to train personnel to operate these plants. The prototype plants are operated and maintained in the same manner as actual ship propulsion plants, hence the type of maintenance and overhaul work performed is similar. The KAPL-Knolls site is located in Niskayuna, New York, about 3.2 km east of Schenectady. The site occupies 0.09 km² of land on the south bank of the Mohawk River. Facilities at the site include machine shops, waste-

handling facilities, a boiler house, and chemistry, physics, and metallurgy laboratories. Work operations at the site are performed in accordance with standardized NNPP requirements which include aggressive practices for minimizing mixed waste; however, small amounts of mixed waste are generated by work performed at KAPL-Knolls.

1.3 Framework For Developing DOE's Site Treatment Plans

RCRA Land Disposal Restrictions (LDR) require the treatment of hazardous waste (including the hazardous component 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 Federal Facility Compliance Act, 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's mixed wastes and requires DOE to prepare plans for developing the required treatment capacity for its mixed waste at each site which 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. Finally, an order must be 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, schedules for developing capacity for mixed waste without an identified existing treatment technology, and schedules for identifying and developing technologies. The FFCAct also requires that the plans provide certain information where radionuclide separation is proposed. The FFCAct states that the plans may provide for centralized, regional or on-site 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 April 6, 1993 in the Federal Register (58 FR 17875 and modified in 60 FR 10840). In the Notice, DOE committed to providing the site treatment plans in three phases: a "conceptual plan" completed in October 1993, a "draft plan" completed in August 1994, and a "final proposed plan" to be submitted no later than March 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 Site Treatment Plan (CSTP) focused on identifying treatment needs, capabilities, and options for treating the site's mixed waste. The Draft Site Treatment Plan (DSTP) focused on identifying site-specific preferred options for treating the site's mixed wastes, whenever possible, as well as proposed schedules for constructing capacity. The options proposed in this PSTP represented the site's best judgement based on available

information. This PSTP 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 STP reflects discussions among states, as well as site-specific input from the individual regulatory agencies 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 Implementing Order required by the FFCAct. DOE's goal is to have all STPs and Orders in place by October 1995.

1.4 Proposed Site Treatment Plan Organization

KAPL-Knolls' PSTP follows the same format as the PSTPs of other DOE sites to facilitate cross-site comparisons. The PSTP is organized in two separate, but integrated, volumes. The *Background Volume* provides the detailed discussion of the options: it contains information on the waste streams and treatability groups as the particular treatment option would address and describes uncertainties associated with that option, as well as the budget status of the option. 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 STP and establish milestones that will be enforced by the Order. It references, but does not duplicate, details on the options in the Background Volume.

Sections 1.0 and 2.0 in both volumes contain introductory material relevant to the purpose of the volume. The Background Volume contains general information on the PSTP 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 1.0 and 2.0 of the Compliance Plan Volume propose certain administrative provisions appropriate for the implementation of the STP when finalized. These include provisions such as the approach to setting milestones, updates to the STP, and additions or removals to waste streams covered by the STP. These sections are intended to initiate discussion; it is expected that specific language will be developed in conjunction with the regulatory agency and these sections may eventually be expanded to address other administrative provisions or incorporated into a separate Implementing Order.

Sections 3.0 through 5.0 in both volumes discuss the preferred option for mixed low-level waste, mixed transuranic waste, and mixed high-level waste. 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 by the FFCAct.

The Background Volume includes three additional sections that are not included in the 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 KAPL-Knolls' mixed wastes pending treatment. Section 8.0 describes a process being followed by

the 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 STP, DOE is including disposal information to be responsive to the States' request that disposal be addressed and to support state discussions.

Appendix A describes the analysis performed to evaluate preferred options. *Appendix B* contains definitions of terms used in the PSTP.

1.5 Related Activities

Other DOE efforts are closely linked to STP development. These include the Mixed Waste Inventory Report; activities conducted pursuant to the National Environmental Policy Act (NEPA); and compliance and cleanup agreements containing commitments relevant to mixed waste. The effect of the NNPP mixed waste policy change on the STP is also described below.

Mixed Waste Inventory Report

The Mixed Waste Inventory Report (MWIR), required by the FFCAct, provides an inventory of mixed waste currently stored or generated, or expected to be generated over the next five years, at each DOE site, and an inventory of treatment capacities and technologies. The Interim Mixed Waste Inventory Report, published by DOE in April of 1993, provided information on a waste stream-by-waste stream basis for each DOE site that generates or stores mixed waste. DOE made updated waste stream and capacity data available to the states and EPA in May of 1994. The May 1994 MWIR data represents the best record of DOE's mixed waste inventory at the beginning of 1994. However, because the data is constantly being refined, waste stream information in KAPL-Knolls' PSTP may differ somewhat from the May 1994 MWIR data.

DOE is in the process of a further update of the MWIR data. The MWIR update is being closely coordinated with preparation of the PSTPs to ensure maximum consistency in waste stream information between the PSTPs and the MWIR. The updated MWIR data will be available by June 1995.

NEPA Activities

The Programmatic Environmental Impact Statement for Waste Management

DOE is preparing a Programmatic Environmental Impact Statement (PEIS) which 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 the DOE's environmental program. The PEIS is examining the following waste types and activities: high-level, transuranic, mixed low-level, low-level, and hazardous waste. The analysis for the waste management PEIS will evaluate decentralized, regional, and centralized approaches for storage of high-level waste; treatment

and storage of transuranic waste; treatment and disposal of low-level and low-level mixed waste; and treatment of hazardous waste.

Development of the Waste Management (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 the 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, EPA, 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 of 1995. The Final WM PEIS will be issued after a public comment period, at or near the time of issuance of the Implementing Orders by the appropriate regulatory agency. To remain flexible and accommodate potential changes, the WM PEIS Record of Decision for mixed waste will be issued after the appropriate regulatory agency has fulfilled its legislative requirement of issuing the Implementing Orders.

Compliance Agreements

KAPL-Knolls does not have any compliance or clean-up agreements with commitments relevant to treatment of mixed waste.

NNPP Mixed Waste Policy Change

Since 1987, the policy of the NNPP has been to apply the requirements of RCRA to radioactive waste after the completion of Program radiological processing. This policy was based on avoiding inconsistency between the requirements of RCRA, as administered by EPA and various states, and the Program's uniform radiological standards established pursuant to Program authority for radioactivity pertaining to naval nuclear propulsion under the Atomic Energy Act (AEA) and Executive Order 12344 (enacted as permanent law in 42 USC 7158).

Under the NNPP mixed waste policy, Program facilities including KAPL-Knolls, have taken aggressive action to avoid the creation of mixed waste, or any material which has the potential to give rise to mixed waste. As a result of these efforts, the amount of mixed waste at Program facilities has remained small. Based on these minimization efforts, the Program's efforts to compare its radiological requirements to RCRA requirements on a technical level, and Program experience with state regulatory agencies on mixed waste matters over the past seven years, the Program mixed waste policy was reviewed in early 1994. In June 1994, the Program concluded that no general inconsistency exists between RCRA and Program authority under the AEA and Executive Order 12344. Thus, the Program mixed waste policy is in the process of being revised to apply the requirements of RCRA at the point of radioactive waste generation.

KAPL-Knolls, is currently working with NYSDEC to reach agreement on the details of how RCRA/State hazardous waste management requirements will be applied at the point of generation for each mixed waste stream at KAPL-Knolls. The NNPP plans to complete implementation of the mixed waste policy change at all Program sites by October 1995, coincident with scheduled approval of the STPs.

The effect of the Program mixed waste policy change on the STP is minor. As the policy change is implemented, KAPL-Knolls plans to continue to handle materials in the same manner technically as was done previously, but with the administrative requirements of RCRA superimposed on Program radiological controls requirements. Certain processing steps which were previously performed by KAPL-Knolls under the Program policy, would continue to be performed by KAPL-Knolls as on-site processing or treatment by generator. Waste streams for which such on-site processing/treatment is performed are included in section 3.0 of the Background Volume for information. However, no milestones for this on-site processing/treatment are included in the Compliance Plan Volume since no LDR compliance issues exist for these streams (i.e., the on-site processing/treatment will be completed within 90 days of the accumulation start date).

The mixed waste policy change will not result in any changes to the mixed waste streams and amounts that will be placed in storage at KAPL-Knolls and will require treatment to meet LDR requirements. These waste streams are included in both the Background Volume and Compliance Plan Volume. A flow chart is included at the beginning of section 3.1 of the Background Volume to clarify the relationship between waste streams processed/treated on-site and waste streams which will be sent to off-site facilities for treatment.

2.0 Methodology

2.1 Assumptions

All sites used the following assumptions to provide for a degree of consistency in the preparation of the PSTPs. The assumptions reflect review and comment from the states and EPA.

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

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

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

3. DOE recognizes some states' preference for treatment of all wastes on-site. Where appropriate, existing on-site capacity will be utilized before new facilities are constructed. When on-site treatment or use of commercial or mobile facilities is not practicable, the use of existing off-site 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 utilization of facilities identified in the PSTPs are being considered for managing ER and D&D waste.
6. Any significant changes/corrections to DSTP waste stream and treatment facilities information will be explained in the PSTP.
7. On a volume basis, the large majority of DOE's mixed waste will be treated on-site. Because of transportation concerns and costs, this generally includes process waste water, and some explosives and remote-handled (RH) wastes. In addition, other large volume waste streams will generally be treated on-site. At a minimum, Hanford, Oak Ridge, INEL and Savannah River will have on-site facilities to treat the majority of their wastes.
8. The WM PEIS is being prepared in parallel with the development of the STPs. The PSTP process will provide information to the WM PEIS. Each site will prepare any necessary specific NEPA documentation before proceeding with a given project or facility ordered by the State or EPA as a result of the STP process.
9. Disposal issues are considered to be independent of the treatment preferred options that are selected to meet LDR requirements.

2.2 Preferred Option Selection Process

KAPL-Knolls determined preferred options based on an evaluation of all feasible options (including on-site treatment, use of mobile treatment systems, commercial treatment, and treatment at other DOE facilities) in accordance with established guidance (e.g., DSTP development framework, treatment selection guides, etc.). Based on the very small volumes

of KAPL-Knolls' waste streams, these evaluations indicated that off-site treatment at other DOE facilities is economically and technically preferable for many of these waste streams. KAPL-Knolls identified potentially technically capable DOE facilities by evaluating available treatment facility information (mostly from the MWIR data) and selected primary candidates for the preferred options from these facilities based primarily on facility status and location. The DOE sites were then formally contacted, and performed evaluations to confirm, with reasonable certainty, whether their facilities will have the technical capability to treat specific waste streams. The results of these site evaluations were used to select preferred options based on technical capability, facility status, location, and in some cases, to consolidate shipments to a minimum number of DOE treatment sites.

Because the Draft Site Treatment Plans (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 are necessary to blend the "bottom-up" DSTPs into a more sensible national configuration of treatment systems. To facilitate this assessment, DOE established the Options Analysis Team (OAT) 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, 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 mixed low-level waste (MLLW). While High Level Waste (HLW) and Mixed Transuranic Waste (MTRU) 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 are 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 emphasize 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 results in a configuration that best meets 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, as presented in the PSTPs, is DOE's best attempt to balance competing DOE and stakeholder interests.

2.3 Coordinating with Regulatory Agencies and Other Stakeholders

The FFCAct offers an opportunity for DOE and the State and EPA regulators who will be approving the STPs to work cooperatively toward defining mixed waste treatment plans. As requested by the States, DOE signed a cooperative agreement in August 1993, with the National Governors Association (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 final PSTPs are submitted in March 1995. DOE has provided additional opportunity for public input by making the CSTPs and DSTPs available for public review.

At the national level, DOE 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 DSTPs 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 were 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; 202-863-5084 in Washington D.C.).

KAPL-Knolls has been conducting periodic conference calls with New York State to keep them updated throughout the development of STP. Since the DSTP was submitted in August 1994, a conference call was held in early November 1994 to solicit regulator feedback on the DSTP and discuss the plan for preparing the PSTP. A subsequent call was held in early January 1995 to discuss STP status and administrative language for the Compliance Plan Volume. This phone call was followed by a letter which transmitted the proposed compliance plan sections 1 and 2 for review by New York state.

New York State Department of Environmental Conservation (NYSDEC) issued a letter containing comments on the DSTP in November 1994. KAPL-Knolls' response provided comment resolution in a letter issued by Schenectady Naval Reactors in February 1995.

In addition, a Notice of Availability for each successive version of the STP has been announced in the Federal Register to facilitate public interaction and comments.

2.4 Characterization of Mixed Waste

In determining whether a radioactive waste is also hazardous, NNPP facilities, including KAPL-Knolls, employ sampling and analysis, and process knowledge based on engineering and technical knowledge of materials used, reactions that occur, and materials that result from particular processes. Process knowledge determinations can rely on factors such as material

safety data sheets, technical data sheets, procurement specifications and engineering assessments. Characterization of continuing mixed waste streams relies on process knowledge where past determinations have been made and the waste stream remains unchanged.

In using process knowledge for evaluation, a waste stream is screened for thresholds based on calculations and conservative assumptions on the concentration of hazardous constituents. Such screening includes comparing a waste stream to similar waste streams for which an evaluation has been completed; comparing the concentration of hazardous constituents contained in a mixed waste stream directly with the Toxicity Characteristic Leaching Procedure (TCLP) concentrations (data for making this comparison may be available in the form of chemical reagent compositions or component material chemical compositions); and obtaining actual data (e.g., from equipment specifications) on the concentration of hazardous constituents rather than using unduly conservative assumptions (which may be appropriate if little is known about the waste stream).

Sampling and analysis on surrogate (identical to the waste stream but non-radioactive) materials is done where process knowledge is insufficient and a representative sample can be constructed. This has been done for several low-level radioactive waste streams and is the preferred method of sampling and analysis when process knowledge is inconclusive or inadequate. Where process knowledge is not adequate and additional characterization and sampling is required, those waste streams are sampled and analyzed.

All NNPP mixed waste streams, including those projected to be generated at KAPL-Knolls, are characterized using sampling and analysis and/or process knowledge as described above. These characterizations are sufficient to support determinations of the appropriate treatment for each waste stream.

2.5 Waste Minimization

All NNPP facilities, including KAPL-Knolls, have taken aggressive action to minimize the creation of mixed waste by minimizing the commingling of radioactive and hazardous materials and avoiding the use of hazardous substances, where technically acceptable, particularly for work involving radioactivity.

Work involving radioactivity is done pursuant to detailed work plans developed for that specific job. These work plans are reviewed for use of RCRA "listed" hazardous substances. Unless substitution for a hazardous substance is technically unacceptable, non-hazardous substances are used. Work plans are also reviewed for use of substances resulting in waste with RCRA hazardous characteristics. Where technically acceptable, non-hazardous substances are used. These advance preparations identify waste streams that could potentially have hazardous constituents and minimize the creation of mixed waste.

3.0 Mixed Low-Level Waste Streams

3.1 Mixed Waste Streams For Which Treatment Technology Exists:

The following mixed waste streams, which can be treated to meet LDR treatment requirements using proven technologies, have been generated or are projected to be generated at KAPL-Knolls. For each waste stream, a description of the waste, technology needed to treat the waste, and the preferred treatment option are identified.

The following flow chart provides a graphical representation of each waste stream discussed in section 3.1. Each box in the flow chart contains the waste stream's name and ID #, its current and projected 5 year inventory, and its chapter number in section 3.1 of the Background Volume. The flow chart is included to clarify the relationship between waste streams processed/treated on-site and waste streams which will be sent to off-site facilities for treatment. (Note: If a waste stream has been renumbered or added since the DSTP, either the old waste stream number or the word "new" will appear in italics beneath the block representing that waste stream.)

