

0040811

**BATTELLE
COLUMBUS
LABORATORIES
DECOMMISSIONING
PROJECT**



FEDERAL FACILITIES COMPLIANCE ACT

**PROPOSED
SITE TREATMENT PLAN**

MARCH 1995

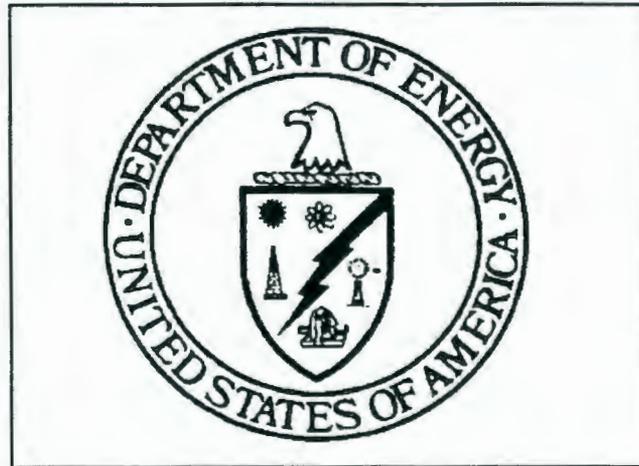


Battelle

... Putting Technology To Work



March 1995



**U.S. DEPARTMENT OF ENERGY
BATTELLE COLUMBUS LABORATORIES
DECOMMISSIONING PROJECT**

PROPOSED SITE TREATMENT PLAN

COMPLIANCE PLAN VOLUME

March 1995

BATTELLE COLUMBUS LABORATORIES

CONTENTS

	<u>Page</u>
1.0 PURPOSE AND SCOPE	1
2.0 IMPLEMENTATION OF THE SITE TREATMENT PLAN	2
2.1 Covered Matters	2
2.2 Compliance Schedules	2
2.3 Annual Site Treatment Plan Updates	5
2.4 Inclusion of New Wastestreams	7
2.5 Revisions	8
2.6 Extensions and Modifications	9
2.7 Deletion of Wastes and Termination of the STP	11
2.8 Procedures for Review and Approval	12
2.9 Funding	14
2.10 Disputes	15
2.11 Covenants and Reservations	16
3.0 LOW-LEVEL MIXED WASTE STREAMS	16
3.1 Mixed Waste Streams for Which Technology Exists	16
3.1.1 Lab Packs (Inorganic) BC-W001	17
3.1.2 Lab Packs (Organic) BC-W002	17
3.1.3 Elemental Lead BC-W003	17
3.1.4 Mercury Contaminated Particulate/Debris from Ductile Iron Drain Lines BC-W004	18
4.0 TRU MIXED WASTE STREAMS	18
4.1 Description of Waste Streams	18
4.2 Strategy for Managing TRU Waste	18
Addendum: Milestone Approach and Environmental Management Budget Formulation Process	20

ACRONYMS

As Low As Reasonably Achievable	ALARA
Battelle Columbus Operations	BCO
Battelle Columbus Laboratories Decommissioning Project	BCLDP
Battelle Memorial Institute	BMI
Decontamination and Decommissioning	D&D
Draft Site Treatment Plan	DSTP
Environmental Restoration	ER
Environmental Management	EM
Environmental Management Advisory Board	EMAB
Environmental Assessment	EA
Federal Facility Compliance Act	FFCA
Land Disposal Restriction	LDR
Low Level Waste	LLW
Mixed Waste Inventory Report	MWIR
National Environmental Policy Act	NEPA
National Governor's Association	NGA
Oak Ridge	OR
Ohio Environmental Protection Agency	OEPA
Programmatic Environmental Impact Statement	PEIS
Proposed Site Treatment Plan	PSTP
Resource Conservation and Recovery Act	RCRA
Richland	RL
Savannah River	SR
Scientific Ecology Group	SEG
Site Treatment Plan	STP
Solid Waste Operations Complex	SWOC
Transuranic	TRU
Treatment Storage and Disposal Facility	TSDF
U.S. Department of Energy	DOE
U.S. Environmental Protection Agency	EPA
Waste Isolation Pilot Project	WIPP
Westinghouse Hanford Company	WHC

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 6721, as amended by Section 105(a) of the Federal Facility Compliance Act [(P.L. 102-386) (FFCA)]. 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 the U.S. Environmental Protection Agency (EPA) and any State in which a facility affected by the plan is located. Upon approval of a plan, the regulatory agency must issue an Order requiring compliance with the approved plan.
- 1.2 The DOE Chicago Operations Office, hereinafter referred to as DOE-CH, has prepared this Site Treatment Plan (STP) for mixed waste at the Battelle Columbus Laboratories Decommissioning Project (BCLDP) which identifies how DOE-CH proposes to obtain treatment of the site's mixed waste or develop technologies where technologies do not exist or need modification. For some wastestreams, a plan and schedules for characterizing wastes, undertaking technology assessments, and for providing the required plans and schedules for developing capacities and technologies, as appropriate, are provided.
- 1.3 The purposes of this STP include:
- 1.3.1 Fulfilling the requirements of the FFCA;
 - 1.3.2 Establishing an enforceable framework in conjunction with the Order in which DOE-CH will develop and treat or otherwise 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 the BCLDP 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 and target dates for achieving compliance with LDR, a general framework for the establishment and review of milestones and target dates and the conversion of target dates into milestones, and other provisions for implementing the approved STP that 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 DOE-CH's requirement to develop and submit a plan for the development of treatment capacities and technologies pursuant to RCRA Section 3021.

2.0 IMPLEMENTATION OF THE SITE TREATMENT PLAN

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

2.1 Covered Matters

The Compliance Plan Volume and implementing order of the STP addresses LDR requirements pertaining to storage and treatment of covered wastes, whether such wastes were generated or accumulated in the past, present or future. Covered wastes are all mixed waste at the BCLDP identified in the STP or added to the STP in accordance with Section 2.4, except those mixed waste 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 Compliance Schedules

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

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

-
- 2.2.1.2** The assumptions upon which individual schedules are dependent are contained in Sections 3.0 through 5.0 of the Background Volume) or (Compliance Plan Volume) The schedules may be affected if the underlying assumptions are incorrect or change.
- 2.2.1.3** *Milestones* are fixed, firm and enforceable dates as set forth in the Compliance Plan Volume. Milestones correspond to the categories of milestones set forth in Section 2.2.3. Changes or Revisions to milestones are subject to approval, approval with modifications, or disapproval by the Ohio Environmental Protection Agency (OEPA) according to the process and framework set forth in this STP. Milestones are set based on target dates, defined in Section 2.2.1.4 below, in accordance with the process in Section 2.2.2.
- 2.2.1.4** *Target dates* mark the anticipated completion of tasks which have not been designated as milestones. Target dates correspond to the categories of milestones set forth in Section 2.2.3. Target dates are not requirements and are not enforceable. Target dates are converted into enforceable milestones in accordance with the process in Section 2.2.2.
- 2.2.2** *Approach to milestones and target dates.* DOE proposes using the rolling milestone approach outlined in the addendum to this STP, "Milestone Approach and Budget Formulation Process."
- 2.2.3** *Categories of milestones and target dates.* The categories of activities for which milestones and target dates will be provided for different types of treatment approaches in the Compliance Plan Volume are based on RCRA Section 3021(b)(1)(B)(i) for mixed waste where technology exists, (ii) for mixed waste where technology does not exist, and (iii) for requirements pertaining to radionuclide separation, to the extent appropriate. Depending upon the status of the facility (e.g., operating under interim status or at differing stages of development), for a particular facility or treatment option, certain types of target dates or milestones may not be necessary, the activities may appear in a different order, or an alternative activity more appropriate to the facility or treatment approach may be provided as a target date or milestone.