KAPL-Knolls Mixed Waste Streams

KEY

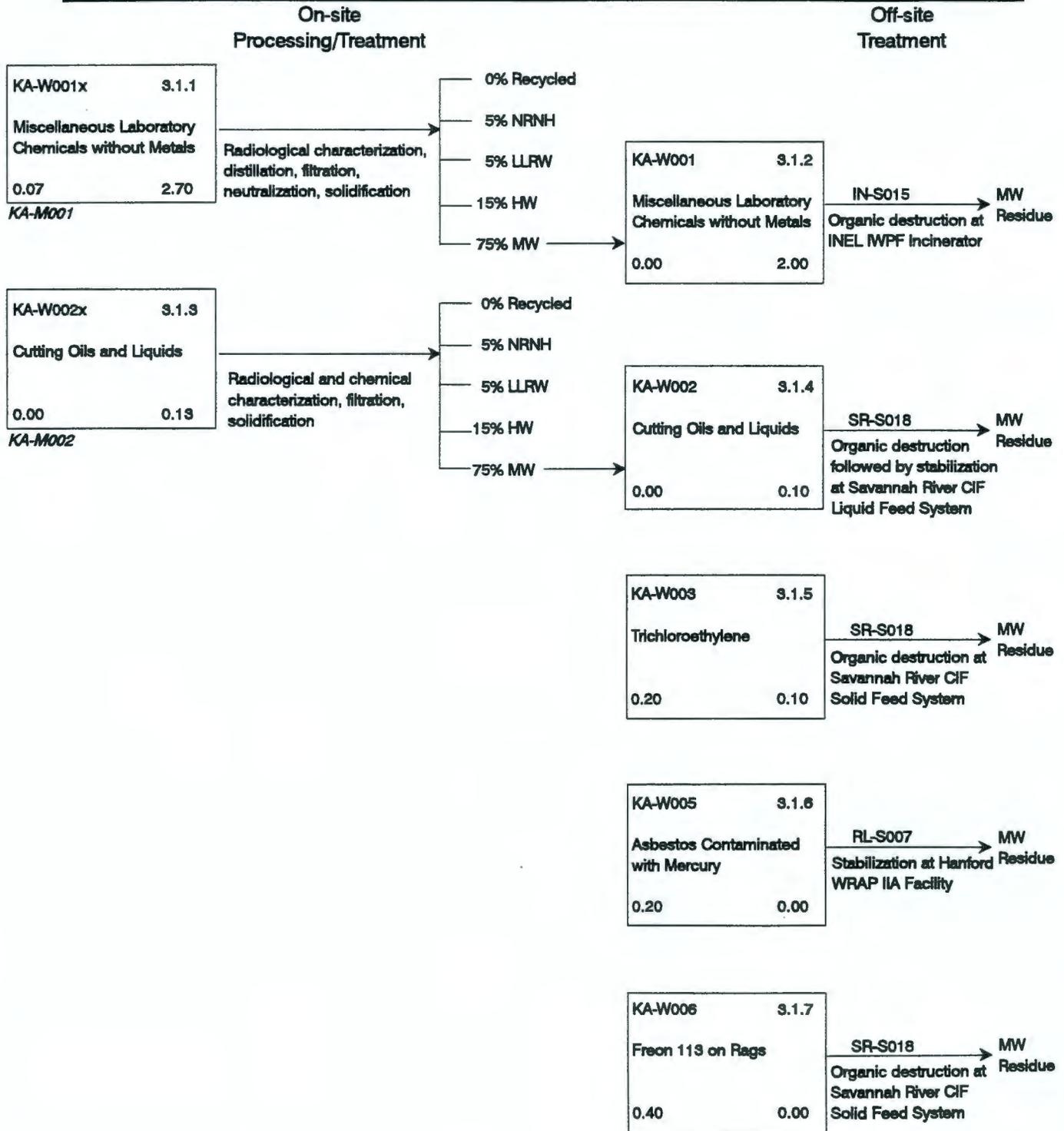
WS number	Chapter
WS name	
Current Inv M3	Proj Inv M3

NRNH = Non Radioactive, Non Hazardous

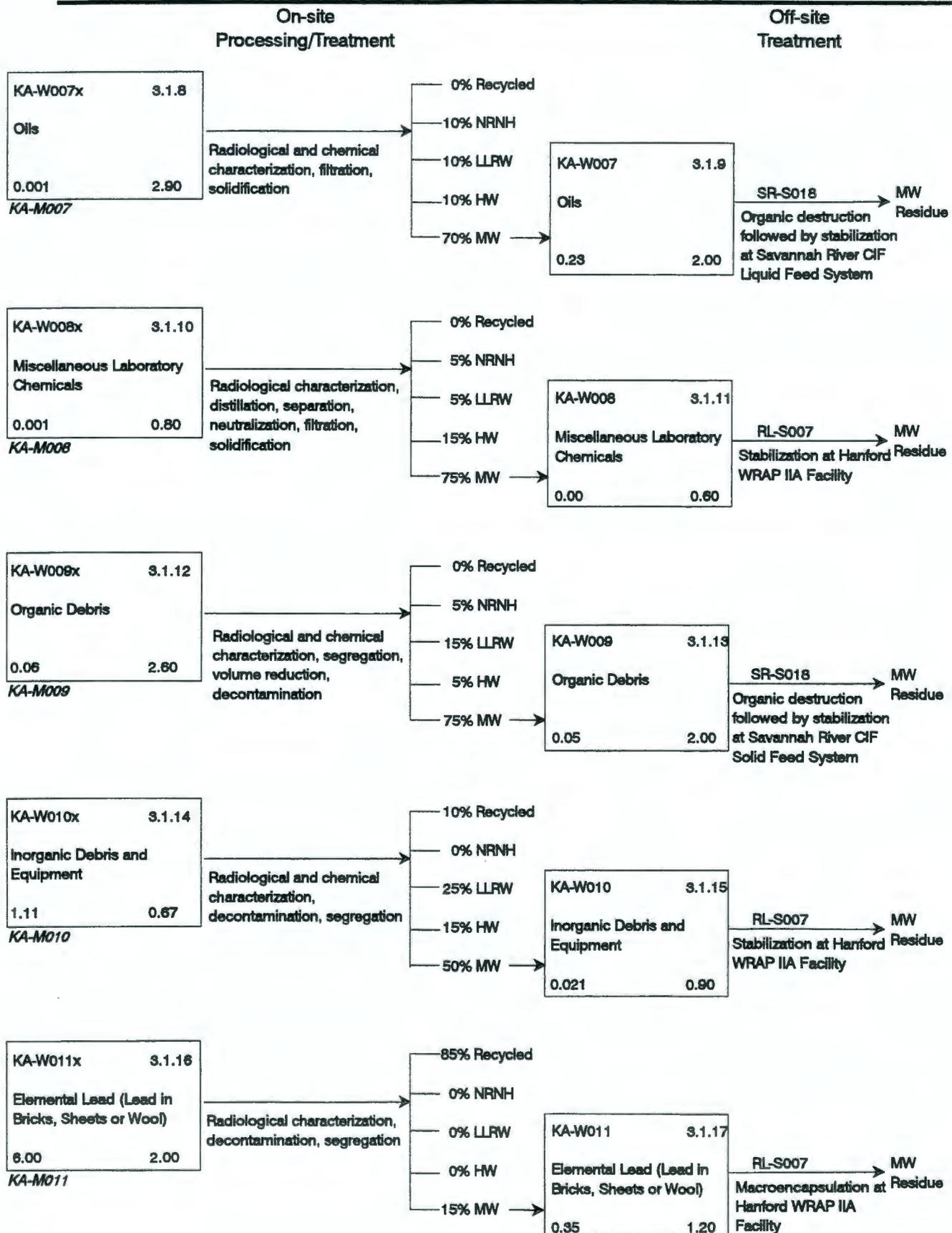
LLRW = Low Level Radioactive Waste

HW = Hazardous Waste

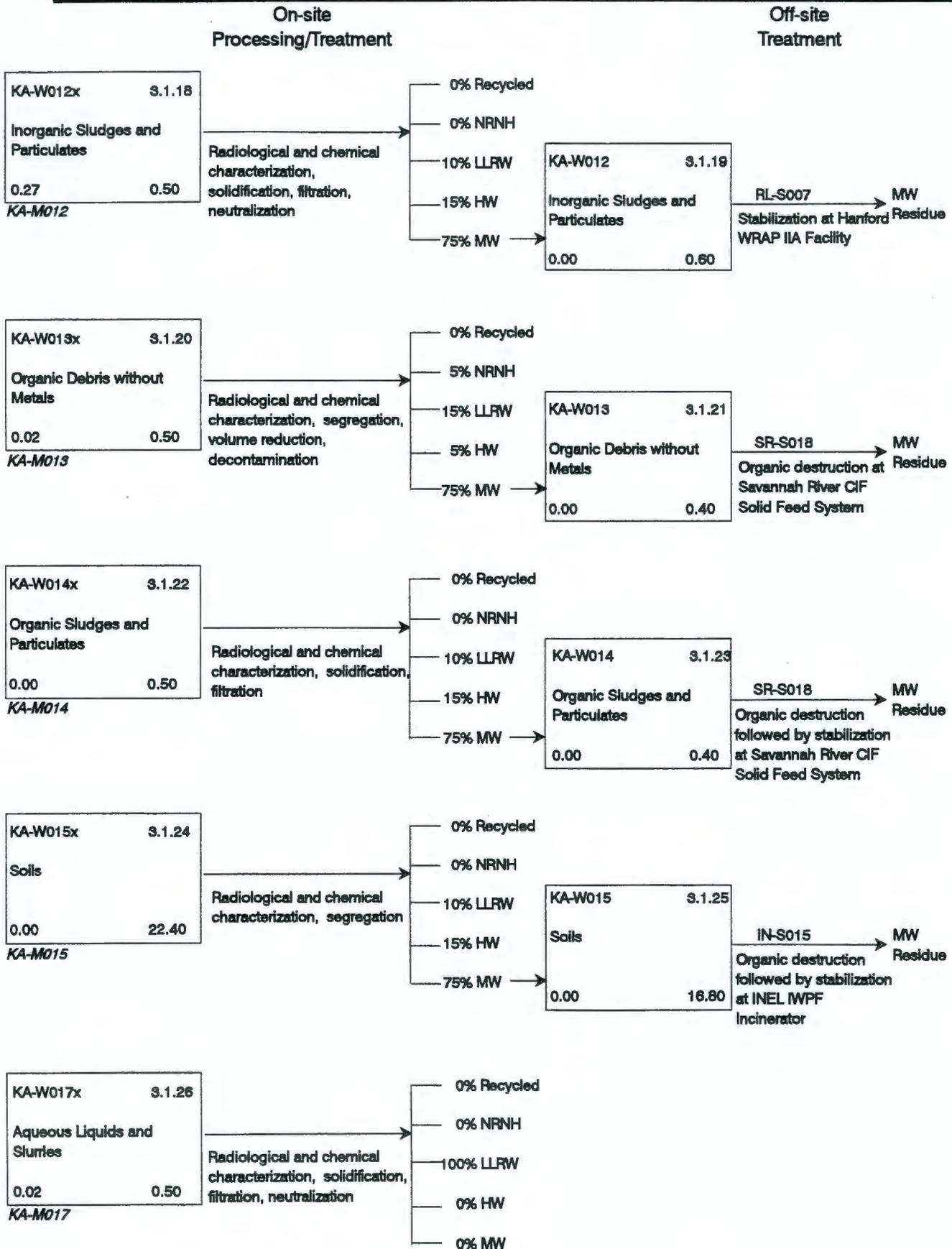
MW = Mixed Waste



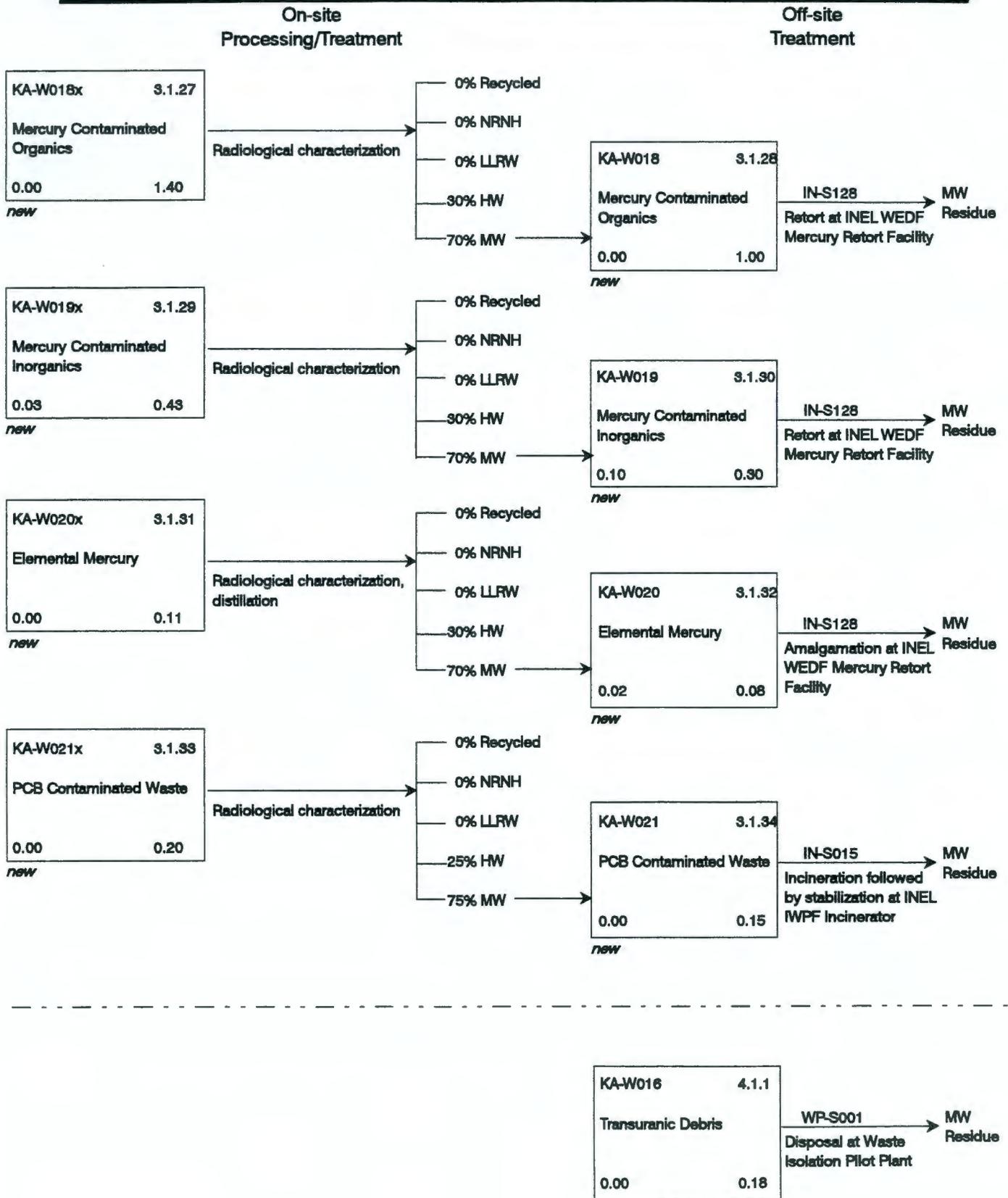
KAPL-Knolls Mixed Waste Streams



KAPL-Knolls Mixed Waste Streams



KAPL-Knolls Mixed Waste Streams



3.1.1 MWIR ID#: KA-W001X (This waste stream was previously described as KA-M001 in Table 3.4 of the DSTP.)

Site ID#: KA 0000000048

Waste Stream Name: Miscellaneous Laboratory Chemicals without Metals

Waste Stream Description: Miscellaneous unused laboratory chemicals (powder, liquid, mixtures)

Treatability Group: MLLW CH, lab packs w/o metals, toxic organics

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D001, D002, D003, D018, D035, D036, D039, F001, F002, F003, F005, P015, U002, U134, U151, U159, U220, U226, U228

Current Inventory: 0.07 cubic meters

Five Year Projection: 2.70 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.1.1 Treatment Technology Required: On-site processing consists of radiological characterization, distillation, filtration, neutralization and solidification. After processing, 75% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W001. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.1.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological characterization, distillation, filtration, neutralization and solidification.

Facility status/Actions to bring facility on-line: Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological characterization, distillation, filtration, neutralization and solidification.

Regulatory status: Permitting is not expected to be required.

3.1.2 MWIR ID#: KA-W001

Site ID#: KA 0000000003

Waste Stream Name: Miscellaneous Laboratory Chemicals without Metals

Waste Stream Description: Miscellaneous unused laboratory chemicals (powder, liquid, mixtures)

Treatability Group: MLLW CH, lab packs w/o metals, toxic organics

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code (s): D001, D002, D003, D018, D035, D036, D039, F001, F002, F003, F005, P015, U002, U134, U151, U159, U220, U226, U228

Current Inventory: 0.00 cubic meters

Five Year Projection: 2.00 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Characterization is based on process knowledge of chemicals used in laboratory analysis procedures and of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.2.1 Treatment Technology Required: Organic destruction will meet the LDR concentration based treatment standard for toxic organics.

3.1.2.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Idaho Waste Processing Facility (IWPF) Incinerator.

Facility status: INEL has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: INEL will submit R & D permit applications for the IWPF Incinerator in April 1996.
2. Entering into contracts: The identification and subsequent request for facility funding was completed in October 1994.
3. Initiating construction: N/A
4. Conducting system testing: N/A
5. Commencing operations: N/A
6. Processing backlogged and currently generated waste: N/A

Due to the uncertainties regarding the DOE budget situation, specific schedule dates for items 3 through 6 were not available for inclusion in the KAPL-Knolls' PSTP. This information will be provided as part of the first annual STP update in accordance with section 2.3 (Annual Site Treatment Plan Updates) of the Compliance Plan Volume.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to INEL within 18 months of the start of IWPF Incinerator operations. If, however, the schedule information provided in the first annual STP update is not satisfactory to New York State Department of Environmental Conservation, or the projected start of operation for this facility is subsequently extended more than 12 months beyond that identified in the first annual update to the STP, or, for any reason, INEL cannot accept this waste stream for treatment by March 2005, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the IWPF Incinerator and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this

waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at INEL until the establishment of disposal arrangements.

Waste stream characterization: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

Packaging and shipping: INEL IWPF is not expected to require repackaging of this waste stream.

Type of technology: INEL IWPF anticipates using a rotary kiln incinerator to provide thermal destruction. Following incineration, the residue will be stabilized at INEL resulting in a waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$36,825. This amount is within KAPL-Knolls target level funding.

3.1.3 MWIR ID#: KA-W002X (This waste stream was previously described as KA-M002 in Table 3.4 of the DSTP.)

Site ID#: KA 0000000049

Waste Stream Name: Cutting Oils and Liquids

Waste Stream Description: Lubricating pump and hydraulic oils and other organic liquids with solvents

Treatability Group: MLLW CH, organic liquids, toxic organics and metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005

Current Inventory: 0.00 cubic meters

Five Year Projection: 0.13 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.3.1 Treatment Technology Required: On-site processing consists of radiological and chemical characterization, filtration and solidification. After processing, 75% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W002. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.3.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological and chemical characterization, filtration and solidification.

Facility status/Actions to bring facility on-line: This waste stream has not yet been generated at KAPL-Knolls. Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological and chemical characterization, filtration and solidification.

Regulatory status: Permitting is not expected to be required.

3.1.4 MWIR ID#: KA-W002

Site ID#: KA 0000000004

Waste Stream Name: Cutting Oils and Liquids

Waste Stream Description: Lubricating pump and hydraulic oils and other organic liquids with solvents

Treatability Group: MLLW CH, organic liquids, toxic organics and metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005

Current Inventory: 0.00 cubic meters

Five Year Projection: 0.10 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.4.1 Treatment Technology Required: The mercury concentration of this waste stream is less than 260 ppm. Organic destruction will meet the LDR concentration based standards for toxic organics. Chemical reduction (to reduce hexavalent chromium to trivalent chromium) followed by stabilization will meet the LDR concentration based standard for chromium. Stabilization will meet the LDR concentration based standards for barium, cadmium, lead, mercury, selenium, and silver. Organic destruction, followed by chemical reduction (if necessary) followed by stabilization will meet the LDR standards for this waste stream.

3.1.4.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incineration Facility (CIF) Liquid Feed System.

Facility status: Savannah River has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: Savannah River has submitted a Part B RCRA permit application for the Consolidated Incineration Facility. Savannah River is scheduled to submit

RCRA permit applications to allow treatment and storage of off-site wastes following South Carolina Department of Health and Environmental Control (SCDHEC) approval of the Savannah River PSTP (targeted for October 1995).

2. Entering into contracts: Complete.
3. Initiating construction: Complete.
4. Conducting system testing: Targeted for July 1995.
5. Commencing operations: Targeted for February 1996.
6. Processing backlogged and currently generated waste: The CIF mixed waste workoff schedule will be submitted for SCDHEC approval within 180 days of commencing facility operations.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Savannah River within 24 months of the start of Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small

volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Savannah River until the establishment of disposal arrangements.

Waste stream characterization: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

Packaging and shipping: Savannah River CIF Liquid Feed System is not expected to require repackaging of this waste stream.

Type of technology: Savannah River CIF Liquid Feed System accepts liquid wastes in either tanks (if their capacity is less than 5000 gallons) or 55-gallon drums. Liquid is fed into the primary and secondary combustion chambers of a rotary kiln incinerator via spray nozzles. Following incineration, residue will be stabilized at Savannah River, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$10,812. This amount is within KAPL-Knolls target level funding.

3.1.5 MWIR ID#: KA-W003

Site ID#: KA 0000000005

Waste Stream Name: Trichloroethylene

Waste Stream Description: Still bottoms on Speedi-Dry (clay)

Treatability Group: MLLW CH, organic sludges/particulates, toxic organics

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D040

Current Inventory: 0.20 cubic meters

Five Year Projection: 0.10 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.5.1 Treatment Technology Required: Organic destruction will meet the LDR concentration based standards for toxic organics.

3.1.5.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incineration Facility (CIF) Solid Feed System.

Facility status: Savannah River has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: Savannah River has submitted a Part B RCRA permit application for the Consolidated Incineration Facility. Savannah River is scheduled to submit RCRA permit applications to allow treatment and storage of off-site wastes following South Carolina Department of Health and Environmental Control (SCDHEC) approval of the Savannah River PSTP (targeted for October 1995).
2. Entering into contracts: Complete.
3. Initiating construction: Complete.
4. Conducting system testing: Targeted for July 1995.
5. Commencing operations: Targeted for February 1996.
6. Processing backlogged and currently generated waste: The CIF mixed waste workoff schedule will be submitted for SCDHEC approval within 180 days of commencing facility operations.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Savannah River within 24 months of the start of Consolidated Incineration

Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Savannah River until the establishment of disposal arrangements.

Waste stream characterization: The characterization is based on process knowledge. Characterization is sufficient to support identification of the proper treatment technology.

Packaging and shipping: Savannah River CIF Solid Feed System may require repackaging of this waste stream prior to treatment. If repackaging is necessary, it will likely be performed by KAPL-Knolls prior to shipment.

Type of technology: Savannah River CIF Solid Feed System will treat low level mixed wastes in a rotary kiln incinerator followed by a secondary combustion chamber. Following incineration, the residue will be stabilized at Savannah River, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this

option is \$9,792. This amount is within KAPL-Knolls target level funding.

3.1.6 MWIR ID#: KA-W005

Site ID#: KA 000000007

Waste Stream Name: Asbestos Contaminated with Mercury

Waste Stream Description: Insulation materials

Treatability Group: MLLW CH, inorganic debris, toxic metals with mercury

Radionuclides: Mixed Fission Products

EPA Waste Code(s): D009

Current Inventory: 0.20 cubic meters

Five Year Projection: 0.00 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge and gross quantitative analysis (Drager tube). Characterization is sufficient to support identification of proper treatment technology.

3.1.6.1 Treatment Technology Required: The mercury concentration of this waste stream is less than 260 ppm. Stabilization will meet the LDR concentration based standards for mercury. Stabilization is required to meet LDR standards for this waste stream.

3.1.6.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Hanford Site Waste Receiving and Processing Facility (WRAP) Module IIA.

Facility status: Hanford Site has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: N/A
2. Entering into contracts: N/A
3. Initiating construction: N/A

4. Conducting system testing: N/A
5. Commencing operations: Targeted for September 1999
6. Processing backlogged and currently generated waste: N/A

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 a new facility, WRAP IIA. Accordingly, DOE-Richland has requested that the Milestone M-19-00, "Complete WRAP IIA 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-Hanford and any change to the facility title will be reported in subsequent Annual Update Reports to the Plan.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Hanford Site within 18 months of the start of WRAP IIA Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, Hanford Site cannot accept this waste stream for treatment by March 2002, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WRAP IIA Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until

treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Hanford Site until the establishment of disposal arrangements.

Waste stream characterization: Characterization is based on process knowledge. Characterization is sufficient to support identification of the proper treatment technology.

Packaging and shipping: Hanford Site WRAP Module IIA is not expected to require repackaging of this waste stream.

Type of technology: Hanford Site WRAP Module IIA is being developed to process, package and certify low level mixed waste for disposal. Hanford Site WRAP Module IIA will perform stabilization and solidification, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$24,477. This amount is within KAPL-Knolls target level funding.

3.1.7 MWIR ID#: KA-W006

Site ID#: KA 0000000008

Waste Stream Name: Freon 113 on Rags

Waste Stream Description: Solvent on rags from dye penetrant

Treatability Group: MLLW CH, organic debris, toxic organics

Radionuclides: Co⁶⁰, Co⁵⁸, Sb¹²⁵, Mn⁵⁴, Zr⁹⁵, Nb⁹⁵, Eu¹⁵⁷, Cs¹³⁷, Cs¹³⁴

EPA Waste Code(s): F002

Current Inventory: 0.40 cubic meters

Five Year Projection: 0.00 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.7.1 Treatment Technology Required: Organic destruction will meet the treatment LDR concentration based treatment standards for toxic organics.

3.1.7.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incineration Facility (CIF) Solid Feed System.

Facility status: Savannah River has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: Savannah River has submitted a Part B RCRA permit application for the Consolidated Incineration Facility. Savannah River is scheduled to submit RCRA permit applications to allow treatment and storage of off-site wastes following South Carolina Department of Health and Environmental Control (SCDHEC) approval of the Savannah River PSTP (targeted for October 1995).
2. Entering into contracts: Complete.
3. Initiating construction: Complete.
4. Conducting system testing: Targeted for July 1995.
5. Commencing operations: Targeted for February 1996.
6. Processing backlogged and currently generated waste: The CIF mixed waste workoff schedule will be submitted for SCDHEC approval within 180 days of commencing facility operations.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Savannah River within 24 months of the start of Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable

DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Savannah River until the establishment of disposal arrangements.

Waste stream characterization: The characterization is based on process knowledge. Characterization is sufficient to support identification of the proper treatment technology.

Packaging and shipping: Savannah River CIF Solid Feed System may require repackaging of this waste stream prior to treatment. If repackaging is necessary, it will likely be performed by KAPL-Knolls prior to shipment.

Type of technology: Savannah River CIF Solid Feed System will treat low level mixed wastes in a rotary kiln incinerator followed by a secondary combustion chamber. Following incineration, the residue will be stabilized at Savannah River, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$9,983. This amount is within KAPL-Knolls target level funding.

- 3.1.8 MWIR ID#: KA-W007X (This waste stream was previously described as KA-M007 in Table 3.4 of the DSTP.)

Site ID#: KA 000000050

Waste Stream Name: Oils

Waste Stream Description: Lubricating, pump and hydraulic oils from maintenance and repair of various equipment and machinery

Treatability Group: MLLW CH, organic liquids, toxic organics and metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005

Current Inventory: 0.001 cubic meters

Five Year Projection: 2.90 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.8.1 Treatment Technology Required: On-site processing consists of radiological and chemical characterization, filtration and solidification. After processing, 70% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W007. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.8.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological and chemical characterization, filtration and solidification.

Facility status/Actions to bring facility on-line: Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological and chemical characterization, filtration and solidification.

Regulatory status: Permitting is not expected to be required.

3.1.9 MWIR ID#: KA-W007

Site ID#: KA 0000000009

Waste Stream Name: Oils

Waste Stream Description: Lubricating, pump and hydraulic oils from maintenance and repair of various equipment and machinery

Treatability Group: MLLW CH, organic liquids, toxic organics and metals with mercury

Radionuclides: Mixed Fission Products (MFP) and other alpha & beta-gamma emitters

EPA Waste Code(s): D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005

Current Inventory: 0.23 cubic meters

Five Year Projection: 2.00 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.9.1 Treatment Technology Required: The mercury concentration of this waste stream is less than 260 ppm. Organic destruction will meet the LDR concentration based standards for toxic organics. Chemical reduction (to reduce hexavalent chromium to trivalent chromium) followed by stabilization will meet the LDR concentration based standard for chromium. Stabilization will meet the LDR concentration based standards for barium, cadmium, lead, mercury, selenium, and silver. Organic destruction, followed by chemical reduction (if necessary) followed by stabilization will meet the LDR standards for this waste stream.

3.1.9.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incineration Facility (CIF) Liquid Feed System.

Facility status: Savannah River has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: Savannah River has submitted a Part B RCRA permit application for the Consolidated Incineration Facility. Savannah River is scheduled to submit RCRA permit applications to allow treatment and storage of off-site wastes following South Carolina Department of Health and Environmental Control (SCDHEC) approval of the Savannah River PSTP (targeted for October 1995).
2. Entering into contracts: Complete.
3. Initiating construction: Complete.
4. Conducting system testing: Targeted for July 1995.
5. Commencing operations: Targeted for February 1996.
6. Processing backlogged and currently generated waste: The CIF mixed waste workoff schedule will be submitted for SCDHEC approval within 180 days of commencing facility operations.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Savannah River within 24 months of the start of Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA

compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Savannah River until the establishment of disposal arrangements.

Waste stream characterization: Identification of hazardous constituents is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

Packaging and shipping: Savannah River CIF Liquid Feed System is not expected to require repackaging of this waste stream.

Type of technology: Savannah River CIF Liquid Feed System accepts liquid wastes in either tanks (if their capacity is less than 5000 gallons) or 55-gallon drums. Liquid is fed into the primary and secondary combustion chambers of a rotary kiln incinerator via spray nozzles. Following incineration, residue will be stabilized at Savannah River, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$45,490. This amount is within KAPL-Knolls target level funding.

3.1.10 MWIR ID#: KA-W008X (This waste stream was previously described as KA-M008 in Table 3.4 of the DSTP.)

Site ID#: KA 0000000051

Waste Stream Name: Miscellaneous Laboratory Chemicals

Waste Stream Description: Unusable chemicals

Treatability Group: MLLW CH, lab packs with metals, toxic metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005, U002, U134, U151, U159, U220, U226, U228

Current Inventory: 0.001 cubic meters

Five Year Projection: 0.80 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.10.1 Treatment Technology Required: On-site processing consists of radiological characterization, distillation, separation, neutralization, filtration and solidification. After processing, 75% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W008. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.10.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological characterization, distillation, separation, neutralization, filtration and solidification.

Facility status/Actions to bring facility on-line: Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological characterization, distillation, separation, neutralization, filtration and solidification.

Regulatory status: Permitting is not expected to be required.

3.1.11 MWIR ID#: KA-W008

Site ID#: KA 0000000011

Waste Stream Name: Miscellaneous Laboratory Chemicals

Waste Stream Description: Unusable chemicals

Treatability Group: MLLW CH, lab packs with metals, toxic metals with mercury

Radionuclides: unknown

EPA Waste Code(s): D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005, U002, U134, U151, U159, U220, U226, U228

Current Inventory: 0.00 cubic meters

Five Year Projection: 0.60 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.11.1 Treatment Technology Required: The mercury concentration of this waste stream is less than 260 ppm. Chemical reduction (to reduce hexavalent chromium to trivalent chromium) followed by stabilization will meet the LDR concentration based standard for chromium. Stabilization will meet the LDR concentration based standards for arsenic, barium, cadmium, lead, mercury, selenium and silver. Chemical reduction (if necessary) followed by stabilization will meet the LDR standards for this waste stream.

3.1.11.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Hanford Site Waste Receiving and Processing Facility (WRAP) Module IIA.

Facility status: Hanford Site has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: N/A
2. Entering into contracts: N/A
3. Initiating construction: N/A
4. Conducting system testing: N/A

5. Commencing operations: Targeted for September 1999
6. Processing backlogged and currently generated waste: N/A

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 a new facility, WRAP IIA. Accordingly, DOE-Richland has requested that the Milestone M-19-00, "Complete WRAP IIA 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-Hanford and any change to the facility title will be reported in subsequent Annual Update Reports to the Plan.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Hanford Site within 18 months of the start of WRAP IIA Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, Hanford Site cannot accept this waste stream for treatment by March 2002, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WRAP IIA Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small

volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Hanford Site until the establishment of disposal arrangements.

Waste stream characterization: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

Packaging and shipping: Hanford Site WRAP Module IIA is not expected to require repackaging of this waste stream.

Type of technology: Hanford Site WRAP Module IIA is being developed to process, package and certify low level mixed waste for disposal. Hanford Site WRAP Module IIA will perform stabilization and solidification, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$30,051. This amount is within KAPL-Knolls target level funding.

3.1.12 MWIR ID#: KA-W009X (This waste stream was previously described as KA-M009 in Table 3.4 of the DSTP.)

Site ID#: KA 0000000052

Waste Stream Name: Organic Debris

Waste Stream Description: Debris (paper, plastic, cloth, rubber.)

Treatability Group: MLLW CH, organic debris, toxic organics and metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D005, D006, D007, D008, D009, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005

Current Inventory: 0.06 cubic meters

Five Year Projection: 2.60 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.12.1 Treatment Technology Required: On-site processing consists of radiological and chemical characterization, segregation, volume reduction and decontamination. After processing, 75% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W009. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.12.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological and chemical characterization, segregation, volume reduction and decontamination.

Facility status/Actions to bring facility on-line: Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological and chemical characterization, segregation, volume reduction and decontamination.

Regulatory status: Permitting is not expected to be required.

3.1.13 MWIR ID#: KA-W009

Site ID#: KA 0000000012

Waste Stream Name: Organic Debris

Waste Stream Description: Debris (paper, plastic, cloth, rubber)

Treatability Group: MLLW CH, organic debris, toxic organics and metals with mercury

Radionuclides: unknown

EPA Waste Code(s): D005, D006, D007, D008, D009, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005

Current Inventory: 0.05 cubic meters

Five Year Projection: 2.00 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of the proper treatment technologies.

3.1.13.1 Treatment Technology Required: The mercury concentration of this waste stream is less than 260 ppm. Organic destruction will meet the LDR concentration based standards for toxic organics. Chemical reduction (to reduce hexavalent chromium to trivalent chromium) followed by stabilization will meet the LDR concentration based standard for chromium. Stabilization will meet the LDR concentration based standards for barium, cadmium, lead, mercury and silver. Organic destruction, followed by chemical reduction (if necessary) followed by stabilization will meet the LDR standards for this waste stream.

3.1.13.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incineration Facility (CIF) Solid Feed System.

Facility status: Savannah River has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: Savannah River has submitted a Part B RCRA permit application for the Consolidated Incineration Facility. Savannah River is scheduled to submit RCRA permit applications to allow treatment and storage of off-site wastes following South Carolina Department of Health and Environmental Control (SCDHEC) approval of the Savannah River PSTP (targeted for October 1995).
2. Entering into contracts: Complete.
3. Initiating construction: Complete.

4. Conducting system testing: Targeted for July 1995.
5. Commencing operations: Targeted for February 1996.
6. Processing backlogged and currently generated waste: The CIF mixed waste workoff schedule will be submitted for SCDHEC approval within 180 days of commencing facility operations.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Savannah River within 24 months of the start of Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Savannah River until the establishment of disposal arrangements.

Waste stream characterization: The characterization is based on process knowledge. Characterization is sufficient to support identification of the proper treatment technology.

Packaging and shipping: Savannah River CIF Solid Feed System may require repackaging of this waste stream prior to treatment. If repackaging is necessary, it will likely be performed by KAPL-Knolls prior to shipment.

Type of technology: Savannah River CIF Solid Feed System will treat low level mixed wastes in a rotary kiln incinerator followed by a secondary combustion chamber. Following incineration, the residue will be stabilized at Savannah River, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$11,795. This amount is within KAPL-Knolls target level funding.

3.1.14 MWIR ID#: KA-W010X (This waste stream was previously described as KA-M010 in Table 3.4 of the DSTP.)

Site ID#: KA 0000000053

Waste Stream Name: Inorganic Debris and Equipment

Waste Stream Description: Debris (glass, metals, ceramic)

Treatability Group: MLLW CH, inorganic debris, toxic metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D005, D006, D007, D008, D009, D011, D018, D035, D039, D040

Current Inventory: 1.11 cubic meters

Five Year Projection: 0.67 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.14.1 Treatment Technology Required: On-site processing consists of radiological and chemical characterization followed by decontamination and segregation. After processing, 50% of the original volume is expected to remain mixed waste and is treated in waste stream KA-

W010. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.14.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological and chemical characterization followed by decontamination and segregation.

Facility status/Actions to bring facility on-line: Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological and chemical characterization followed by decontamination and segregation.

Regulatory status: Permitting is not expected to be required.

3.1.15 MWIR ID#: KA-W010

Site ID#: KA 0000000014

Waste Stream Name: Inorganic Debris and Equipment

Waste Stream Description: Debris (glass, metals, ceramic)

Treatability Group: MLLW CH, inorganic debris, toxic metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D005, D006, D007, D008, D009, D011, D018, D035, D039, D040

Current Inventory: 0.021 cubic meters

Five Year Projection: 0.90 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.15.1 Treatment Technology Required: The mercury concentration of this waste stream is less than 260 ppm. Chemical reduction (to reduce hexavalent chromium to trivalent chromium) followed by stabilization will meet the LDR concentration based standard for chromium. Stabilization will meet the LDR concentration based standards for barium, cadmium, lead, mercury and silver. Chemical reduction (if necessary) followed by stabilization will meet the LDR standards for this waste stream.

3.1.15.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Hanford Site Waste Receiving and Processing Facility (WRAP) Module IIA.