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

- (a) For mixed waste that shall be shipped off-site for treatment, the final target date/milestone for the treatment of such waste in the Compliance Plan Volume shall be completion of shipment of the mixed waste to the off-site treatment facility. Information supporting development or use of off-site treatment capacity or technology for treatment of such wastes is provided in the Background Volume of the STP. In the event that changes in the schedule of the off-site treatment facility impact the schedule in DOE-CH's Compliance Plan Volume, DOE-CH shall notify OEPA, and DOE-CH and OEPA shall negotiate necessary changes in accordance with Sections 2.5, Revisions, or 2.6, Extensions and Modifications, as appropriate, and subject to Section 2.10, Disputes. Additional milestones or target dates for completion of on-site activities may be established. The following contains some examples of Milestones/Target Dates that may be provided for mixed wastes shipped off-site for treatment.

- (b) For mixed wastes which are not sufficiently characterized to allow identification of appropriate treatment, the Compliance Plan Volume will contain schedules for characterizing such wastes. The final milestone/target date for such a schedule will be the requirement for DOE-CH to either identify the facility that will receive the waste and any necessary changes to the pertinent schedule for that facility or to submit a proposed schedule as described in this section.

- (c) TRU Waste -- Notwithstanding any other provision of this Compliance Plan Volume, the provisions of Section 4.0 shall apply regarding schedules for MTRU wastes destined for WIPP in lieu of other schedule requirements of this Section 2.0 of the Compliance Plan Volume.

- (d) Storage of mixed wastes for purposes of allowing for radioactive decay of the radioactive portion of the mixed waste

shall be considered to be storage for the purpose of accumulation of such quantities of waste as are necessary to facilitate proper recovery, treatment, or disposal in compliance with RCRA Section 3004(j). Such storage may be included in the schedules of the Compliance Plan Volume as appropriate, including treatment schedules or schedules related to radionuclide separation.

2.3 Annual Site Treatment Plan Updates

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

2.3.2 Each fiscal year after the fiscal year in which this STP is approved and accompanying Order executed, DOE-CH shall provide an Annual Update to the STP to OEPA for review and comment. The Annual Update shall provide OEPA with information to track progress on milestones and target dates. The Annual Update shall allow input from the public, affected states and EPA to be obtained when Revisions to the STP are proposed. 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 and will be handled by page changes to the extent practicable. These changes will be marked for comparison to the previous STP. If there are no changes to the information, milestones, or target dates in the STP, a letter to that effect would be sent to OEPA in lieu of an Annual Update.

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

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

- (a) The amount of each covered waste stored at the BCLDP as follows: (1) the estimated amount in storage at the end of the

previous fiscal year; and (2) the estimated amount anticipated to be placed in storage in the next five fiscal years.

- (b) A description of progress made up to the end of the last fiscal year on treatment or technology development of each treatment facility or activity scheduled in the STP. If applicable, DOE will also describe current or anticipated alternative treatment technology which is being evaluated for use in lieu of treatment technologies or capacities identified in the STP. This description will include potential alternate commercial treatment, and off-site DOE treatment capacity or technology development.
- (c) A description of DOE's funding for STP-related activities and any funding issues which may impact the schedule.
- (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 wastestreams in accordance with Section 2.4.2.
- (f) Notification of the deletion of waste streams in accordance with Section 2.7.1.

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

- (a) Any changes to the Compliance Plan Volume incorporated since the previous Annual Update.
- (b) Any proposed revisions or conditionally approved revisions.
- (c) Any proposed new milestones, in accordance with Section 2.2.

-
- (d) Any other changes to the overall schedules.

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

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

2.4 Inclusion of New Wastestreams

- 2.4.1** This section establishes a method for including new mixed waste streams at the BCLDP 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** DOE-CH shall notify OEPA of additional or new mixed wastes or waste streams which have been generated or stored, and may notify of mixed wastes anticipated to be generated or stored at the BCLDP, 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 the BCLDP, whichever is later. To the extent practicable, DOE-CH shall provide a description of the waste code, waste form, volumes, technology and capacity needs, and similar pertinent information in the notification. In general, additional detail on the waste and the proposed plan and schedules consistent with Section 2.2, Compliance Schedules, will be provided in next regularly scheduled Annual Update, or a date for submittal of such a proposed plan and schedules will be provided if additional time is required for its preparation. The information provided pursuant to this subsection is subject to OEPA approval to the extent provided for in Subsection 2.4.4.
- 2.4.3** If DOE-CH cannot provide such information or schedules as required by Subsection 2.4.2 because of inadequate characterization or it is otherwise impracticable, DOE-CH shall include appropriate justification, supporting information, and proposed plans for approval as a deliverable under Section

2.8, Procedures for Review and Approval for developing such information and schedules consistent with Section 2.2, Compliance Schedules.

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

2.5 Revisions

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

2.5.2 Revisions to the STP shall be made as follows:

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

2.5.2.2 Within 30 days subsequent to conditional approval, OEPA shall publish a notice of availability and make the Revision to the STP

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

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

2.6 Extensions and Modifications

- 2.6.1** DOE-CH shall implement this STP in accordance with the milestones set forth in this Compliance Plan Volume, as well as milestones subsequently developed pursuant to this STP. DOE-CH further agrees to adopt all reasonable measures to avoid or minimize any delays in the implementation.
- 2.6.2** A milestone shall be extended upon receipt of a timely request for extension where good cause exists for the requested extension. Any request for an extension shall be made to OEPA prior to the milestone date, either in writing or orally with a written follow-up request within ten (10) business days of the request. The request shall operate to extend the milestone until receipt of OEPA's written position on the request, unless it is determined the request was made in bad faith and without reasonable justification. Any oral or written request shall be provided to the project manager responsible for implementation of this STP. The written request shall specify:

- (a) The milestone for which the extension is requested,

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

2.6.3 Good Cause for an extension includes, but it not limited to:

- An event of Force Majeure as defined below in Subsection 2.6.4;
- A delay caused by OEPA's failure to meet any requirement of this STP;
- A delay caused by the good faith invocation of dispute resolution or the initiation of administrative or judicial action;
- A delay caused, or which is likely to be caused, by the grant of an extension of another milestone;
- A delay caused by additional work agreed on by DOE-CH and OEPA;
- Circumstances unforeseen at the time this STP was prepared that significantly affects the work required under the STP;
- Delay in review of a permit application, or a permit to be issued by Ohio, or issuing a permit required to meet a milestone;
- Inconsistency with the requirement of any other existing agreement, order or permit to which DOE is a party; and
- Any event or series of events mutually agreed to by DOE-CH and OEPA as constituting good cause.