Facility status: Hanford Site has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: N/A
2. Entering into contracts: N/A
3. Initiating construction: N/A
4. Conducting system testing: N/A
5. Commencing operations: Targeted for September 1999
6. Processing backlogged and currently generated waste: N/A

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 a new facility, WRAP IIA. Accordingly, DOE-Richland has requested that the Milestone M-19-00, "Complete WRAP IIA 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-Hanford and any

change to the facility title will be reported in subsequent Annual Update Reports to the Plan.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Hanford Site within 18 months of the start of WRAP IIA Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, Hanford Site cannot accept this waste stream for treatment by March 2002, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WRAP IIA Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Hanford Site until the establishment of disposal arrangements.

Waste stream characterization: Characterization is based on process knowledge. Characterized is sufficient to support identification of the proper treatment technology.

Packaging and shipping: Hanford Site WRAP Module IIA is not expected to require repackaging of this waste stream.

Type of technology: Hanford Site WRAP Module IIA is being developed to process, package and certify low level mixed waste for disposal. Hanford Site WRAP Module IIA will perform stabilization and solidification, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$40,694. This amount is within KAPL-Knolls target level funding.

3.1.16 MWIR ID#: KA-W011X (This waste stream was previously described as KA-M011 in Table 3.4 of the DSTP.)

Site ID#: KA 0000000054

Waste Stream Name: Elemental Lead (Lead in Bricks, Sheets or Wool)

Waste Stream Description: Lead shielding

Treatability Group: MLLW CH, elemental lead, toxic metals w/o mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D008

Current Inventory: 6.00 cubic meters

Five Year Projection: 2.00 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.16.1 Treatment Technology Required: On-site processing consists of radiological characterization, decontamination and segregation. After processing, 15% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W011. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.16.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological characterization, decontamination and segregation.

Facility status/Actions to bring facility on-line: Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological characterization, decontamination and segregation.

Regulatory status: Permitting is not expected to be required.

3.1.17 MWIR ID#: KA-W011

Site ID#: KA 0000000015

Waste Stream Name: Elemental Lead (Lead Bricks, Sheets or Wool)

Waste Stream Description: Lead shielding

Treatability Group: MLLW CH, elemental lead, toxic metals w/o mercury

Radionuclides: unknown

EPA Waste Code(s): D008

Current Inventory: 0.35 cubic meters

Five Year Projection: 1.20 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.17.1 Treatment Technology Required: Macroencapsulation meets the LDR technology based treatment standard for elemental lead.

3.1.17.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Hanford Site Waste Receiving and Processing Facility (WRAP) Module IIA.

Facility status: Hanford Site has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: N/A
2. Entering into contracts: N/A

3. Initiating construction: N/A
4. Conducting system testing: N/A
5. Commencing operations: Targeted for September 1999
6. Processing backlogged and currently generated waste: N/A

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 a new facility, WRAP IIA. Accordingly, DOE-Richland has requested that the Milestone M-19-00, "Complete WRAP IIA 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-Hanford and any change to the facility title will be reported in subsequent Annual Update Reports to the Plan.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Hanford Site within 18 months of the start of WRAP IIA Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, Hanford Site cannot accept this waste stream for treatment by March 2002, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WRAP IIA Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA

compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Hanford Site until the establishment of disposal arrangements.

Waste stream characterization: Characterization is based on process knowledge. Characterized is sufficient to support identification of the proper treatment technology.

Packaging and shipping: Hanford Site WRAP Module IIA is not expected to require repackaging of this waste stream.

Type of technology: Hanford Site WRAP Module IIA is being developed to process, package and certify low level mixed waste for disposal. Hanford Site WRAP Module IIA will perform stabilization and solidification, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$134,712. This amount is within KAPL-Knolls target level funding.

3.1.18 MWIR ID#: KA-W012X (This waste stream was previously described as KA-M012 in Table 3.4 of the DSTP.)

Site ID#: KA 0000000055

Waste Stream Name: Inorganic Sludges and Particulates

Waste Stream Description: System residues and maintenance; paint chips

Treatability Group: MLLW CH, inorganic sludges/particulates, toxic metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D002, D005, D006, D007, D008, D009, D010, D011

Current Inventory: 0.27 cubic meters

Five Year Projection: 0.50 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.18.1 Treatment Technology Required: On-site processing consists of radiological and chemical characterization, solidification, filtration and neutralization. After processing, 75% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W012. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.18.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological and chemical characterization, solidification, filtration and neutralization.

Facility status/Actions to bring facility on-line: Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological and chemical characterization, solidification, filtration and neutralization.

Regulatory status: Permitting is not expected to be required.

3.1.19 MWIR ID#: KA-W012

Site ID#: KA 0000000018

Waste Stream Name: Inorganic Sludges and Particulates

Waste Stream Description: System residues and maintenance; paint chips and PCBs

Treatability Group: MLLW CH, inorganic sludges/particulates, toxic metals with mercury

Radionuclides: Unknown

EPA Waste Code(s): D002, D005, D006, D007, D008, D009, D010, D011

Current Inventory: 0.00 cubic meters

Five Year Projection: 0.60 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.19.1 Treatment Technology Required: The mercury concentration of this waste stream is less than 260 ppm. Deactivation will meet the LDR technology based standard for corrosives. Chemical reduction (to reduce hexavalent chromium to trivalent chromium) followed by stabilization will meet the LDR concentration based standard for chromium. Stabilization will meet the LDR concentration based standards for barium, cadmium, lead, mercury, selenium and silver. Deactivation, chemical reduction (if necessary) followed by stabilization will meet the LDR standards for this waste stream.

3.1.19.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Hanford Site Waste Receiving and Processing Facility (WRAP) Module IIA.

Facility status: Hanford Site has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: N/A
2. Entering into contracts: N/A
3. Initiating construction: N/A
4. Conducting system testing: N/A
5. Commencing operations: Targeted for September 1999
6. Processing backlogged and currently generated waste: N/A

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 a new facility, WRAP IIA. Accordingly, DOE-Richland has requested that the Milestone M-19-00, "Complete WRAP IIA 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-Hanford and any change to the facility title will be reported in subsequent Annual Update Reports to the Plan.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Hanford Site within 18 months of the start of WRAP IIA Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, Hanford Site cannot accept this waste stream for treatment by March 2002, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WRAP IIA Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Hanford Site until the establishment of disposal arrangements.

Waste stream characterization: The characterization is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of the proper treatment technology.

Packaging and shipping: Hanford Site WRAP Module IIA is not expected to require repackaging of this waste stream.

Type of technology: Hanford Site WRAP Module IIA is being developed to process, package and certify low level mixed waste for disposal. Hanford Site WRAP Module IIA will perform chemical reduction, deactivation, stabilization and solidification, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$31,038. This amount is within KAPL-Knolls target level funding.

3.1.20 MWIR ID#: KA-W013X (This waste stream was previously described as KA-M013 in Table 3.4 of the DSTP.)

Site ID#: KA 0000000056

Waste Stream Name: Organic Debris without Metals

Waste Stream Description: Organic debris (e.g., Rags and plastics) contaminated with cleaning/ decontamination solution

Treatability Group: MLLW CH, organic debris, toxic organics

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): F001, F002, F003, F005

Current Inventory: 0.02 cubic meters

Five Year Projection: 0.50 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.20.1 Treatment Technology Required: On-site processing consists of radiological and chemical characterization,

segregation, volume reduction and decontamination. After processing, 75% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W013. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.20.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological and chemical characterization, segregation, volume reduction and decontamination.

Facility status/Actions to bring facility on-line: Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological and chemical characterization, segregation, volume reduction and decontamination.

Regulatory status: Permitting is not expected to be required.

3.1.21 MWIR ID#: KA-W013

Site ID#: KA 0000000036

Waste Stream Name: Organic Debris without Metals

Waste Stream Description: Organic debris (e.g., Rags and plastics) contaminated with cleaning/decontamination solution

Treatability Group: MLLW CH, organic debris, toxic organics

Radionuclides: Unknown

EPA Waste Code(s): F001, F002, F003, F005

Current Inventory: 0.00 cubic meters

Five Year Projection: 0.40 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at

other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.21.1 Treatment Technology Required: Organic destruction will meet the LDR concentration based treatment standards for toxic organics.

3.1.21.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incineration Facility (CIF) Solid Feed System.

Facility status: Savannah River has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: Savannah River has submitted a Part B RCRA permit application for the Consolidated Incineration Facility. Savannah River is scheduled to submit RCRA permit applications to allow treatment and storage of off-site wastes following South Carolina Department of Health and Environmental Control (SCDHEC) approval of the Savannah River PSTP (targeted for October 1995).
2. Entering into contracts: Complete.
3. Initiating construction: Complete.
4. Conducting system testing: Targeted for July 1995.
5. Commencing operations: Targeted for February 1996.
6. Processing backlogged and currently generated waste: The CIF mixed waste workoff schedule will be submitted for SCDHEC approval within 180 days of commencing facility operations.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Savannah River within 24 months of the start of Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason,

Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Savannah River until the establishment of disposal arrangements.

Waste stream characterization: The characterization is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of the proper treatment technology.

Packaging and shipping: Savannah River CIF Solid Feed System may require repackaging of this waste stream prior to treatment. If repackaging is necessary, it will likely be performed by KAPL-Knolls prior to shipment.

Type of technology: Savannah River CIF Solid Feed System will treat low level mixed wastes in a rotary kiln incinerator followed by a secondary combustion chamber. Following incineration, the residue will be stabilized at Savannah River, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$13,663. This amount is within KAPL-Knolls target level funding.

3.1.22 MWIR ID#: KA-W014X (This waste stream was previously described as KA-M014 in Table 3.4 of the DSTP.)

Site ID#: KA 0000000057

Waste Stream Name: Organic Sludges and Particulates

Waste Stream Description: Sludge and paint chips

Treatability Group: MLLW CH, organic sludges/particulates, toxic organics and metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005

Current Inventory: 0.00 cubic meters

Five Year Projection: 0.50 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.22.1 Treatment Technology Required: On-site processing consists of radiological and chemical characterization, solidification and filtration. After processing, 75% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W014. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.22.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological and chemical characterization, solidification and filtration.

Facility status/Actions to bring facility on-line: This waste stream has not yet been generated at KAPL-Knolls. Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological and chemical characterization, solidification and filtration.

Regulatory status: Permitting is not expected to be required.

3.1.23 MWIR ID#: KA-W014

Site ID#: KA 0000000043

Waste Stream Name: Organic Sludges and Particulates

Waste Stream Description: Sludge and paint chips

Treatability Group: MLLW CH, organic sludges/particulates, toxic organics and metals with mercury

Radionuclides: Unknown

EPA Waste Code(s): D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005

Current Inventory: 0.00 cubic meters

Five Year Projection: 0.40 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.23.1 Treatment Technology Required: The mercury concentration of this waste stream is less than 260 ppm. Organic destruction will meet the LDR concentration based standards for toxic organics. Chemical reduction (to reduce hexavalent chromium to trivalent chromium) followed by stabilization will meet the LDR concentration based standard for chromium. Stabilization will meet the LDR concentration based standards for barium, cadmium, lead, mercury, selenium and silver. Organic destruction, followed by chemical reduction (if necessary) followed by stabilization will meet the LDR standards for this waste stream.

3.1.23.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incineration Facility (CIF) Solid Feed System.

Facility status: Savannah River has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: Savannah River has submitted a Part B RCRA permit application for the Consolidated Incineration Facility. Savannah River is scheduled to submit RCRA permit applications to allow treatment and storage of off-site wastes following South Carolina Department of Health and Environmental Control (SCDHEC) approval of the Savannah River PSTP (targeted for October 1995).
2. Entering into contracts: Complete.
3. Initiating construction: Complete.
4. Conducting system testing: Targeted for July 1995.
5. Commencing operations: Targeted for February 1996.
6. Processing backlogged and currently generated waste: The CIF mixed waste workoff schedule will be submitted for SCDHEC approval within 180 days of commencing facility operations.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to Savannah River within 24 months of the start of Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at Consolidated Incineration Facility and will obtain New York State Department of

Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at Savannah River until the establishment of disposal arrangements.

Waste stream characterization: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

Packaging and shipping: Savannah River CIF Solid Feed System may require repackaging of this waste stream prior to treatment. If repackaging is necessary, it will likely be performed by KAPL-Knolls prior to shipment.

Type of technology: Savannah River CIF Solid Feed System will treat low level mixed wastes in a rotary kiln incinerator followed by a secondary combustion chamber. Following incineration, the residue will be stabilized at Savannah River, resulting in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$16,983. This amount is within KAPL-Knolls target level funding.

3.1.24 MWIR ID#: KA-W015X (This waste stream was previously described as KA-M015 in Table 3.4 of the DSTP.)

Site ID#: KA 0000000058

Waste Stream Name: Soils

Waste Stream Description: Waste soils from maintenance, decontamination and decommissions

Treatability Group: MLLW CH, soils, toxic organics and metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D005, D006, D007, D008, D009, D011, D018, D035, D039, D040, F001, F002, F003, F005

Current Inventory: 0.00 cubic meters

Five Year Projection: 22.40 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.24.1 Treatment Technology Required: On-site processing consists of radiological and chemical characterization followed by segregation. After processing, 75% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W015. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.24.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological and chemical characterization followed by segregation.

Facility status/Actions to bring facility on-line: This waste stream has not yet been generated at KAPL-Knolls. Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological and chemical characterization followed by segregation.

Regulatory status: Permitting is not expected to be required.

3.1.25 MWIR ID#: KA-W015

Site ID#: KA 0000000047

Waste Stream Name: Soils

Waste Stream Description: Waste soils from maintenance, decontamination and decommissions

Treatability Group: MLLW CH, soils, toxic organics and metals with mercury

Radionuclides: Unknown

EPA Waste Codes (s): D005, D006, D007, D008, D009, D011, D018, D035, D039, D040, F001, F002, F003, F005

Current Inventory: 0.00 cubic meters

Five Year Projection: 16.80 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.25.1 Treatment Technology Required: The mercury concentration of this waste stream is less than 260 ppm. Organic destruction will meet the LDR concentration based standards for toxic organics. Chemical reduction (to reduce hexavalent chromium to trivalent chromium) followed by stabilization will meet the LDR concentration based standard for chromium. Stabilization will meet the LDR concentration based standards for barium, cadmium, lead, mercury and silver. Organic destruction, followed by chemical reduction (if necessary) followed by stabilization will meet the LDR standards for this waste stream.

3.1.25.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Idaho Waste Processing Facility (IWPF) Incinerator.

Facility status: INEL has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: INEL will submit R & D permit applications for the IWPF Incinerator in April 1996.
2. Entering into contracts: The identification and subsequent request for facility funding was completed in October 1994.
3. Initiating construction: N/A
4. Conducting system testing: N/A
5. Commencing operations: N/A
6. Processing backlogged and currently generated waste: N/A

Due to the uncertainties regarding the DOE budget situation, specific schedule dates for items 3 through 6 were not available for inclusion in the KAPL-Knolls' PSTP. This information will be provided as part of the first annual STP update in accordance with section 2.3 (Annual Site Treatment Plan Updates) of the Compliance Plan Volume.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to INEL within 18 months of the start of IWPF Incinerator operations. If, however, the schedule information provided in the first annual STP update is not satisfactory to New York State Department of Environmental Conservation, or the projected start of operation for this facility is subsequently extended more than 12 months beyond that identified in the first annual update to the STP, or, for any reason, INEL cannot accept this waste stream for treatment by March 2005, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the IWPF Incinerator. and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed

waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at INEL until the establishment of disposal arrangements.

Waste stream characterization: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

Packaging and shipping: INEL IWPF is not expected to require repackaging of this waste stream.

Type of technology: INEL IWPF anticipates using a rotary kiln incinerator to provide thermal destruction. Following incineration, the residue will be stabilized at INEL resulting in a waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$218,817. This amount is within KAPL-Knolls target level funding.

3.1.26 MWIR ID#: KA-W017X (This waste stream was previously described as KA-M017 in Table 3.4 of the DSTP.)

Site ID#: KA 0000000059

Waste Stream Name: Aqueous Liquids and Slurries

Waste Stream Description: Aqueous waste from laboratory operations and maintenance

Treatability Group: MLLW CH, aqueous liquids/slurries, toxic organics and metals

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D002, D005, D006, D007, D008, D009, D010, D011, D018, D035, D039, D040

Current Inventory: 0.02 cubic meters

Five Year Projection: 0.50 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.26.1 Treatment Technology Required: On-site treatment consists of radiological and chemical characterization, solidification, filtration and neutralization. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.26.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site treatment consisting of radiological and chemical characterization, solidification, filtration and neutralization.

Facility status/Actions to bring facility on-line: Existing radiological work facilities can be used to perform on-site treatment of the estimated low volume of this waste stream.

Type of technology: On-site treatment for this waste stream would consist of radiological and chemical characterization, solidification, filtration and neutralization.

Regulatory status: Permitting is not expected to be required.

3.1.27 MWIR ID#: KA-W018X (This is a new waste stream.)

Site ID#: KA 0000000060

Waste Stream Name: Mercury Contaminated Organics

Waste Stream Description: Organic waste material contaminated with mercury greater than 260 ppm

Treatability Group: MLLW CH, organic process residues, toxic organics and metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D004, D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005

Current Inventory: 0.00 cubic meters

Five Year Projection: 1.40 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.27.1 Treatment Technology Required: On-site processing consists of radiological characterization. After processing, 70% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W018. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.27.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological characterization.

Facility status/Actions to bring facility on-line: This waste stream has not yet been generated at KAPL-Knolls. Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological characterization.

Regulatory status: Permitting is not expected to be required.

3.1.28 MWIR ID#: KA-W018 (This is a new waste stream.)

Site ID#: KA 0000000061

Waste Stream Name: Mercury Contaminated Organics

Waste Stream Description: Organic waste material contaminated with mercury greater than 260 ppm

Treatability Group: MLLW CH, organic process residues, toxic organics and metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D004, D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, F001, F002, F003, F005

Current Inventory: 0.00 cubic meters

Five Year Projection: 1.00 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.28.1 Treatment Technology Required: Mercury retort is the LDR treatment technology based standard required for mercury greater than 260 ppm. Organic destruction will meet the LDR concentration based treatment standard for toxic organics. Chemical reduction (to reduce hexavalent chromium to trivalent chromium) followed by stabilization will meet the LDR concentration based standard for chromium. Stabilization will meet the LDR concentration based standards for arsenic, barium, cadmium, lead, selenium and silver. Mercury retort and organic destruction, followed by chemical reduction (if necessary) followed by stabilization will meet the LDR standards for this waste stream.

3.1.28.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Waste Engineering Development Facility (WEDF) Mercury Retort Unit.

Facility status: INEL has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: INEL will submit a Part B RCRA permit application for the WEDF Mercury Retort Facility in January 1996.
2. Entering into contracts: Targeted for October 1995.
3. Initiating construction: Targeted for October 1996.
4. Conducting system testing: Targeted for January 1997.
5. Commencing operations: Targeted for April 1999.
6. Processing backlogged and currently generated waste: The WEDF Mercury Retort Facility mixed waste workoff schedule will be submitted to the Division of Environmental Quality Idaho Department of Health and Welfare in October of 1999.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to INEL within 18 months of the start of WEDF Mercury Retort Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, INEL cannot accept this waste stream for treatment by October 2001, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WEDF Mercury Retort Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small

volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at INEL until the establishment of disposal arrangements.

Waste stream characterization: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites.

Characterization is sufficient to support identification of proper treatment technology.

Packaging and shipping: INEL WEDF is not expected to require repackaging of this waste stream. The WEDF Mercury Retort Unit will receive waste from the WEDF Sizing Unit which will open containers, sample, size, and/or sort waste as necessary, and then send the contents to the appropriate WEDF treatment unit.

Type of technology: The INEL WEDF Mercury Retort Unit will volatilize mercury from the wastes and recover/condense the mercury vapor. The recovered mercury will be recycled or amalgamated as required. The treatment process will result in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$46,560. This amount is within KAPL-Knolls target level funding.

3.1.29 MWIR ID#: KA-W019X (This is a new waste stream.)

Site ID#: KA 0000000062

Waste Stream Name: Mercury Contaminated Inorganics

Waste Stream Description: Inorganic waste material contaminated with mercury greater than 260 ppm

Treatability Group: MLLW CH, inorganic process residues, toxic metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D004, D005, D006, D007, D008, D009, D010, D011

Current Inventory: 0.03 cubic meters

Five Year Projection: 0.43 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.29.1 Treatment Technology Required: On-site processing consists of radiological characterization. After processing, 70% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W019. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.29.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological characterization.

Facility status/Actions to bring facility on-line: Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological characterization.

Regulatory status: Permitting is not expected to be required.

3.1.30 MWIR ID#: KA-W019 (This is a new waste stream.)

Site ID#: KA 0000000063

Waste Stream Name: Mercury Contaminated Inorganics

Waste Stream Description: Inorganic waste material contaminated with mercury greater than 260 ppm

Treatability Group: MLLW CH, inorganic process residues, toxic metals with mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D004, D005, D006, D007, D008, D009, D010, D011

Current Inventory: 0.10 cubic meters

Five Year Projection: 0.30 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.30.1 Treatment Technology Required: Mercury retort is the LDR treatment technology based standard required for mercury greater than 260 ppm. Chemical reduction (to reduce hexavalent chromium to trivalent chromium) followed by stabilization will meet the LDR concentration based treatment standard for chromium. Stabilization will meet the LDR concentration based treatment standards for arsenic, barium, cadmium, lead, selenium and silver. Mercury retort followed by chemical reduction (if necessary) followed by stabilization will meet the LDR standards for this waste stream.

3.1.30.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Waste Engineering Development Facility (WEDF) Mercury Retort Unit.

Facility status: INEL has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: INEL will submit a Part B RCRA permit application for the WEDF Mercury Retort Facility in January 1996.
2. Entering into contracts: Targeted for October 1995.
3. Initiating construction: Targeted for October 1996.
4. Conducting system testing: Targeted for January 1997.
5. Commencing operations: Targeted for April 1999.

6. Processing backlogged and currently generated waste: The WEDF Mercury Retort Facility mixed waste workoff schedule will be submitted to the Division of Environmental Quality Idaho Department of Health and Welfare in October of 1999.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to INEL within 18 months of the start of WEDF Mercury Retort Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, INEL cannot accept this waste stream for treatment by October 2001, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WEDF Mercury Retort Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at INEL until the establishment of disposal arrangements.

Waste stream characterization: Identification of hazardous constituents is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

Packaging and shipping: INEL WEDF is not expected to require repackaging of this waste stream. The WEDF Mercury Retort Unit will receive waste from the WEDF Sizing Unit which will open containers, sample, size, and/or sort waste as necessary, and then send the contents to the appropriate WEDF treatment unit.

Type of technology: The INEL WEDF Mercury Retort Unit will volatilize mercury from the wastes and recover/condense the mercury vapor. The recovered mercury will be recycled or amalgamated as required. The treatment process will result in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$25,440. This amount is within KAPL-Knolls target level funding.

3.1.31 MWIR ID#: KA-W020X (This is a new waste stream.)

Site ID#: KA 0000000064

Waste Stream Name: Elemental Mercury

Waste Stream Description: Elemental mercury contaminated with radioactivity

Treatability Group: MLLW CH, elemental mercury, mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D009

Current Inventory: 0.00 cubic meters

Five Year Projection: 0.11 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.31.1 Treatment Technology Required: On-site processing consists of radiological characterization and distillation. After processing, 70% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W020. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.31.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site

processing consisting of radiological characterization and distillation.

Facility status/Actions to bring facility on-line: This waste stream has not yet been generated at KAPL-Knolls. Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological characterization and distillation.

Regulatory status: Permitting is not expected to be required.

3.1.32 MWIR ID#: KA-W020 (This is a new waste stream.)

Site ID#: KA 0000000065

Waste Stream Name: Elemental Mercury

Waste Stream Description: Elemental mercury contaminated with radioactivity

Treatability Group: MLLW CH, elemental mercury, mercury

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D009

Current Inventory: 0.02 cubic meters

Five Year Projection: 0.08 cubic meters

Waste Characterization Determination: Characterization is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

3.1.32.1 Treatment Technology Required: Amalgamation is the LDR treatment technology based standard for elemental mercury. Amalgamation is required to meet the LDR standards for this waste stream.

3.1.32.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Waste

Engineering Development Facility (WEDF) Mercury Retort Unit.

Facility status: INEL has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: INEL will submit a Part B RCRA permit application for the WEDF Mercury Retort Facility in January 1996.
2. Entering into contracts: Targeted for October 1995.
3. Initiating construction: Targeted for October 1996.
4. Conducting system testing: Targeted for January 1997.
5. Commencing operations: Targeted for April 1999.
6. Processing backlogged and currently generated waste: The WEDF Mercury Retort Facility mixed waste workoff schedule will be submitted to the Division of Environmental Quality Idaho Department of Health and Welfare in October of 1999.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to INEL within 18 months of the start of WEDF Mercury Retort Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified above, or for any reason, INEL cannot accept this waste stream for treatment by October 2001, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WEDF Mercury Retort Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at INEL until the establishment of disposal arrangements.

Waste stream characterization: Identification of hazardous constituents is based on process knowledge. Characterization is sufficient to support identification of proper treatment technology.

Packaging and shipping: INEL WEDF is not expected to require repackaging of this waste stream. The WEDF Mercury Retort Unit will receive waste from the WEDF Sizing Unit which will open containers, sample, size, and/or sort waste as necessary, and then send the contents to the appropriate WEDF treatment unit.

Type of technology: The INEL WEDF Mercury Retort Unit will volatilize mercury from the wastes and recover/condense the mercury vapor. The recovered mercury will be recycled or amalgamated as required. The treatment process will result in a final waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$39,960. This amount is within KAPL-Knolls target level funding.

3.1.33 MWIR ID#: KA-W021X (This is a new waste stream.)

Site ID#: KA 0000000066

Waste Stream Name: PCB Contaminated Waste

Waste Stream Description: Waste material with PCB concentrations greater than 50 ppm

Treatability Group: MLLW CH, organic debris, toxic organics and PCBs

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D004, D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, NYS Codes B002, B003, B004, B005, B007

Current Inventory: 0.00 cubic meters

Five Year Projection: 0.20 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.33.1 Treatment Technology Required: On-site processing consists of radiological characterization. After processing, 75% of the original volume is expected to remain mixed waste and is treated in waste stream KA-W021. A graphical representation of this waste stream is provided at the beginning of section 3.1.

3.1.33.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is to perform on-site processing consisting of radiological characterization.

Facility status/Actions to bring facility on-line: This waste stream has not yet been generated at KAPL-Knolls. Existing radiological work facilities can be used to perform on-site processing of the estimated low volume of this waste stream.

Type of technology: On-site processing for this waste stream would consist of radiological characterization.

Regulatory status: Permitting is not expected to be required.

3.1.34 MWIR ID#: KA-W021 (This is a new waste stream.)

Site ID#: KA 0000000067

Waste Stream Name: PCB Contaminated Waste

Waste Stream Description: Waste material with PCB concentrations greater than 50 ppm

Treatability Group: MLLW CH, organic debris, toxic organics and PCBs

Radionuclides: Alpha, Beta-gamma emitters

EPA Waste Code(s): D004, D005, D006, D007, D008, D009, D010, D011, D018, D035, D036, D039, D040, NYS Codes B002, B003, B004, B005, B007

Current Inventory: 0.00 cubic meters

Five Year Projection: 0.15 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

3.1.34.1 Treatment Technology Required: Organic destruction will meet LDR concentration based treatment standard for toxic organics. The TSCA treatment for PCBs is organic destruction (incineration). Chemical reduction (to reduce hexavalent chromium to trivalent chromium) followed by stabilization will meet the LDR concentration based treatment standard for chromium. Stabilization will meet the LDR concentration based treatment standards for arsenic, barium, cadmium, lead, mercury, selenium and silver. Organic destruction followed by chemical reduction (if necessary) followed by stabilization will meet the LDR standards for this waste stream.

3.1.34.2 Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Idaho Waste Processing Facility (IWPF) Incinerator.

Facility status: INEL has provided confirmation that this facility is technically capable of treating this waste stream.

1. Submission of Permit Applications: INEL will submit R & D permit applications for the IWPF Incinerator in April 1996.

2. Entering into contracts: The identification and subsequent request for facility funding was completed in October 1994.
3. Initiating construction: N/A
4. Conducting system testing: N/A
5. Commencing operations: N/A
6. Processing backlogged and currently generated waste: N/A

Due to the uncertainties regarding the DOE budget situation, specific schedule dates for items 3 through 6 were not available for inclusion in the KAPL-Knolls' PSTP. This information will be provided as part of the first annual STP update in accordance with section 2.3 (Annual Site Treatment Plan Updates) of the Compliance Plan Volume.

Schedule for shipment to treatment facility: This mixed waste stream will be shipped to INEL within 18 months of the start of IWPF Incinerator operations. If, however, the schedule information provided in the first annual STP update is not satisfactory to New York State Department of Environmental Conservation, or the projected start of operation for this facility is subsequently extended more than 12 months beyond that identified in the first annual update to the STP, or, for any reason, INEL cannot accept this waste stream for treatment by March 2005, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the IWPF Incinerator and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

Pre-Treatment storage and Post-Treatment residual management: This waste stream will be stored in RCRA

compliant storage facilities at KAPL-Knolls until treatment capability is available. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, all residuals from this waste stream will remain at INEL until the establishment of disposal arrangements.

Waste stream characterization: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge of similar waste streams at other NNPP sites. Characterization is sufficient to support identification of proper treatment technology.

Packaging and shipping: INEL IWPF is not expected to require repackaging of this waste stream.

Type of technology: INEL IWPF anticipates using a rotary kiln incinerator to provide thermal destruction. Following incineration, the residue will be stabilized at INEL resulting in a waste form that meets LDR requirements.

Budget status: The total cost estimate (including transportation and off-site treatment) to implement this option is \$22,471. This amount is within KAPL-Knolls target level funding.

3.2 Mixed Waste Streams For Which Technology Exists But Needs Adaptation or For Which No Technology Exists:

N/A

3.3 Mixed Waste Streams Requiring Further Characterization or For Which Technology Assessment Has Not Been Done:

N/A

4.0 Mixed TRU Waste Streams:

4.1 TRU Wastes Expected To Go To WIPP

4.1.1 MWIR ID#: KA-W016

Site ID#: KA 0000000045

Waste Stream Name: Transuranic Debris

Waste Stream Description: Heterogeneous material (metal, glass, ceramic) contaminated with TRU materials.

Treatability Group: MTRU RH, other debris, metals with mercury and organics

Radionuclides: Pu^{238b}, Pu^{239b}, Pu^{240b}, Pu^{241b}, Pu^{242b}, Am^{241b}, U²³³, H³, Fe⁵⁹, Co⁶⁰, Sr⁹⁰, Y⁹⁰, Cs¹³⁷, Ba^{137m}, MFP (Cs¹³⁴, Ce¹⁴⁴, Pr¹⁴⁴, Ru¹⁰⁶, Rh¹⁰⁶, Sb¹²⁵, Eu¹⁵⁴, Eu¹⁵⁵, Pm¹⁴⁷)

EPA Waste Code(s): D004, D005, D006, D007, D008, D009, D010, D011, D018, D035, D039, D040, F001, F002, F003, F005

Current Inventory: 0.00 cubic meters

Five Year Projection: 0.18 cubic meters

Waste Characterization Determination: This waste stream has not yet been generated at KAPL-Knolls. Identification of hazardous constituents is based on process knowledge. Characterization is sufficient to support identification of the proper treatment technology.

4.1.1.1 Treatment Technology Required: It is not anticipated that this TRU waste will require treatment. This defense TRU waste stream is expected to be disposed of at the Waste Isolation Pilot Plant (WIPP).

Waste Stream Management Plan: The current DOE strategy for management of mixed transuranic (MTRU) waste is to segregate MTRU wastes from mixed low-level wastes; to maintain the MTRU wastes in safe interim storage; to characterize, certify, process if necessary, and package the wastes to meet the waste acceptance criteria (WAC) of the Waste Isolation Pilot Plant (WIPP); and to permanently dispose of applicable MTRU waste at WIPP. Compliance with the requirements of the Federal Facility Compliance Act (FFCAct) for MTRU waste will be achieved using the RCRA no-migration variance petition approach provided in the Code of Federal Regulations (CFR) Title 40 Section 268.6. Under this strategy, no treatment other than that necessary to meet WIPP WAC is anticipated; however, the performance assessment, and the EPA no-migration variance determination will ascertain what treatments, if any, will be required to ensure disposal compliance.

DOE is actively gathering inventory and characterization data for input into the performance assessment and preparing several regulatory submittals to EPA to demonstrate compliance with no-migration variance petition requirements. The current plan is to submit a draft compliance certification package to EPA in March 1995; a no-migration variance petition to EPA by May 1995; a revised RCRA Part B permit application to the New Mexico Environment Department by June 1995; a final compliance certification package (including final performance assessment results) to EPA by December 1996; and to finalize the disposal WIPP WAC by June 1997. DOE plans to declare operational readiness for WIPP by December 1997. Disposal of contact-handled (CH) TRU waste will begin in June 1998, followed by remote-handled (RH) TRU waste in June 1999. These dates are contingent upon permit approval, certification of disposal compliance, and determination of no-migration from the appropriate regulators and are subject to the availability of funds.

4.1.1.2 Preferred Option: Not applicable. No treatment is expected to be required.

4.2 TRU Wastes Not Destined For WIPP

N/A

5.0 Mixed High-Level Waste Streams:

N/A

6.0 Future Generation of Mixed Waste Streams:

6.1 Environmental Restoration Waste:

It is well documented in Navy and EPA reports that stringent NNPP radiological controls have served to prevent release of radioactivity from naval nuclear propulsion work to the environment. As a result, little mixed waste is expected to result from environmental restoration activities at NNPP sites including KAPL-Knolls. Because of the stringent controls, the only radioactive contamination present is contained within radiological work facility buildings. It is anticipated that these buildings can be decontaminated without generating much, if any, mixed waste. Additional information on this potential mixed waste stream will be provided as it becomes available.

6.2 Decon and Decommissioning Waste

N/A

7.0 Storage Report

DOE is committed to storing waste in compliance with RCRA storage requirements in 40 CFR 264 or 40 CFR 265 pending the development of treatment capacity and implementation of the STPs.

For mixed waste to be shipped off-site for treatment, the storage of mixed waste before treatment and the storage of mixed waste treatment residuals will be arranged on a case-by-case basis between the shipping and receiving sites, in consultation with the affected States. Factors such as inadequate compliant storage capacity at the shipping site and a need to facilitate closure of the shipping site have been considered in proposing shipping schedules.

Prior to shipment off-site, the associated mixed waste streams will be stored in RCRA compliant storage facilities at the shipping site until treatment capability is available. This approach is consistent with KAPL-Knolls' practice in safe handling and effective management of KAPL-Knolls' waste streams. Safe RCRA compliant facilities with adequate storage capacity will be available to store KAPL-Knolls' waste streams. For facilities which are constructed and operational, shipment to the receiving site will commence within one year of the scheduled approval of the PSTPs (i.e., by October 1996). For non-operational facilities such as Savannah River, shipment to the receiving site will occur within twenty-four (24) months of the commencement of facility operation. For non-operational facilities such as INEL and the Hanford Site, shipment to the receiving site will occur within eighteen (18) months of the commencement of facility operation. For any mixed waste generated subsequent to the initial shipment of a given waste stream and for the initial generation of a mixed waste stream after the initial shipping milestone is reached, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment. Due to the very small volumes of KAPL-Knolls' waste streams, the technical issues associated with some treatment technologies, and the desire to minimize shipments, KAPL-Knolls proposes that all residuals from KAPL-Knolls waste streams will remain at the treatment facility until disposal arrangements are established.