2.6.4 Force Majeure

An event of force majeure shall mean any event arising from causes beyond the control of DOE-CH that causes a delay in or prevents the performance of any obligation under this STP, including, but not limited to, acts of God; fire; war; insurrection; civil disturbance; explosion; unanticipated breakage or accident to machinery; equipment or lines of pipe despite reasonably diligent maintenance; adverse weather conditions that could not be reasonably

anticipated; unusual delay in transportation; restraint by court order or of public authority; inability to obtain, at reasonable cost and after exercise of reasonable diligence, any necessary authorizations, approvals, permits or licenses due to action or inaction of any governmental agency or authority other than the DOE; delays caused by compliance with applicable statutes or regulations such as those governing contracting, procurement, or acquisition procedures, despite the appropriated funds, if the DOE shall have made timely request for such funds as part of the budgetary process as set forth in Section 2.9, Funding on this STP. A force majeure event shall also include any strike or any other labor dispute, whether or not in control of the DOE-CH,

2.6.5 Determination

Absent agreement of the DOE-CH and OEPA with respect to the existence of good cause, the Parties may seek and obtain a determination through the dispute resolution process, Section 2.10, whether or not good cause exists.

- 2.6.6** DOE-CH shall notify OEPA in writing within fourteen (14) days after it becomes aware of events which DOE-CH knows or should know constitute a force majeure event that may delay or prevent the performance of an obligation under this STP. Such notice shall describe the cause and anticipated length of delay and mitigation measures being taken. Subsequent to each notification, any request for an extension based on a force majeure event shall be made pursuant to Subsection 2.6.2 of this section.

2.7 Deletion of Wastes and Termination of the STP

- 2.7.1** Deletion of Wastes - The requirements of this Compliance Plan Volume shall terminate with regard to any covered waste upon DOE-CH's notice to OEPA 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 pending treatment or disposal;

- (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 DOE-CH and OEPA.

2.7.2 Inasmuch as the intent of the FFCA 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 the BCLDP which does not meet LDR requirements or (2) the mixed waste being stored or generated at the BCLDP is being stored, or will be stored when generated, solely for the purpose of accumulating sufficient quantities of mixed wastes as are necessary to facilitate proper recovery, treatment, or disposal.

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

2.8 Procedures for Review and Approval

2.8.1 Deliverables developed by DOE-CH pursuant to this Compliance Plan Volume shall be submitted by DOE-CH to OEPA for review and comment as provided in this section. Deliverables include documents or notices signifying completion of milestones, identifying new wastes, and supporting proposed Revisions as required or permitted under this Compliance Plan Volume. Where OEPA approval of a deliverable is expressly required in this Compliance Plan Volume, the approval provisions in this section apply. Permit applications and National Environmental Policy Act (NEPA)

documents shall not be subject to the procedures of this section. Permit applications shall be submitted and reviewed under applicable regulations and NEPA documents shall be submitted and reviewed under the DOE regulations implementing NEPA. Each submittal of a deliverable shall specify the milestone or other provision of this Compliance Plan Volume requiring submittal of that deliverable.

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

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

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

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

2.8.5.1 Ohio EPA shall, within 30 days of receipt, take action as follows: (1) approve, conditionally approve (if the deliverable is a Revision), or disapprove the deliverable as submitted, or (2) return the deliverable to DOE-CH with comments so that changes can be made for resubmittal. Conditionally-approved Revisions will be approved or approved with modification after public review and comment and consultation with affected states and EPA pursuant to Section 2.5, Revisions. Ohio EPA may extend this review period by an additional 30 days by notifying DOE-CH. This period may be further extended for an additional period of time, as may be agreed to by OEPA and DOE-CH. Comments on the deliverable shall be provided with adequate specificity so that DOE-CH can make the appropriate changes to the document. To the extent applicable, comments should refer to specific paragraphs of any sources of

authority or references on which the comments are based, and upon request of DOE-CH, OEPA shall provide a copy of the cited authority or reference.

2.8.5.2 If OEPA fails to take one of the actions specified above within the time frames required by this STP, the deliverable shall be considered approved or conditionally approved as submitted. If OEPA extends the review period for a deliverable, any milestones or target dates dependent upon the results of deliverable review will automatically be extended an equivalent amount of time as the time taken beyond the specified time frame for review. DOE-CH will notify OEPA in writing of any enforceable milestones that will need to be extended or revised.

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

2.9 Funding

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

2.10 Disputes

- 2.10.1** Except as specifically set forth elsewhere in this plan, any action which leads to or generates a dispute regarding compliance with this plan is subject to resolution under this section.
- 2.10.2** DOE-CH and the OEPA shall make reasonable efforts to informally resolve disputes as expeditiously as possible at the project manager level. If resolution cannot be achieved informally, the disputing party may elevate the dispute for resolution pursuant to this action.
- 2.10.3** To initiate formal dispute resolution, the disputing party shall submit to the other party a written Notice of dispute specifying:
- (a) the nature of the dispute
 - (b) the work affected by the dispute
 - (c) the disputing party's position with respect to the dispute; and
 - (d) the information the disputing party is relying upon to support its position.
- 2.10.4** Upon receipt of the Notice of Dispute, the appropriate DOE-CH Assistant Manager and the OEPA's Assistant Director (or their respective delegates or successors) shall engage in dispute resolution meetings or conference calls. If mutually agreed upon resolution is not reached within 30 days, the dispute shall be escalated to the Director of the OEPA. Within 30 days of escalation, the Director shall consult with the manager, DOE-CH, and issue a final determination of OEPA. This 30 day period may be extended by mutual written agreement of the parties. The joint decision shall be binding upon the parties unless timely appeal is taken.
- 2.10.5** DOE shall have the right to obtain judicial appeal or review according to law of the joint final determination(s) under this section. During the pendency of any dispute, DOE-CH agrees that it shall continue to implement those portions of this STP affected by the dispute that can be reasonably implemented pending final resolution of the issue(s) in dispute. All elements of work required by this Compliance Plan Volume that are not affected by the dispute shall continue and be completed in accordance with the applicable schedule.
- 2.10.6** Unless timely appeal is taken, DOE-CH shall incorporate the resolution and final determination into the appropriate plan, schedule or procedure, and

proceed with implementation in accordance with the amended plan, schedule, or procedure within 45 days after resolution of a dispute pursuant to the procedures specified in this section for Section 2.11 to remain in effect for the affected waste stream.