The KAPL-Knolls site currently operates two mixed waste storage areas under interim status as authorized by New York State Department of Environmental Conservation. One facility, the H2 Modular Addition is located adjacent to H Building on the western edge of the site. The H2 Modular Addition has a permitted capacity of 3520 gallons. The other facility is located in the Radioactive Material Laboratory (RML) near the center of the site. It consists of four 5'x5'x5' concrete pits in the floor of the RML. The total permitted capacity of the four pits is 1320 gallons.

8.0 Process for Evaluating Disposal Issues in Support of the STP Discussions

This section addresses the overall DOE process for evaluating issues related to disposal of MLLW treatment residuals. KAPL-Knolls is among the sites being analyzed for development

as a disposal site for MLLW residuals (the Niskayuna site and the Kesselring site are considered, for analysis purposes, as the Kesselring site). This section outlines the disposal planning process developed by DOE, in consultation with the States, for evaluating MLLW treatment residual disposal options. DOE is not currently developing MLLW disposal sites, with the exception of Hanford Site. Therefore, preferred alternatives or final destinations for the residuals are not currently known. The results of this process will be considered during subsequent planning and discussions between DOE and regulator agencies.

8.1 Background

The FFCAct requires DOE to develop a plan for treatment of mixed wastes; it does not impose similar requirements for disposal of mixed wastes after they have been treated. However, DOE recognizes the need to address this final phase of mixed waste management. This section reflects DOE's strategy for evaluating disposal options. 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. Identification of sites that may receive mixed waste for disposal will follow State and Federal regulations for siting and permitting, and will include public involvement.

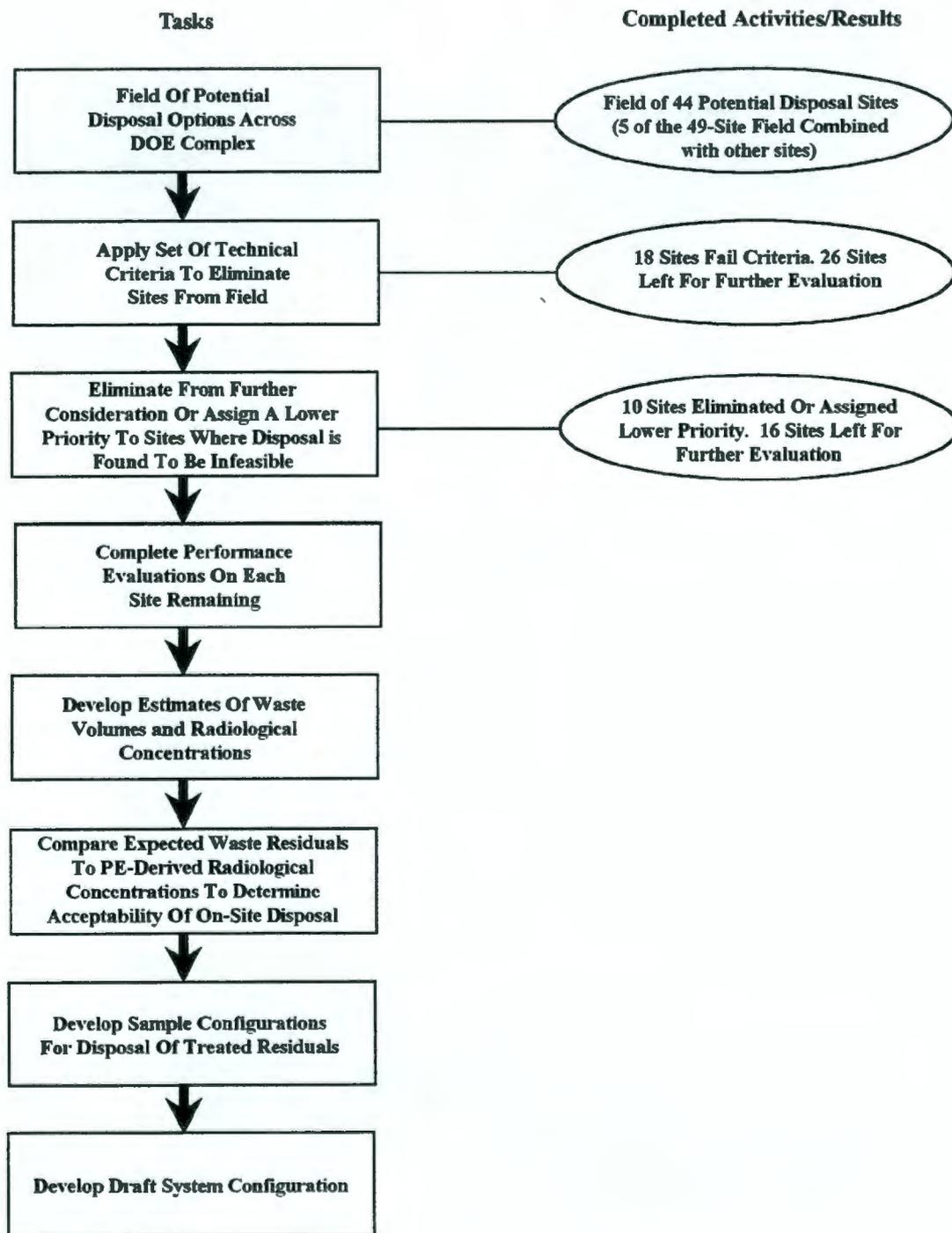
High-level and MTRU waste are subject to the FFCAct. Options for disposal of these mixed wastes are not identified by this process because there are established processes for the study, design, construction, and operation of disposal facilities for these wastes.

The DOE has historically planned to develop MLLW disposal facilities at six DOE sites that currently dispose 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 treatment of MLLW. This plan has been changed to accommodate the planning efforts of the FFCAct disposal planning process (Figure 8.1) and WM PEIS. The sites subject to evaluation are the 49 sites currently storing or expected to generate mixed waste that were reported to Congress by DOE in the MWIR (April 1993).

8.2 Disposal Planning Process

Although the FFCAct does not specifically address disposal of treated mixed wastes, both DOE and the States recognize that disposal issues are an integral part of treatment discussions. A process was established to evaluate and discuss issues related to disposal of MLLW residuals as shown in Figure 8.1. The focus of this process has been to identify from the 49 sites, those that are suitable for further evaluation as disposal locations. Sites that have marginal or no potential for disposal activities will be removed or deferred from further evaluation. The remaining sites will be evaluated more extensively. A number of sites are expected to be identified as technically acceptable for disposal activities.

Figure 8.1: Disposal Planning Process



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 were located such that they could be addressed 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.

Initial Site Screening

At a joint meeting on March 3-4, 1994, DOE and the States agreed on three exclusionary criteria for screening the 44 remaining sites. These criteria were developed by reviewing Federal and State laws regarding the siting of waste treatment, storage, and disposal facilities. To be considered for potential disposal activities, a site:

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

The first criteria (100-year flood plain) is derived from both National Regulatory Commission (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 joint guidance from EPA, NRC, and DOE for the proper operation of waste facilities.

Evaluation of the 44 sites resulted in 26 sites having acceptable conditions. At a joint meeting on March 30-31, 1994, DOE and the States agreed to remove from further evaluation sites not meeting these criteria. DOE also agreed to collect more detailed information on the remaining 26 sites to identify additional strengths and weaknesses of each site. DOE and the States recognized that DOE or any affected State may propose eliminating sites from consideration after 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 and to consider eliminating any of the 26 remaining sites from further evaluation. The focus of these discussions was to identify sites suitable for further evaluation.

The criteria that DOE and the States used to eliminate sites from further evaluation were derived from three main groupings of criteria; Technical Considerations, Potential Receptor Considerations, and Practical Considerations. These groupings 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 were recommended for removal or postponement from further evaluation. DOE and the States agreed to eliminate five sites from further consideration due to their limited potential for disposal. The sites eliminated were:

<u>SITE</u>	<u>STATE</u>
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.

It was agreed to lower, but not eliminate, the evaluation priority of an additional four sites. Issues such as the technical capabilities of the sites, the volume of mixed waste which may be generated by the sites, and the acceptability of off-site waste contributed to a conclusion that further evaluation should not be 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 will not be considered for disposal of wastes from other sites. They may be eliminated from further analysis if sufficient evidence suggests the potential for disposal is too limited. The sites in this category are:

<u>SITE</u>	<u>STATE</u>
Weldon Spring Remedial Action Project	Missouri
Brookhaven National Laboratory	New York
Mound Plant	Ohio
Bettis Atomic Power Laboratory	Pennsylvania

Performance Evaluation

The performance evaluation conducted on the remaining 16 sites relies on additional detailed site-specific data. The performance evaluation is based on principles of radiological performance assessments developed by DOE performance assessment experts. Additionally,

the evaluation will be based on RCRA-compliant engineered facilities. This information is being used to evaluate the sites and estimate the radionuclide concentration limits of waste that may be disposed of at a site. The performance evaluations were started in August 1994. The 16 sites for which performance evaluations are being prepared are:

<u>SITE</u>	<u>STATE</u>
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 Laboratory	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 Reservation	Tennessee
Pantex Plant	Texas
Hanford Site	Washington

* Because the West Valley Demonstration Project Act precludes the site from accepting off-site wastes, the site will only be evaluated for disposal of on-site wastes.

8.2.2 Next Steps in Disposal Site Evaluation Process

As illustrated in Figure 8.1, progress has been made in the planning of the disposal process. The following steps outline activities to be used 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, the following 10 performance evaluations have been completed; 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 of performance evaluation activities, issued within the same time frame as the final PSTPs, will keep the states and other interested parties informed of the progress.

Develop Estimates of Volumes and Radionuclide Concentrations of Treated Residuals

Once treatment methods for mixed waste streams are finalized through the FFCAct process, estimates of the volumes and radionuclide concentrations of the treated residuals will be

developed. 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 Residue to Performance Evaluation-Derived Radionuclide Concentration Guides

Radionuclide concentrations for each treated residual will be compared with performance evaluation concentration guide derived values. This will allow a comparison of MLLW stream characteristics and potential disposal site capabilities. This evaluation will include off-site DOE and commercial disposal site candidates for those treated waste streams which do not have on-site capabilities. Confirmation of the candidate's streams and sites will be attained through detailed performance assessment efforts.

Develop Sample Configurations for Disposal of Treated Residuals

An Options Analysis Team (OAT) 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 handled at the site and those considered acceptable by the performance evaluations), capacity to handle projected residual volumes, etc. Other issues will be weighed during the configuration discussions, such as transportation costs and distances.

Develop a Draft Disposal System Configuration

Using the sample configurations, DOE will develop, with State and stakeholder input, a draft disposal system configuration. This will be the basis for determining future funding and schedules for proposed disposal facilities. The Final WM PEIS will provide 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 Record Of Decision for the WM PEIS, DOE may initiate site-specific National Environmental Policy Act 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. However, DOE recognizes the importance of State input to facilitate resolution of disposal issues. This information is provided in the PSTP to involve the States and make them aware of DOE's continued work on the disposal issue. For more detailed information on the performance evaluation process, refer to the *"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.

OPTIONS ANALYSIS TEAM (OAT) PROCESS FOR EVALUATING PREFERRED OPTIONS

In the Draft Site Treatment Plan (DSTP), KAPL-Knolls evaluated and identified preferred options for each KAPL-Knolls waste stream. This evaluation considered all feasible options including on-site treatment, use of mobile treatment systems, commercial treatment systems, and off-site treatment at DOE facilities. Key factors that contributed to the selection of KAPL-Knolls preferred options identified in the DSTP included: 1) the small volumes of KAPL-Knolls waste streams, 2) the availability of treatment technologies, 3) costs associated with different treatment options, 4) the desire to minimize mixed waste shipments, and 5) environmental health and safety concerns. Comparison of the treatment options identified that both off-site DOE treatment and on-site exempt treatment (for the limited waste streams where this approach is feasible) ranked favorably primarily due to life cycle cost. KAPL-Knolls followed the same evaluation process used by all other sites to identify and select preferred options based on DOE guidance documents prepared for this purpose.

The DSTP preferred options targeted most KAPL-Knolls waste streams for DOE off-site treatment facilities because these facilities were identified as having the lowest life cycle cost and the widest range of treatment technologies. Thus, cost effective preferred options could be consolidated at a limited number of DOE sites. Consolidating KAPL-Knolls' preferred options improves the efficiency of managing KAPL-Knolls' mixed waste because the effort associated with meeting different packaging requirements, shipping requirements, and waste acceptance criteria for each site is minimized. In addition, the number of mixed waste shipments would be reduced. Because the life cycle cost was not prohibitive, on-site simple treatment, such as solidification in the accumulation container, was identified as a preferred option where practical to be consistent with the states' preference to perform on-site treatment.

The DSTP evaluation of mobile treatment technologies to treat similar waste streams at different NNPP sites indicated this option would be cost prohibitive compared to off-site treatment at DOE facilities due to the small volumes involved. Commercial options were not considered viable because of the limited potential commercial capability to treat KAPL-Knolls waste streams. Even if commercial capability to treat some KAPL-Knolls waste streams was identified, substantial additional effort would likely be required to determine if the potential commercial facilities could meet all of the technical requirements to treat KAPL-Knolls waste streams and resolve uncertainties regarding permit issues. In addition, considerable costs and effort would likely be required to establish and maintain contracts with commercial vendors to treat small volume waste streams. Vendors expressed a low level of interest regarding treatment of KAPL-Knolls waste streams primarily due to the small volumes involved, and it was anticipated the cost to treat small volume waste streams using commercial facilities would be high.

After the DSTPs were submitted to the states and EPA in August 1994, the DOE Options Analysis Team (OAT) conducted a review of the preferred options to resolve technical uncertainties and to improve the efficiency of the overall DOE complex-wide mixed waste configuration. A number of changes to KAPL-Knolls' DSTP preferred options were

recommended and have been incorporated into the PSTP. Changes to preferred options were based on the following considerations:

- Waste streams originally targeted for the Hanford Thermal Treatment Facility have been targeted to an alternate facility because construction of this facility is no longer being pursued.
- Further characterization of a particular waste stream identified a more appropriate treatment technology.
- The DOE Options Analysis Team recommended that some waste streams originally targeted for on-site simple treatment be targeted for DOE off-site treatment due to an overall lower life cycle cost.
- The DOE Options Analysis Team identified an alternate treatment facility with a better facility status and/or to improve the efficiency of the overall DOE treatment configuration.

Where possible, alternate treatment facilities were selected from DOE sites targeted to receive other KAPL-Knolls mixed waste streams to consolidate shipments. The following table summarized the preferred options for KAPL-Knolls waste streams and identifies changes from DSTP.

MWIR ID#	WASTE STREAM NAME	PREFERRED OPTION	CHANGE FROM DSTP	COMMENTS
KA-W001	Miscellaneous Laboratory Chemicals without Metals	INEL IWPF Incinerator	Yes	Originally targeted for Hanford Thermal Treatment Facility
KA-W002	Cutting Oils and Liquids	Savannah River CIF Liquid Feed System	No	
KA-W003	Trichloroethylene	Savannah River CIF Solid Feed System	No	
KA-W005	Asbestos Contaminated with Mercury	Hanford WRAP IIA Facility	No	
KA-W006	Freon 113 on Rags	Savannah River CIF Solid Feed System	No	
KA-W007	Oils	Savannah River CIF Liquid Feed System	No	

MWIR ID#	WASTE STREAM NAME	PREFERRED OPTION	CHANGE FROM DSTP	COMMENTS
KA-W008	Miscellaneous Laboratory Chemicals	Hanford WRAP IIA Facility	Yes	Originally targeted for Hanford Thermal Treatment Facility
KA-W009	Organic Debris	Savannah River CIF Solid Feed System	No	
KA-W010	Inorganic Debris and Equipment	Hanford WRAP IIA Facility	No	
KA-W011	Elemental Lead (Lead in Bricks, Sheets, or Wool)	Hanford WRAP IIA Facility	No	
KA-W012	Inorganic Sludges and Particulates	Hanford WRAP IIA Facility	Yes	Originally targeted for Savannah River CIF Solid Feed System
KA-W013	Organic Debris without Metals	Savannah River CIF Solid Feed System	No	
KA-W014	Organic Sludges and Particulates	Savannah River CIF Solid Feed System	No	
KA-W015	Soils	INEL IWPF Incinerator	Yes	Originally targeted for Hanford Thermal Treatment Facility
KA-W016	Transuranic Debris	Waste Isolation Pilot Plant	No	
KA-W018	Mercury Contaminated Organics	INEL WEDF Mercury Retort Facility	N/A	New waste stream. Treatment facility selected from DOE sites already targeted to treat KAPL-Knolls waste streams.
KA-W019	Mercury Contaminated Inorganics	INEL WEDF Mercury Retort Facility	N/A	New waste stream. Treatment facility selected from DOE sites already targeted to treat KAPL-Knolls waste streams.
KA-W020	Elemental Mercury	INEL WEDF Mercury Retort Facility	N/A	New waste stream. Treatment facility selected from DOE sites already targeted to treat KAPL-Knolls waste streams.
KA-W021	PCB Contaminated Waste	INEL IWPF Incinerator	N/A	New waste stream. Treatment facility selected from DOE sites already targeted to treat KAPL-Knolls waste streams.

DEFINITIONS

The terms defined below are used in this PSTP. Common abbreviations, if any, follow the term.

Acidic Wastewater (as a waste matrix) - Aqueous liquids that contain less than 1% Total Suspended Solids (TSS) and less than 1% total organic carbon (TOC) with a pH \leq 2.0.

Aqueous Liquids/Slurries (as a waste matrix) - Liquids with a Total Suspended/Settled Solids (TSS) content up to 40% and less than 1% total organic carbon (TOC). Only liquids and slurries packaged in a bulk free form (e.g. drum, tank) are included in this category. Liquids and slurries packaged as lab packs are not categorized here.

Aqueous/Organic Liquid (as a waste matrix) - Liquid, including mixtures, both miscible and immiscible, of aqueous and organic liquids containing \geq 1% TOC.

Best Available Technology (BAT) or Best Demonstrated Available Technology (BDAT) -

- (1) The technology for treating a particular waste, selected from among others after taking into account factors related to technology, economics, public policy, and other parameters.
- (2) Treatment technologies that have been shown through actual use to yield the greatest environmental benefit among competing technologies that are practically available.

Cemented Solids (as a waste matrix) - Sludges or solids (e.g., particulates, etc.) that have been solidified/stabilized with cement or other solidifying agents but do not meet Land Disposal Restrictions (LDR) treatment standards. These wastes may require pretreatment (e.g., crushing/grinding, etc.) prior to subsequent LDR treatment.

Chemical Reduction (CHRED) - Chemical reduction utilizing the following reducing reagents (or waste reagents) or a combination thereof: (1) sulfur dioxide; (2) sodium, potassium, or alkali salts of sulfites, bisulfites, metabisulfites, 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 waste water residues). Chemical reduction is commonly used for the reduction of hexavalent chromium to trivalent chromium.

Concentration Based Standard - In certain cases a concentration based standard has been developed for an extract of a restricted waste or treatment residue, or for the constituent concentration in the waste or treatment residue. These standards are based on BDAT and the waste or 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 radiation dose rate does not exceed 200 mrem per hour at the surface of the container.

Debris - Waste meeting the definition of debris per the LDR debris rulemaking (57 FR 37194, 8/18/92). Abbreviated definition is as follows: Solid material exceeding a 60 mm

particle size that is intended for disposal and that is: 1) a manufactured object, or 2) plant or animal matter, or 3) natural geologic material. However, the following materials are not debris: 1) any material for which a specific treatment standard is provided in 40 CFR part 268, Subpart D; 2) process residuals such as smelter slag and residues from the treatment of waste, waste water, sludges, or air emission residues; and 3) intact containers of hazardous waste that are not ruptured and that retain at least 75% of their original volume. A mixture of debris that has not been treated to the standards provided by §268.45 and other material is subject to regulation as debris if the mixture is comprised primarily of debris, by volume, based on visual inspection.

Elemental Cadmium (as a waste matrix) - Waste that contains at least 50% by volume bulk elemental cadmium. Examples of waste in this category are cadmium bricks, sheets, and pipes.

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, sheets, counterweights, and other shielding materials.

Elemental Mercury (as a waste matrix) - Waste that is bulk, pourable liquid mercury. Manometers, or other equipment that contain small residual amounts of mercury should be assigned to the appropriate debris category.

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 previous conditions.

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

Hazardous Substance - (1) Any substance designated pursuant to §311(h)(2)(A) of the Federal Water Pollution Control Act (FWPCA); (b) any element, compound, mixture, solution, or substance designated pursuant to §102 of Comprehensive Environmental Response Compensation and Liability Act (CERCLA); (c) any hazardous waste having the characteristics identified under or listed pursuant to §3001 of the Solid Waste Disposal Act (SWDA); (d) any toxic pollutant listed under §307(a) of the FWPCA; (e) any hazardous air pollutant listed under §112 of the Clean Air Act (CAA); and (f) any imminently hazardous chemical substance or mixture with respect to which the Administrator of EPA has taken action pursuant to §7 of Toxic Substances Control Act (TSCA). (2) Any material that poses a threat to human health and/or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive.

Any substance designated by EPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or if otherwise emitted into the environment.

(3) §101(14) of CERCLA, as amended, defines "hazardous substance" chiefly by reference to other environmental statutes, such as the SWDA, FWPCA, CAA, and TSCA. The term excludes petroleum, crude oil or any fraction thereof, natural gas, natural gas liquids, or

synthetic gas usable for fuel. Under the Act, the Office of Emergency and Remedial Response (OERR) also may include other substances that it specifically designates as "hazardous".

Hazardous Waste (HW) - Those wastes that are designated hazardous by EPA regulations (40 CFR 261.3) or authorized state regulations. An abbreviated definition is as follows: (1) Byproducts of production or operation that can pose a potential hazard to human health or the environment when improperly managed and that possess at least one of four characteristics (ignitability, corrosivity, reactivity, toxicity), or that appear on special EPA lists. (2) A solid waste or combination of solid wastes, that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may (a) cause, or significantly contribute to, an increase in mortality or an increase in serious, irreversible, or incapacitating reversible illnesses; or (b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. (3) Those wastes listed by EPA or meeting characteristics specified by EPA in their criteria pursuant to the RCRA. Note: Source, special nuclear material, and byproduct material, as defined by the Atomic Energy Act (AEA) of 1954 as amended, are specifically excluded from the term hazardous waste.

Heterogeneous Debris (as a waste matrix) - Wastes meeting the definition of debris per the LDR debris rulemaking (57 FR 37194, 8/18/92). 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 or soil, provided debris comprises no more than 50% of the waste.

High-Level Waste (HLW) - (1) As defined by the Nuclear Waste Policy Act (NWPA), high-level waste is (a) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including the liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and (b) other highly radioactive material that the Nuclear Regulatory Commission (NRC), consistent with existing law, determines by rule to require permanent isolation. (2) (a) Irradiated reactor fuel, (b) liquid wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuel, and (c) solids into which such liquid wastes have been converted.

Inorganic Debris (as a waste matrix) - Wastes with matrices meeting the definition of debris per the LDR debris rulemaking (57 FR 37194, 8/18/92). More specifically this category is defined for wastes that contain > 90% inorganic debris. Examples of inorganic debris materials are: metal shapes (e.g., equipment, scrap, etc.), metal turnings, glass (e.g., light tubes, leaded glass, etc.), ceramic materials, concrete, 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. Waste in this category may also contain some debris materials provided the amount of debris is less than 50% (based on 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. Examples of waste materials in this category are: sludges, ashes, sand blasting media, absorbed aqueous or organic liquids (or inorganic particulate absorbents), ion exchange resins, and paint chips/residues.

Lab Packs with Metals and Lab Packs without Metals (as waste matrices) - Waste 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 includes scintillation fluids that are packaged with vials. The difference between wastes within these categories is contaminants. Lab packed wastes contaminated with Toxicity Characteristic (TC) metals are categorized as "Lab packs with Metals". Lab packed wastes that are not contaminated with TC metals are categorized as "Lab Packs without Metals".

Low-Level Radioactive Waste (LLW) - (1) Waste that contains radioactivity and is not classified as high-level waste, TRU waste, spent nuclear fuel, byproduct material 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 low-level waste, provided the concentration of TRU is less than 100 nCi/g.

Metal Debris (as a waste matrix) - Debris that is approximately 95% by volume, or more, metal.

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

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

Mixed TRU (MTRU) Waste - TRU waste that also includes hazardous waste 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 the RCRA. The term "radioactive component" refers only to the actual radionuclides dispersed or suspended in the waste substance.

Neutral Wastewaters (as a waste matrix) - Aqueous liquids that contain less than 1% Total Suspended Solids (TSS) and less than 1% Total Organic Carbon (TOC) with $2.0 < \text{pH} < 12.5$.

NNPP (Program) - Joint DOE/Navy program responsible for all aspects of naval nuclear propulsion.

Organic Debris (as a waste matrix) - Wastes with matrices meeting the definition of debris per the LDR debris rulemaking (57 FR 37194, 8/18/92). More specifically this category is defined for wastes that contain > 90% organic debris. Examples of organic debris materials are: rags (including "solvent rags"), plastic/rubber, paper, wood, glovebox gloves (including lead-lined), and animal carcasses.

Organic Destruction - Destruction of organic liquids and solids by a broad spectrum of thermal and non-thermal organic destruction technologies including incineration; other thermal technologies such as vitrification, plasma hearth, molten metal, etc., and non-thermal technologies such as chemical oxidation, electron beam, silent discharge plasma.

Organic Liquids (as waste matrix) - Liquids/slurries with a total organic carbon (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/stored in bulk form (i.e., tank stored, drummed bulk free liquids) are included in this category. Liquids packaged in lab pack type configurations 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 sludge or particulate materials. Waste in this category may also contain some debris materials provided the amount of debris is less than 50% (based on LDR debris rule). As opposed to Inorganic Sludges/Particulates, wastes in this category would not leave a large residue when thermally treated. Examples of waste materials in this category are: organic sludge (e.g., sewage sludges), activated carbon, organic resins, and absorbed liquids (organic particulate absorbents).

Radioactive Waste - (1) Solid, liquid, or gaseous material that contains radionuclides regulated under the AEA of 1954, as amended, and 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.

Reactive Metals (as a waste matrix) - Waste meeting the criteria for classification as water reactive or ignitable reactive per the Third Third LDR rule (55 FR 22545 and 22553). Typically, these wastes are sodium metal or sodium metal alloys, but can also include particulate fines of aluminum, uranium, zirconium, or other pyrophoric materials. The waste may also be mixed with stabilizing agents.

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

Soils (as a waste matrix) - Waste estimated to be 50% by volume soil, including contamination from spills, etc.

Soil/Debris (as a waste matrix) - Waste estimated to be at least 50% by volume soil, and 5% by volume other debris, not including rock. This category includes soil and rock from spills etc., with the balance of the matrix being debris.

Technology Based Standard - A technology based standard is specified for wastes that may be land disposed after treatment using the specified technology or an equivalent treatment method approved by the Administrator of EPA.

Transuranic Waste (TRU) - Waste containing alpha-emitting radionuclides with an atomic number greater than 92 and half-lives greater than 20 years, at concentrations greater than 100 nCi/g of waste. Modifications include the following: (1) For purposes of management, DOE Order 5820.2A (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 that 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 Administrator [of EPA] do not need the degree of isolation required by this part; or (c) wastes that the 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, physical/chemical matrices, and hazardous components, 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.

Uncategorized pure organic liquids (as a waste matrix) - Waste that is essentially purely organic but whose Halogenated Organic Compound (HOC) is unknown (e.g. whether the HOC is less than, equal to, or greater than 1000 ppm).

Waste Acceptance Criteria (WAC) - Parameters used by DOE which lists the technical and regulatory criteria for acceptance of waste at treatment sites. The technical criteria are derived from the design and purpose of the specific treatment system. The WAC consolidates all applicable state and Federal regulations.

**PROPOSED SITE TREATMENT PLAN FOR
KNOLLS ATOMIC POWER LABORATORY**

Compliance Plan Volume

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**Proposed Site Treatment Plan For
Knolls Atomic Power Laboratory**

Compliance Plan Volume

1.0 Purpose and Scope

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) (FFCA)]. The mixed waste must be treated or otherwise managed in accordance with the land disposal restriction standards under Section 3004 of RCRA. Upon submission of the plan to the appropriate regulatory agency, the FFCA requires the recipient agency to solicit and consider public comments, and approve, approve with modification, or disapprove the plan within six months. The agency is to consult with 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 requiring compliance with the approved plan.

1.2 This Site Treatment Plan (STP) for mixed waste at Knolls Atomic Power Laboratory (KAPL) identifies how KAPL-Knolls proposes to obtain treatment of its mixed waste.

1.3 The purposes of this STP include:

1.3.1 Fulfilling the requirements of the FFCA;

1.3.2 Establishing an enforceable framework in conjunction with the Order in which KAPL-Knolls will meet RCRA land disposal restrictions (LDR) for all covered LDR mixed wastes currently in storage and to be generated or received in the future; and

1.3.3 Allowing for storage of current and projected covered LDR mixed wastes at KAPL-Knolls during implementation of this STP and the Order.

1.4 The Compliance Plan Volume, in conjunction with the Background Volume, comprises the STP. The Compliance Plan Volume provides overall schedules with milestones for achieving compliance with LDR and other provisions for implementing the approved STP that would be enforced under the Order. Additional discussion contained in the Background Volume is provided for informational purposes only.

1.5 This STP, once approved and an Order issued, fulfills the requirements contained in the Federal Facility Compliance Act of 1992, RCRA Section 3021, and therefore, pursuant to §105(a) of the FFCA (RCRA §3021(b)(5)), this STP and Order shall stand in lieu of any other interpretations of KAPL-Knolls 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 mechanisms and procedures which will be used in conjunction with the Order 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 order of the STP address LDR requirements pertaining to treatment of covered wastes, whether such wastes were generated or accumulated in the past, present or future. Covered wastes are all mixed waste at KAPL-Knolls identified in the STP or added to the STP in accordance with section 2.4, except those mixed wastes which 1) meet LDR requirements, regardless of the time of generation, or which 2) are being stored, or will be stored when generated, solely for the purposes of accumulating sufficient quantities of mixed waste as are necessary to facilitate proper recovery, treatment, or disposal.

2.2 Approach to Establishing Milestones

2.2.1 The Compliance Plan Volume of the STP establishes overall schedules for achieving compliance with LDR requirements for mixed wastes at KAPL-Knolls.

2.2.2 Waste Streams to be Shipped Off Site for Treatment

2.2.2.1 For each waste stream that will be shipped off site for treatment, a single schedule milestone (for shipment of the waste to the targeted treatment facility) is identified in section 3.0 of the Compliance Plan Volume. In cases where the targeted treatment facility is currently operating and capable of accepting off-site waste, a specific date is provided for the shipment milestone. In cases where the targeted treatment facility is not yet operating or capable of accepting off-site waste, the shipment milestone is tied to some specific milestone at the receiving site (e.g., within X months of the start of facility operations, receipt of a permit, or the start of acceptance of off-site waste).

2.2.2.2 All KAPL-Knolls actions required to support shipment of each waste stream to the treatment facility, including characterization, preparation of waste certifications, and packaging for shipment, will be completed to support the identified shipping milestones. However, no additional milestones are provided for these actions since they are not considered necessary and specific receiving facility characterization, certification, and packaging requirements are not currently available. In addition, no milestones for pre/post-treatment storage activities, discussed in sections 3.0 and 7.0 of the Background Volume, are provided since these activities are not directly related to achieving compliance with LDR treatment requirements.

2.2.2.3 Other schedule information, including information associated with development of the targeted treatment facilities at the receiving sites, is provided in section 3.0 of the Background Volume. Such information is provided solely for informational purposes. KAPL-Knolls will track the development of each targeted treatment facility, and

will provide updated schedule information for those facilities to New York State Department of Environmental Conservation as part of Annual STP Updates per section 2.3. In the event that the schedule associated with development of a targeted treatment facility is extended beyond the time frames identified in section 3.0 of the Compliance Plan Volume, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of affected waste streams sooner than can be accomplished via the targeted facility. KAPL-Knolls will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of affected waste streams should be revised in accordance with Section 2.5, Revisions.

2.2.2.4 For any mixed waste generated subsequent to the initial shipment of a given waste stream and for the initial generation of a mixed waste stream after the initial shipping milestone is reached, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

2.2.3 Waste Streams to Be Treated On Site: For waste streams that will be treated on site (i.e., using RCRA "simple treatment") no schedule milestones are identified since such treatment will be completed within 90 days of accumulating a sufficient quantity of waste to facilitate proper treatment, thus achieving compliance with LDR treatment requirements.

2.3 Annual Site Treatment Plan Updates

2.3.1 This section provides a mechanism to: (1) communicate and exchange information that affects 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) 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 Order executed, KAPL-Knolls shall provide an Annual Update to the STP to New York State Department of Environmental Conservation for review and comment. The Annual Update shall provide New York State Department of Environmental Conservation with information to track progress on milestones. The Annual Update shall allow input from the public, affected states and EPA to be obtained when necessary for proposed Revisions to the STP. Each Annual Update to the STP will bring the STP current to the end of the previous fiscal year (September 30). The Annual Update will minimize the paperwork necessary to document changes. If there are no changes to the information, milestones, or target dates in the STP, a letter to that effect would be sent to New York State Department of Environmental Conservation in lieu of an Annual Update.

2.3.3 The Annual Update of the STP will 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 KAPL-Knolls 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.

(c) Updated schedule information for targeted off-site treatment facilities. If applicable, KAPL-Knolls will also describe current or anticipated alternative treatment options and/or technologies which are being evaluated for use in lieu of treatment options or technologies identified in the STP. This description will include potential alternate commercial treatment, and off-site DOE treatment capacity or technology development.

(d) The status of any pending or planned extension, treatability variance or no migration petition.

(e) Information which 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.

(f) Notification of the deletion of waste streams in accordance with section 2.6.1.

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 other changes to the overall schedules.

The Annual Update would clearly identify proposed changes requiring approval under section 2.5, Revisions.

2.4 Inclusion of New Waste Streams

2.4.1 This section establishes a method for including new mixed waste streams at KAPL-Knolls in the STP, including mixed wastes which are newly discovered, identified, generated, or received from off-site, and mixed wastes which are generated through environmental restoration and decontamination and decommissioning activities to the extent such wastes are intended to become a covered waste.

2.4.2 KAPL-Knolls shall notify New York State Department of Environmental Conservation of additional or new mixed wastes or waste streams which have been generated or stored, within 30 days of generation, identification, or storage, and may notify New York State Department of Environmental Conservation of mixed wastes anticipated to be generated or stored at KAPL-Knolls, which 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 1) upon receipt of such notification or 2) when generated or stored at KAPL-Knolls, whichever is later. To the extent practicable, KAPL-Knolls shall provide a description of the waste code, waste form, volumes, technology and capacity needs, and similar pertinent information in the notification.

2.4.3 Additional detail on new mixed waste streams and proposed plans and schedules for treatment consistent with section 2.2, Approach to Establishing Milestones, will be provided in the next regularly scheduled Annual Update, or a date for submittal of such proposed plans and schedules will be provided if additional time is required for its preparation. The information provided pursuant to this subsection will be submitted to New York State Department of Environmental Conservation for approval in accordance with section 2.5, Revisions.

2.4.4 If KAPL-Knolls cannot provide such information or schedules as required by subsection 2.4.3 because of inadequate characterization or it is otherwise impracticable, KAPL-Knolls shall include appropriate justification, supporting information, and proposed plans for developing such information and schedules consistent with section 2.2, Approach to Establishing Milestones.

2.5 Revisions

2.5.1 A Revision is a change to the Compliance Plan Volume of the STP which requires, New York State Department of Environmental Conservation approval. Some revisions (e.g., the addition of a treatment facility at KAPL-Knolls or technology development not previously included in the Compliance Plan Volume to the STP, or an extension to a milestone for a period greater than one year) may also require 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. Other revisions (e.g., changes in waste volume, the addition or deletion of wastes or waste types and extensions/changes to milestones for a period less than a year) may not require public participation and/or consultation with other states/EPA.