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

2.11 Covenants and Reservations

2.11.1 This STP and implementing Order shall stand in lieu of any administrative, legal and equitable remedies which are available to the OEPA against DOE, 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 DOE and all parties bound by this STP and implementing Order are in compliance with the STP and implementing Order as determined by OEPA or a court of competent jurisdiction.

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

3.0 LOW-LEVEL MIXED WASTE STREAMS

3.1 Mixed Waste Streams for Which Technology Exists

This section describes the plans and schedules to treat 4 low-level mixed waste streams at the BCLDP. The *Background Volume* of this report describes each waste stream and the preferred treatment option for that waste stream. The completion of

decontamination and decommissioning activities at the King Avenue facility area anticipated by October 1996. By this time, it is projected that the majority of EM wastes will have been generated and shipped off-site for treatment and disposal.

3.1.1 Lab Packs (Inorganic) BC-W001

3.1.1.1 Schedule for activities to ship waste off-site:

Activity	Type	Date
Request approval to ship waste	milestone	October 1995
Prepare waste for shipment	milestone	June 1996
Ship waste	milestone	Sept. 1996

3.1.2 Lab Packs (Organic) BC-W002

3.1.2.1 Schedule for activities to ship waste off-site:

Activity	Type	Date
Request approval to ship waste	milestone	January 1996
Prepare waste for shipment	milestone	June 1996
Ship waste	milestone	August 1996

3.1.3 Elemental Lead BC-W003

3.1.3.1 Schedule for activities to ship waste off-site:

Activity	Type	Date
Request approval to ship waste	milestone	January 1996
Prepare waste for shipment	milestone	June 1996
Ship waste	milestone	August 1996

3.1.4 Mercury Contaminated Particulate/Debris from Ductile Iron Drain Lines BC-W004

3.1.4.1 Schedule for activities to ship waste off-site:

Activity	Type	Date
Request approval to ship waste	milestone	January 1996
Prepare waste for shipment	milestone	May 1996
Ship waste	milestone	July 1996

4.0 TRU MIXED WASTE STREAMS

4.1 Description of Waste Streams

The types of Transuranic wastes identified by the BCLDP include metallurgical samples of spent nuclear fuel, contaminated laboratory equipment, particulate contamination on interior hot cell walls and surfaces, and contaminated filters and resins. The potential generation of TRU mixed waste by the project is speculative at this time; further characterization of the JN-1 hot cell is required to make a determination. TRU mixed wastes are not anticipated based upon current knowledge.

4.2 Strategy for Managing TRU Waste

4.2.1 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 FFCA for MTRU destined for the Waste Isolation Pilot Project (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 ship and dispose of such wastes in WIPP. Within twelve months of the Secretary's decision to operate WIPP as a disposal facility, the BCLDP 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 the BCLDP will provide a timetable for submitting a shipment schedule to WIPP for its MTRU waste. The BCLDP will coordinate with the Carlsbad area office in developing the shipment schedule to ensure proper throughput and receipt of waste at WIPP.

- 4.2.2** The BCLDP will begin discussions with Ohio EPA regarding alternative treatment options for MTRU waste in January 1998 if the Secretary of Energy 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. DOE shall propose modifications to the STP for approval by Ohio EPA within a timeframe agreed upon between the DOE and OEPA. These modifications will describe planned activities and schedules for the new MTRU strategy.
- 4.2.3** DOE shall include information regarding progress of MTRU waste management in the update to the STP required by Section 2.3 of this compliance plan. This will include, as applicable and appropriate, the status of the no-migration variance petition, and information related to characterization, packaging, and/or treatment capabilities or plans for MTRU waste related to WIPP waste acceptance criteria and disposal.

Addendum

Milestone Approach and Environmental Management Budget Formulation Process

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

To meet these objectives, DOE proposes using a one-year rolling milestone approach to implement the schedules provided in the Compliance Plan Volume of the Site Treatment Plan. Under this approach, schedule dates are designated as either "milestones" or "target dates." Milestones and target dates would be established in accordance with available environmental management funding for the site. Milestones are enforceable deadlines for near-term activities (the current fiscal year). Milestones are established for near-term activities because there is greater fiscal and technical certainty about these activities. Target dates are nonenforceable deadlines for longer-term activities and would be converted to milestones on an annual basis. After receipt of the Approved Funding Program that reflects the final Congressional appropriation for the current fiscal year, milestones for the current fiscal year would be established, adjusting the affected target dates as necessary. To the extent practical, this process would coincide with the process for the Annual Site Treatment Plan Updates and would be conducted in a consistent timeframe across the DOE sites (for example, no later than March 31 of each year).

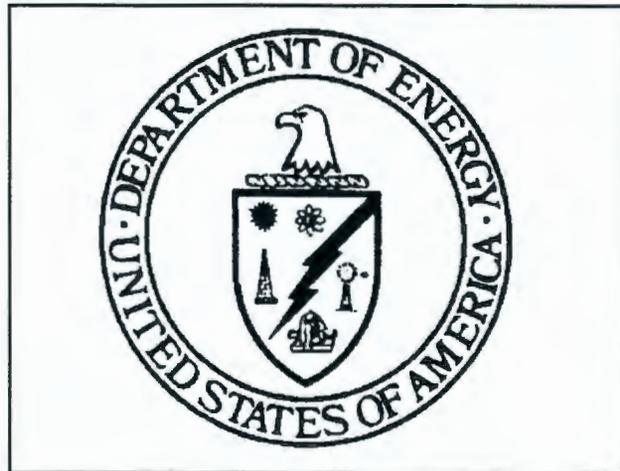
During the annual review and establishment of milestones and target dates, DOE and the regulatory agencies would consider a variety of factors, including funding availability, latest information on cost estimates, site priorities identified through consultations among DOE, regulatory agencies, and stakeholders,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

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

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

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

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



**U.S. DEPARTMENT OF ENERGY
BATTELLE COLUMBUS LABORATORIES
DECOMMISSIONING PROJECT**

PROPOSED SITE TREATMENT PLAN

BACKGROUND VOLUME

MARCH 1995

**BATTELLE COLUMBUS LABORATORIES
DECOMMISSIONING PROJECT
PROPOSED SITE TREATMENT PLAN**

CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	v
1.0 INTRODUCTION	1
1.1 Purpose and Scope	1
1.2 Site History and Mission	3
1.2.1 Site History	3
1.2.2 Site Description	3
1.2.3 Project Mission	6
1.2.4 Organization	7
1.2.5 Waste Management Operations	7
1.3 Framework For Developing DOE's Site Treatment Plans	10
1.4 Proposed Site Treatment Plan Organization	11
1.5 Other Activities Related to DSTP Development	13
1.5.1 Mixed Waste Inventory Report	13
1.5.2 The Programmatic Environmental Impact Statement for Waste Management	14
2.0 METHODOLOGY	15
2.1 Assumptions	15
2.2 Preferred Option Selection Process	16
2.3 Coordination with Regulatory Agencies and Other Stakeholders	17
2.4 Characterization of Mixed Wastes	20
2.5 Waste Minimization	21
2.5.1 Pollution Prevention	22
2.5.2 Current Waste Minimization Activities	23
3.0 LOW-LEVEL MIXED WASTE STREAMS	24
3.1 Mixed Waste Streams for Which Technology Exists	24
3.1.1 Lab Packs (Inorganic)	26
3.1.2 Lab Packs (Organic)	27
3.1.3 Elemental Lead	28
3.1.4 Mercury Contaminated Particulate/Debris from Ductile Iron Drain Line	30
3.2 Waste Streams for Which Technology Exists But Needs Adaptation or for Which No Technology Exists	31
3.3 Waste Streams Requiring Further Characterization or for Which Technology Assessment Has Not Been Done	32
4.0 TRU MIXED WASTE STREAMS	32
4.1 Description of Waste Streams	32
4.2 National Strategy for Managing Transuranic Waste	32

CONTENTS (Continued)

	<u>Page</u>
5.0 HIGH-LEVEL MIXED WASTE STREAMS	33
6.0 FUTURE GENERATION OF MIXED WASTE STREAMS	33
6.1 Environmental Restoration Waste	33
6.2 Decontamination and Decommissioning Waste	33
6.3 Other Wastes	33
7.0 STORAGE REPORT	33
8.0 PROCESS FOR EVALUATING DISPOSAL ISSUES IN SUPPORT OF THE STP DISCUSSIONS	34
8.1 Background	35
8.2 Disposal Planning Process	35
8.2.1 Activities to Date	37
8.2.2 Next Steps in the Evaluation Process	40
8.3 Integration with the STP Process	42

Table and Figures

Table 3-1. Mixed Waste Stream	25
Figure 1-1. Building Numbers and Locations at the King Avenue Site	4
Figure 1-2. Building Numbers and Locations at the West Jefferson Site	5
Figure 1-3. DOE-BCLDP Organization Chart	8
Figure 1-4. Battelle Decontamination and Decommissioning Operations Organization	9
Figure 8-1. Disposal Planning Process	36

ACRONYMS

As Low As Reasonably Achievable	ALARA
Battelle Columbus Operations	BCO
Battelle Columbus Laboratories Decommissioning Project	BCLDP
Battelle Memorial Institute	BMI
Decontamination and Decommissioning	D&D
Draft Site Treatment Plan	DSTP
Environmental Restoration	ER
Environmental Management	EM
Environmental Management Advisory Board	EMAB
Environmental Assessment	EA
Federal Facility Compliance Act	FFCA
Land Disposal Restriction	LDR
Low Level Waste	LLW
Mixed Waste Inventory Report	MWIR
National Environmental Policy Act	NEPA
National Governor's Association	NGA
Oak RidgeOR
Ohio Environmental Protection Agency	OEPA
Programmatic Environmental Impact Statement	PEIS
Proposed Site Treatment Plan	PSTP
Resource Conservation and Recovery Act	RCRA
RichlandRL
Savannah RiverSR
Scientific Ecology Group	SEG
Site Treatment Plan	STP
Solid Waste Operations Complex	SWOC
TransuranicTRU
Treatment Storage and Disposal Facility	TSDF
U.S. Department of Energy	DOE
U.S. Environmental Protection Agency	EPA
Waste Isolation Pilot Project	WIPP
Westinghouse Hanford Company	WHC

EXECUTIVE SUMMARY

The Federal Facility Compliance Act (FFCA) requires the Department of Energy to prepare Site Treatment Plans for how mixed waste, waste containing both hazardous and radioactive components, will be treated. More specifically, the FFCA requires each individual DOE site that stores or generates mixed waste to develop a Site Treatment Plan. Each site's Plan must provide a list or inventory of mixed waste, treatment technology required and the approach or treatment facility that will be used to treat the waste. After completed, the site's Plan is then submitted to the cognizant state agency or Regional EPA office for review and approval, approval with modification, or disapproval. For the Battelle Columbus Laboratories, the Plan is being submitted to the Ohio Environmental Protection Agency for review and approval.

This Plan is a result of a three-part planning process consisting of Conceptual, Draft, and this Proposed Plan. The Conceptual Plan was completed in October 1993. In general, that document provided a mixed waste inventory, identified potential treatment technologies and a range of treatment options. The Draft Plan, completed in August 1994, represented the second stage of the process in which the treatment options identified in the Conceptual Plan were narrowed down to few or only one preferred option for each waste stream. The Proposed Plan is the final stage of the planning process and provides the preferred option and treatment schedule of each waste stream.

The Proposed Plan, like the Draft Plan, consists of two major sections or volumes: Background Volume and Plan Volume. The Background Volume provides a more extensive discussion while the Plan Volume is a much shorter and focused document.

The Background Volume consists of the following eight sections:

- **Section 1. Introduction.** This in turn discussed the Purpose and Scope, Site History and Mission, Framework for Developing the Site Treatment Plans, The Proposed Plan Organization, and Related Activities.
- **Section 2. Methodology.** This includes discussions of Assumptions, Preferred Selection Process, Coordination with Regulatory Agencies and Other Stakeholders, Characterization of Mixed Waste and Waste Minimization.
- **Section 3. Low Level Mixed Waste Stream.** This provides, for each mixed waste stream, a discussion of each mixed waste stream, treatment technology needed, and the preferred option.
- **Sections 4 and 5. TRU Mixed Waste and High Level Mixed Waste Stream.** If applicable, this provides information on these waste streams.

- **Section 6. Future Generation of Mixed Waste.** Identifies, as possible, mixed waste not discussed in Section 3 that could result from future restoration or site remediation activities.
- **Section 7. Storage Report.** Discusses the adequacy of the site's mixed waste storage facilities.
- **Section 8. Process for Evaluating Disposal Issues in Support of the STP.** This summarizes the overall DOE activity in the area of disposal of mixed waste treatment residuals.

The Plan Volume is a shorter and more focused document consisting of the following sections:

- **Section 1. Purpose and Scope of the Compliance Plan.**
- **Section 2. Implementation of the Site Treatment Plan.** This provides administrative language for the Plan.
- **Section 3. Low Level Mixed Waste Schedules.** For each mixed waste stream and option, identifies milestones and target dates.

The above discussion provided an overview of FFCA, planning and plan review, and approval process and format of the Proposed Plan. The important feature of the Plan is the discussion of the waste streams and treatment options. The following table provides a summary matrix which identifies each waste stream, the respective preferred treatment option, and inventory.