2.5.2 Revisions to the STP shall be made as follows:

2.5.2.1 KAPL-Knolls shall identify to New York State Department of Environmental Conservation the need to revise the Compliance Plan Volume of the STP and shall provide supporting information on the basis for the Revision. For each proposed revision to the Compliance Plan Volume submitted by KAPL-Knolls, New York State Department of Environmental Conservation shall determine whether public participation and/or consultation with other states/EPA is required. If it is determined that public participation and/or consultation with other states/EPA is not required, New York State

Department of Environmental Conservation may approve the revision, return it to KAPL-Knolls so that changes can be made for resubmittal, or disapprove it. If it is determined that public participation and/or consultation with other states/EPA is required, New York State Department of Environmental Conservation may conditionally approve the Revision, return it to KAPL-Knolls with comments so that changes can be made for resubmittal, or disapprove it. Conditional approval of a Revision is a determination by New York State Department of Environmental Conservation that the Revision is acceptable subject to the results of public comment and consultation with affected states and EPA.

2.5.2.2 Subsequent to conditional approval of a proposed Revision, New York State Department of Environmental Conservation 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 the modification by New York State Department of Environmental Conservation within six months after New York State Department of Environmental Conservation's receipt of the proposed Revision.

2.5.3 To the extent practicable, proposed revisions to the STP will be submitted in conjunction with the Annual Update to the STP, per section 2.3.

2.6 Deletion of Wastes and Termination of the STP

2.6.1 Deletion of Wastes - The requirements of this Compliance Plan Volume shall terminate with regard to any covered waste upon KAPL-Knolls' notice to New York State Department of Environmental Conservation 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 off-site for treatment, disposal or storage;
- (c) Changes to statute or regulation or determinations of the regulatory authority which cause 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 KAPL-Knolls and New York State Department of Environmental Conservation.

2.6.2 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 KAPL-Knolls which does not meet LDR requirements or, (2) the mixed waste being stored or generated at KAPL-Knolls 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.

2.6.3 KAPL-Knolls will notify New York State Department of Environmental Conservation of such termination independently and/or in the Annual Updates to the STP. New York State Department of Environmental Conservation will provide KAPL-Knolls with a written response to the notification.

2.7 Funding

2.7.1 It is KAPL-Knolls' expectation that all obligations and commitments established in the STP will be funded. If appropriated funds are not available to fulfill KAPL-Knolls' obligations under the STP or Order, KAPL-Knolls will meet promptly with New York State Department of Environmental Conservation to discuss whether accommodation or adjustments to deadlines that require the payment or obligation of such funds can be reached. No provision of the STP or Order shall be interpreted as or constitute a commitment or a requirement that the Navy and/or DOE, or any officer or employee thereof, obligate or pay funds in contravention of the Anti-Deficiency Act, 31 U.S.C. 1342.

2.8 Covenants and Reservations

2.8.1 This STP and the associated Implementing Order shall stand in lieu of any administrative, legal and equitable remedies which are available to the New York State Department of Environmental Conservation against DOE, the Navy, and KAPL-Knolls, its contractors and subcontractors at any tier and all persons bound by this STP and Implementing Order with respect to the matters covered by this STP and Implementing Order, so long as KAPL-Knolls and all parties bound by this STP and Implementing Order are in compliance with the STP and Implementing Order as determined by New York State Department of Environmental Conservation or a court of competent jurisdiction.

2.8.2 Except as specifically set forth herein, DOE, the Navy, and KAPL-Knolls reserve and do not waive any rights, authority, claims or defenses, including sovereign immunity, that they may have or wish to pursue in any administrative, judicial or other proceeding with respect to any person; nor do DOE, the Navy, and KAPL-Knolls waive any claim of jurisdiction over matters which may be reserved to DOE, the Navy, or KAPL-Knolls by law, including the Atomic Energy Act. Nothing in this STP and Implementing Order shall constitute an admission on the part of DOE, the Navy, or KAPL-Knolls, in whole or in part, in any proceeding except in a proceeding to enforce the order implementing this STP. DOE, the Navy, and KAPL-Knolls specifically reserve all rights they may have by law to seek and obtain administrative or judicial review or appeal according to law of any determination made by New York State Department of Environmental Conservation during KAPL-Knolls' performance of its obligations under this STP and Implementing Order. DOE, the Navy, and

KAPL-Knolls also specifically reserve all rights they may have by law to seek and obtain administrative or judicial review or appeal of permit requirements.

3.0 Low Level Mixed Waste Treatment Plans and Schedules

3.1 Mixed Waste Streams for which Technology Exists

The following mixed waste streams can be treated to meet LDR treatment requirements using proven technologies are projected to be generated at KAPL-Knolls. For each waste stream, a description of the waste and the preferred treatment option are provided below.

3.1.1 MWIR ID#: KA-W001

SITE ID#: KA 000000003

Waste Stream Name: Miscellaneous Laboratory Chemicals
without Metals

Current Inventory: 0.00 cubic meters

Projected Inventory: 2.00 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Idaho Waste Processing Facility (IWPF) Incinerator.

Schedule Milestone: This mixed waste stream will be shipped to INEL within 18 months of the start of IWPF Incinerator operations. As noted in section 3.1.2.2 of the Background Volume, a projected date for start of operation of this facility was not available for inclusion in the KAPL-Knolls' PSTP, but will be provided as part of the first annual STP update (per section 2.3, Annual Site Treatment Plan Updates). If the schedule information provided in the first annual STP update is not satisfactory to New York State Department of Environmental Conservation, or the projected start of operation for this facility is subsequently extended more than 12 months beyond that identified in the first annual STP update, or for any reason, INEL cannot accept this waste stream for treatment by March 2005, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the IWPF Incinerator and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation

of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.2 MWIR ID#: KA-W002
SITE ID#: KA 0000000004
Waste Stream Name: Cutting Oils and Liquids
Current Inventory: 0.00 cubic meters
Projected Inventory: 0.10 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incinerator Facility (CIF) Liquid Feed System.

Schedule Milestone: This mixed waste stream will be shipped to Savannah River within 24 months of the start of the Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.4.2 of the Background Volume, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.3 MWIR ID#: KA-W003
SITE ID#: KA 0000000005
Waste Stream Name: Trichloroethylene
Current Inventory: 0.20 cubic meters
Projected Inventory: 0.10 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incinerator Facility (CIF) Solid Feed System.

Schedule Milestone: This mixed waste stream will be shipped to Savannah River within 24 months of the start of the Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.5.2 of the Background Volume, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.4 MWIR ID#: KA-W005

SITE ID#: KA 000000007

Waste Stream Name: Asbestos Contaminated with Mercury

Current Inventory: 0.20 cubic meters

Projected Inventory: 0.00 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Hanford Site Waste Receiving and Processing Facility (WRAP) Module IIA.

Schedule Milestone: This mixed waste stream will be shipped to Hanford Site within 18 months of the start of WRAP IIA Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.6.2 of the Background Volume, or for any reason, Hanford Site cannot accept this waste stream for treatment by March 2002, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WRAP IIA Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of

this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.5 MWIR ID#: KA-W006
SITE ID#: KA 0000000008
Waste Stream Name: Freon 113 on Rags
Current Inventory: 0.40 cubic meters
Projected Inventory: 0.00 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incinerator Facility (CIF) Solid Feed System.

Schedule Milestone: This mixed waste stream will be shipped to Savannah River within 24 months of the start of the Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.7.2 of the Background Volume, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.6 MWIR ID#: KA-W007
SITE ID#: KA 0000000009
Waste Stream Name: Oils
Current Inventory: 0.23 cubic meters
Projected Inventory: 2.00 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incinerator Facility (CIF) Liquid Feed System.

Schedule Milestone: This mixed waste stream will be shipped to Savannah River within 24 months of the start of the Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.9.2 of the Background Volume, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.7 MWIR ID#: KA-W008

SITE ID#: KA 0000000011

Waste Stream Name: Miscellaneous Laboratory Chemicals

Current Inventory: 0.00 cubic meters

Projected Inventory: 0.60 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Hanford Site Waste Receiving and Processing Facility (WRAP) Module IIA.

Schedule Milestone: This mixed waste stream will be shipped to Hanford Site within 18 months of the start of WRAP IIA Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.11.2 of the Background Volume, or for any reason, Hanford Site cannot accept this waste stream for treatment by March 2002, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WRAP IIA Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.8 MWIR ID#: KA-W009
SITE ID#: KA 0000000012
Waste Stream Name: Organic Debris
Current Inventory: 0.05 cubic meters
Projected Inventory: 2.00 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incinerator Facility (CIF) Solid Feed System.

Schedule Milestone: This mixed waste stream will be shipped to Savannah River within 24 months of the start of the Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.13.2 of the Background Volume, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.9 MWIR ID#: KA-W010
SITE ID#: KA 0000000014
Waste Stream Name: Inorganic Debris and Equipment
Current Inventory: 0.021 cubic meter
Projected Inventory: 0.90 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Hanford Site Waste Receiving and Processing Facility (WRAP) Module IIA.

Schedule Milestone: This mixed waste stream will be shipped to Hanford Site within 18 months of the start of WRAP IIA Facility operations. If, however, the projected start of operation for this facility

is extended more than 12 months beyond that identified in section 3.1.15.2 of the Background Volume, or for any reason, Hanford Site cannot accept this waste stream for treatment by March 2002, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WRAP IIA Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.10 MWIR ID#: KA-W011

SITE ID#: KA 0000000015

Waste Stream Name: Elemental Lead (Lead in Bricks, Sheets or Wool)

Current Inventory: 0.35 cubic meters

Projected Inventory: 1.20 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Hanford Site Waste Receiving and Processing Facility (WRAP) Module IIA.

Schedule Milestone: This mixed waste stream will be shipped to Hanford Site within 18 months of the start of WRAP IIA Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.17.2 of the Background Volume, or for any reason, Hanford Site cannot accept this waste stream for treatment by March 2002, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WRAP IIA Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.11 MWIR ID#: KA-W012

SITE ID#: KA 0000000018

Waste Stream Name: Inorganic Sludges and Particulates

Current Inventory: 0.00 cubic meters

Projected Inventory: 0.60 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Hanford Site Waste Receiving and Processing Facility (WRAP) Module IIA.

Schedule Milestone: This mixed waste stream will be shipped to Hanford Site within 18 months of the start of WRAP IIA Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.19.2 of the Background Volume, or for any reason, Hanford Site cannot accept this waste stream for treatment by March 2002, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WRAP IIA Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.12 MWIR ID#: KA-W013

SITE ID#: KA 000000036

Waste Stream Name: Organic Debris without Metals

Current Inventory: 0.00 cubic meters

Projected Inventory: 0.40 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incinerator Facility (CIF) Solid Feed System.

Schedule Milestone: This mixed waste stream will be shipped to Savannah River within 24 months of the start of the Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.21.2 of the Background Volume, or for any reason, Savannah River cannot accept this waste stream for treatment by

February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.13 MWIR ID#: KA-W014
SITE ID#: KA 0000000043
Waste Stream Name: Organic Sludges and Particulates
Current Inventory: 0.00 cubic meters
Projected Inventory: 0.40 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Savannah River Consolidated Incinerator Facility (CIF) Solid Feed System.

Schedule Milestone: This mixed waste stream will be shipped to Savannah River within 24 months of the start of the Consolidated Incineration Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.23.2 of the Background Volume, or for any reason, Savannah River cannot accept this waste stream for treatment by February 1999, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the Consolidated Incineration Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.14 MWIR ID#: KA-W015
SITE ID#: KA 0000000047

Waste Stream Name: Soils
Current Inventory: 0.00 cubic meters
Projected Inventory: 16.80 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Idaho Waste Processing Facility (IWPF) Incinerator.

Schedule Milestone: This mixed waste stream will be shipped to INEL within 18 months of the start of IWPF Incinerator operations. As noted in section 3.1.25.2 of the Background Volume, a projected date for start of operation of this facility was not available for inclusion in the KAPL-Knolls' PSTP, but will be provided as part of the first annual STP update (per section 2.3, Annual Site Treatment Plan Updates). If the schedule information provided in the first annual STP update is not satisfactory to New York State Department of Environmental Conservation, or the projected start of operation for this facility is subsequently extended more than 12 months beyond that identified in the first annual STP update, or for any reason, INEL cannot accept this waste stream for treatment by March 2005, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the IWPF Incinerator and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.15 MWIR ID#: KA-W018

SITE ID#: KA 0000000061

Waste Stream Name: Mercury Contaminated Organics

Current Inventory: 0.00 cubic meters

Projected Inventory: 1.00 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Waste Engineering Development Facility (WEDF) Mercury Retort Unit.

Schedule Milestone: This mixed waste stream will be shipped to INEL within 18 months of the start of WEDF Mercury Retort Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.28.2 of the Background Volume, or for any reason, INEL cannot accept this waste stream for treatment by October 2001, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WEDF Mercury Retort Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.16 MWIR ID#: KA-W019

SITE ID#: KA 0000000063

Waste Stream Name: Mercury Contaminated Inorganics

Current Inventory: 0.10 cubic meters

Projected Inventory: 0.30 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Waste Engineering Development Facility (WEDF) Mercury Retort Unit.

Schedule Milestone: This mixed waste stream will be shipped to INEL within 18 months of the start of WEDF Mercury Retort Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.30.2 of the Background Volume, or for any reason, INEL cannot accept this waste stream for treatment by October 2001, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WEDF Mercury Retort Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.17 MWIR ID#: KA-W020
SITE ID#: KA 0000000065
Waste Stream Name: Elemental Mercury
Current Inventory: 0.02 cubic meters
Projected Inventory: 0.08 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Waste Engineering Development Facility (WEDF) Mercury Retort Unit.

Schedule Milestone: This mixed waste stream will be shipped to INEL within 18 months of the start of WEDF Mercury Retort Facility operations. If, however, the projected start of operation for this facility is extended more than 12 months beyond that identified in section 3.1.32.2 of the Background Volume, or for any reason, INEL cannot accept this waste stream for treatment by October 2001, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the WEDF Mercury Retort Facility and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment, shipment of this waste will commence upon accumulation of sufficient quantities to facilitate treatment.

3.1.18 MWIR ID#: KA-W021
SITE ID#: KA 0000000067
Waste Stream Name: PCB Contaminated Waste
Current Inventory: 0.00 cubic meters
Projected Inventory: 0.15 cubic meters

Preferred Option: The KAPL-Knolls preferred option for treatment of this waste stream is off-site treatment at Idaho National Engineering Laboratory (INEL) Idaho Waste Processing Facility (IWPF) Incinerator.

Schedule Milestone: This mixed waste stream will be shipped to INEL within 18 months of the start of IWPF Incinerator operations. As noted

in section 3.1.34.2 of the Background Volume, a projected date for start of operation of this facility was not available for inclusion in the KAPL-Knolls' PSTP, but will be provided as part of the first annual STP update (per section 2.3, Annual Site Treatment Plan Updates). If the schedule information provided in the first annual STP update is not satisfactory to New York State Department of Environmental Conservation, or the projected start of operation for this facility is subsequently extended more than 12 months beyond that identified in the first annual STP update, or for any reason, INEL cannot accept this waste stream for treatment by March 2005, KAPL-Knolls will perform an evaluation to determine whether any other reasonable DOE or commercial treatment facility options are available to complete treatment of this waste stream sooner than it can be treated at the IWPF Incinerator and will obtain New York State Department of Environmental Conservation agreement on whether the preferred option for treatment of this waste stream should be revised. For any mixed waste generated subsequent to the initial shipment or if initial generation of this waste stream occurs after the initial shipping milestone is reached, shipment of this waste stream will commence upon accumulation of sufficient quantities to facilitate treatment.

3.2 Mixed Waste Streams for which Technology Exists but Needs Adaptation or for which No Technology Exists

N/A

3.3 Mixed Waste Streams Requiring Further Characterization or for which Technology Assessment Has Not Been Done

N/A

4.0 TRU Mixed Waste Streams

4.1.1 MWIR ID#: KA-W016
SITE ID#: KA 0000000045
Waste Stream Name: Transuranic Debris
Current Inventory: 0.00 cubic meters
Projected Inventory: 0.18 cubic meters

Preferred Option: Not applicable. No treatment expected to be required. This defense TRU waste stream is expected to be disposed of at WIPP.

Schedule Milestone: As discussed in greater detail in section 4 of the Background Volume of this STP, DOE plans to achieve compliance with the requirements of the FFCAct for MTRU destined for WIPP by using the no-migration variance petition approach described in 40 CFR Section 268.6. Under this strategy, DOE intends to continue interim storage of such MTRU, continue preparation of such wastes for shipment to WIPP, and then to ship and dispose of such wastes at WIPP. Within twelve (12) months of the Department of Energy Secretary's decision to operate WIPP as a disposal facility, KAPL-Knolls will submit a supplemental plan outlining schedules and additional activities required to prepare the MTRU waste for shipment to WIPP if not already included in this plan or in the event that significant changes transpired as a result of the final permit or the final no-migration determination. In addition, at that time KAPL-Knolls will provide a timetable for submitting a shipment schedule to WIPP for its MTRU waste. KAPL-Knolls will coordinate with the Carlsbad area office in developing the shipment schedule to ensure proper throughput and receipt of waste at WIPP.

KAPL-Knolls will begin discussions with New York State Department of Environmental Conservation regarding alternative treatment options for MTRU waste in January 1998 if the Department of Energy Secretary does not decide to operate WIPP as a disposal facility by that time, or at such earlier time as DOE determines that (1) there will be a delay in the opening of WIPP substantially beyond 1998, or (2) the no-migration variance petition is not granted by the EPA. If necessary, DOE shall propose modifications to the STP for approval by New York State Department of Environmental Conservation by January 1999 to describe planned activities and schedules for a new MTRU strategy.

DOE shall include information regarding progress of MTRU waste management in the update to the STP required by section 2.3. This will include, as applicable and appropriate, the status of the no-migration petition, and information related to characterization, packaging, and/or treatment capabilities or plans for MTRU waste related to WIPP waste acceptance criteria and disposal.

5.0 High Level Mixed Waste Streams

N/A