Site Waste/Treatment Matrix

Waste Name	Preferred Treatment	Inventory
BC-W001 Inorganic Lab Packs	Fernald Environmental Management Project (FEMP)	0.042m ³
BC-W002 Organic Lab Packs	ORNL TSCA Incinerator	0.511m ³
BC-W003 Elemental Lead	Hanford WRAP II A	0.000m ³
BC-W004 Mercury Contaminated Drainlines	Hanford WRAP II A	0.000m ³

Also as noted above, Chapter 3 of the Background Volume provides more detail on each of the items in this matrix.

The final stage of the FFCA is for the regulatory agency to review the Plan. DOE plans to be working with the staff of the agency or agencies to discuss issues in order to facilitate approval of the Plan.

**THIS PAGE INTENTIONALLY
LEFT BLANK**

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 (the Act), to prepare site treatment plans (STPs or plans) 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 Act as waste containing both a hazardous waste subject to the Resource Conservation and Recovery Act, 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 Battelle Columbus Laboratories Decommissioning Project (BCLDP) Proposed Site Treatment Plan (Proposed STP or Proposed Plan) is being provided to The Ohio Environmental Protection Agency (OEPA) for approval in accordance with the Act.

The BCLDP Proposed Plan is the result of a "bottom up" process described in an April 6, 1993, Federal Register notice (58 FR 17875). DOE has followed an iterative process in developing the Plans, working closely with State regulatory agencies and EPA at the site and national level throughout the process. This Proposed Plan follows two interim versions—a Conceptual Site Treatment Plan submitted in October 1993 and a Draft Plan submitted in August 1994—which were provided to regulatory agencies and made publicly available. The Conceptual Plan identified a range of preliminary options for treating the mixed waste at the BCLDP. The Draft Plans identified site-specific preferred treatment options which had not yet been evaluated for impacts to other DOE sites or to the overall DOE program. DOE initially planned to submit the Proposed Plans 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). The BCLDP Conceptual Plan and Draft Plan and other related information are available at:

- Columbus Metropolitan Library, Main Branch, 96 S. Grant Ave., and Northside Branch, 1423 N. High St., Columbus, Ohio
- State Library of Ohio, 65 S. Front St., Columbus, Ohio
- West Jefferson Public Library, 301 Main St., West Jefferson, Ohio

This Proposed Plan contains DOE's preferred options developed after evaluation and integration of the site-specific treatment options contained in the Draft Plans 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 Proposed Plans represent a sensible national configuration for

mixed waste treatment systems that balances DOE's interests and concerns and the input DOE received on the Draft Plans from the regulatory agencies and others.

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

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

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

This "Background Volume" is one of two volumes that constitute the Proposed Site Treatment Plan. It provides a detailed discussion of the preferred option or options, identifies the waste streams the option addresses, and gives explanatory information for the "Compliance Plan Volume." The Compliance Plan Volume identifies the capacity to be developed and associated schedules as required by the Act.

1.2 Site History and Mission

1.2.1 Site History

On April 16, 1943, Battelle Memorial Institute (BMI) entered into Contract No. W-7405-ENG-92 with the Manhattan Engineer District to perform atomic energy research and development activities. Since that time, Battelle has continuously performed research and development work under the contract at its facilities for the DOE and its predecessor agencies. The Battelle facilities are located at BMI's Battelle Columbus Laboratories King Avenue site in Columbus, Ohio, and West Jefferson site near West Jefferson, Ohio. Fifteen buildings or portions thereof, and related external areas, that became radioactively contaminated as a result of work performed under the government contract are to be decontaminated and released to Battelle, without radiological restrictions, as part of the government's obligation under the contract. The buildings are owned by BMI which is a charitable trust under provisions in Ohio law.

1.2.2 Site Description

Of the 15 contaminated buildings, nine are located in Columbus, Ohio (Figure 1-1), and the remaining six buildings are located at the West Jefferson site (Figure 1-2), which is approximately 15 miles west of Columbus. The type and extent of contamination varies from building to building, depending on the nature of nuclear research historically performed. Most of the contamination at the King Avenue site, for example, is due to uranium, thorium and associated daughter products. These radioactively contaminated research facilities are located in older buildings that comprise part of the main Battelle campus across the street from Ohio State University. The immediate contiguous area can be characterized as a moderate density residential area. A river, which passes through the city, and several commercial and industrial areas are within one-half mile of the King Avenue site. The West Jefferson site consists of contaminated facilities similar to the King Avenue site, as well as a building containing a number of hot cells that are highly contaminated. The bulk of transuranic (TRU), mixed fission products, and activation product contamination is confined to the Nuclear Sciences Area of the West Jefferson site. The West Jefferson site lies in a rural, agricultural setting in eastern Madison County. The nearest residence is over one half mile from the site boundary.

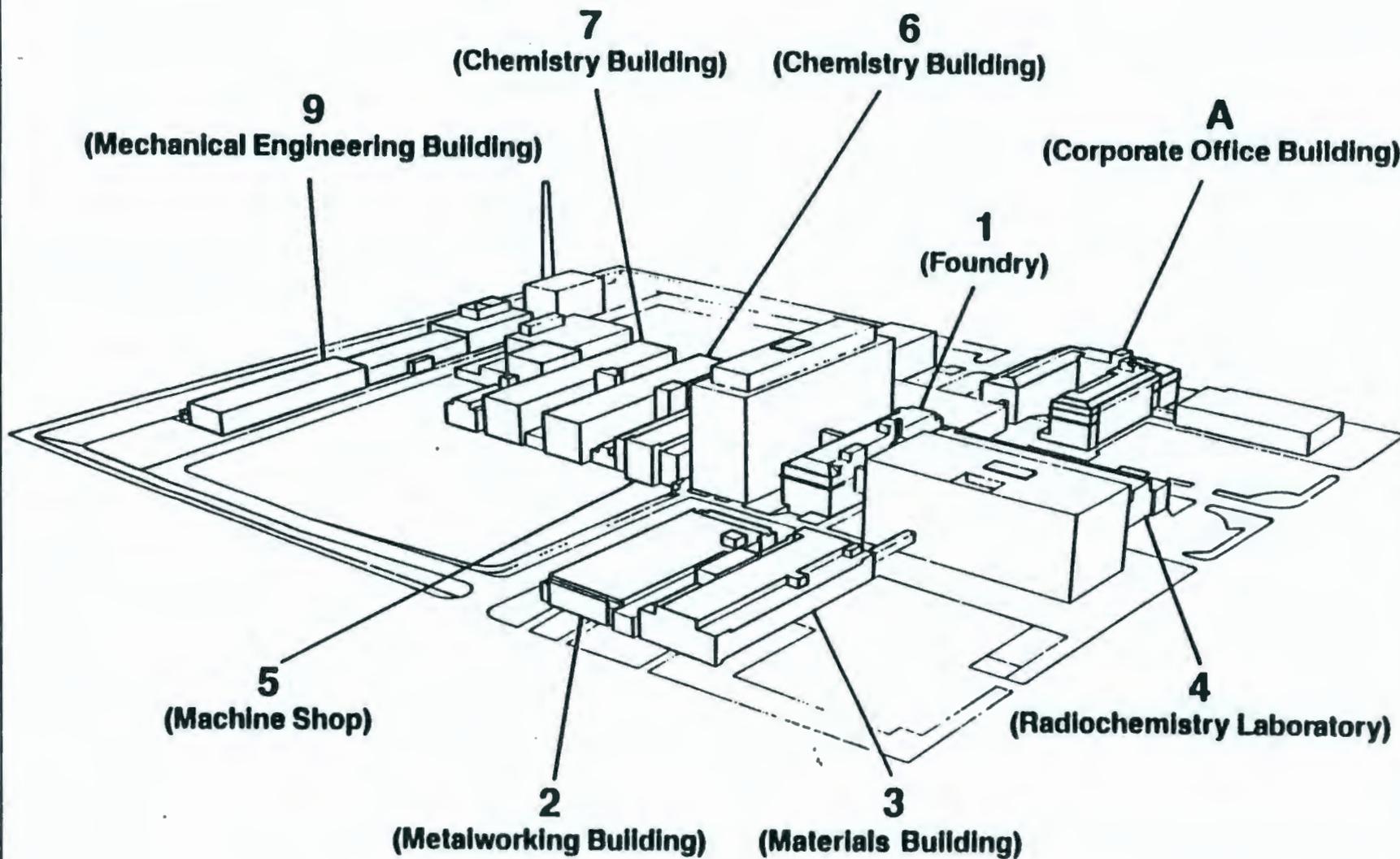


Figure 1-1. Building Numbers and Locations at the King Avenue Site

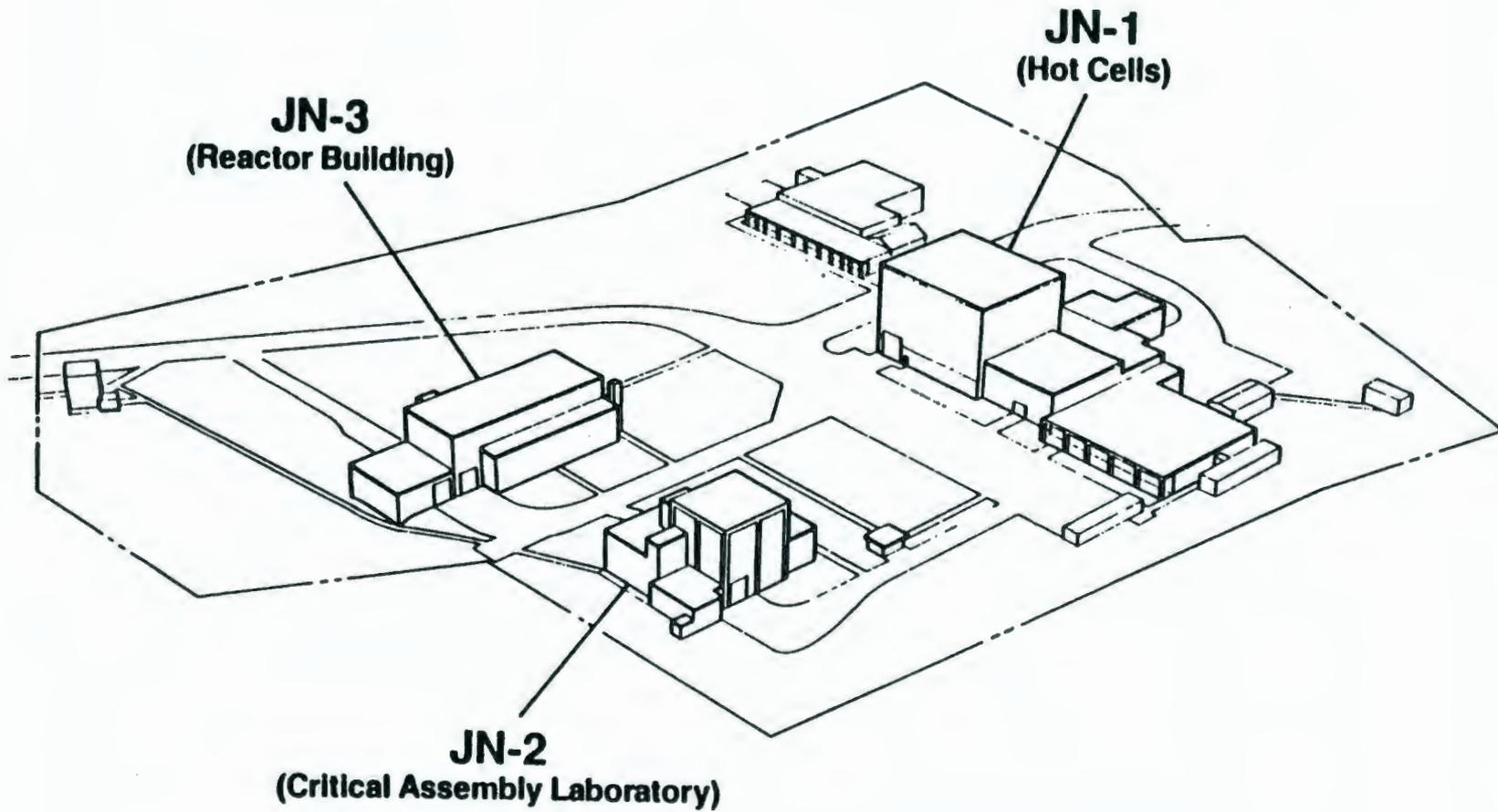


Figure 1-2. Building Numbers and Locations at the West Jefferson Site

1.2.3 Project Mission

DOE intends that Battelle's facilities be returned to a condition suitable for use without radiological restrictions. Actual future use of these facilities will be determined by Battelle. Battelle must also demonstrate compliance with NRC decommissioning requirements. Residual radioactivity will be kept as low as reasonably achievable (ALARA), consistent with the limits established in DOE and NRC Regulatory Guide 1.86. The objectives associated with decontamination and decommissioning (D&D) also include to:

- Identify all areas requiring control and cleanup by conducting pre- and post-D&D radiological characterization surveys;
- Maintain facilities awaiting decontamination in a manner that limits worker, public and environmental exposure to potential hazards;
- Prepare a detailed design and schedule for specific building campaigns;
- Decontaminate laboratory equipment, interior building surfaces, and any adjacent areas of soil contamination using available technology in the most cost-effective manner possible;
- Segregate and minimize low-level radioactive waste resulting from D&D activities to reduce waste shipment and disposal costs, and shipping to an approved offsite storage/disposal facility; and
- Receive an independent verification survey for all building decontaminations, and obtain NRC and DOE management certification of completed decontamination.

There are no major environmental issues regarding the BCLDP. Battelle, as a private, nongovernmental entity, is responsible for maintaining its operations in full compliance with all applicable health, safety, and environmental laws and regulations.

All radioactive waste is from surveillance and maintenance, characterization, health physics, material removal, decontamination and waste management activities. The majority (approximately 95 percent by volume) of the BCLDP generated and stored waste is low level waste (LLW). Transuranic (TRU) waste accounts for about 5 percent by volume. A small amount (less than 5 percent) of radioactive mixed waste is anticipated.

The Project is responsible for the handling and disposal of decommissioning wastes that are contaminated with radioactivity, including: high volume/low activity wastes such as building rubble; contaminated laboratory equipment; and protective clothing, high efficiency particulate air filters, and cleaning materials with residual low-level radioactivity. In addition, cleanup of the hot cell facility will result in both high- and low-activity TRU wastes. Hazardous wastes that have no radioactivity above established release limits are the responsibility of Battelle. All radioactive and radioactive mixed-wastes are to be shipped to an offsite, DOE-approved facility for treatment, storage or disposal.

1.2.4 Organization

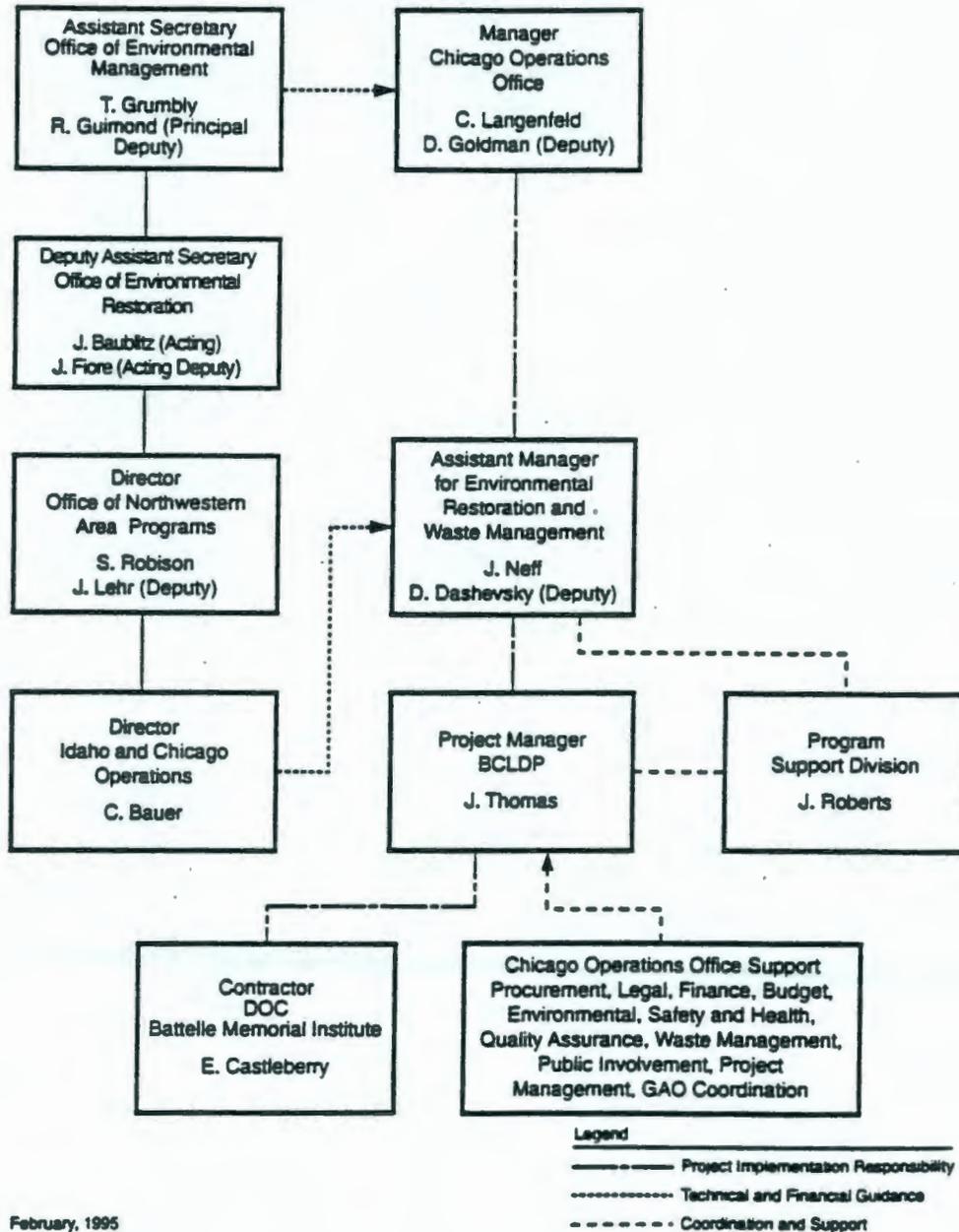
The BCLDP will be managed by the DOE Chicago Operations Office under the charter established between the Chicago Operations Office and DOE Headquarters. BMI will function as the Decommissioning Operations Contractor and will be responsible for all operations, including procurement of appropriate subcontractors when needed. Figure 1-3 presents the DOE and contractor organizational relationships for the project. Figure 1-4 shows the organization of the Battelle Decontamination and Decommissioning Operations.

1.2.5 Waste Management Operations

The BCLDP waste management group provides all administrative and operational directives and is responsible for all radioactive waste related activities. The BCLDP is responsible only for radioactive and radioactive mixed wastes generated by D&D activities. Hazardous wastes without collateral radioactivity are the responsibility of Battelle under all applicable regulations and its RCRA permit. Waste management activities include waste handling, monitoring, separation, segregation, minimization, characterization, sampling, classifying, certifying, packaging, and shipping of LLW, TRU waste, and low level radioactive mixed waste generated during all phases of the BCLDP. The BCLDP does not operate treatment, storage or disposal facilities.

The BCLDP maintains certification to ship low-level wastes to the Hanford site for treatment (as necessary), and disposal. Currently, the BCLDP is identified as a generator site for specific mixed-waste streams in Hanford's waste management plans. Waste accumulation, segregation, characterization, and packaging for shipment occurs on-site. The project also has received approval to utilize commercial facilities for its low-level (and certain low-level mixed) wastes. Since December 1993, the project has shipped over 22,000 cu ft of low-level radioactive waste to Envirocare of Utah under an Interagency Agreement with the U.S. Army Corps of Engineers. Additionally, the project has entered into a contract with the Scientific Ecology Group (SEG) at their Oak Ridge, TN facility for volume reduction services (incineration,

DOE - BCLDP ORGANIZATION CHART

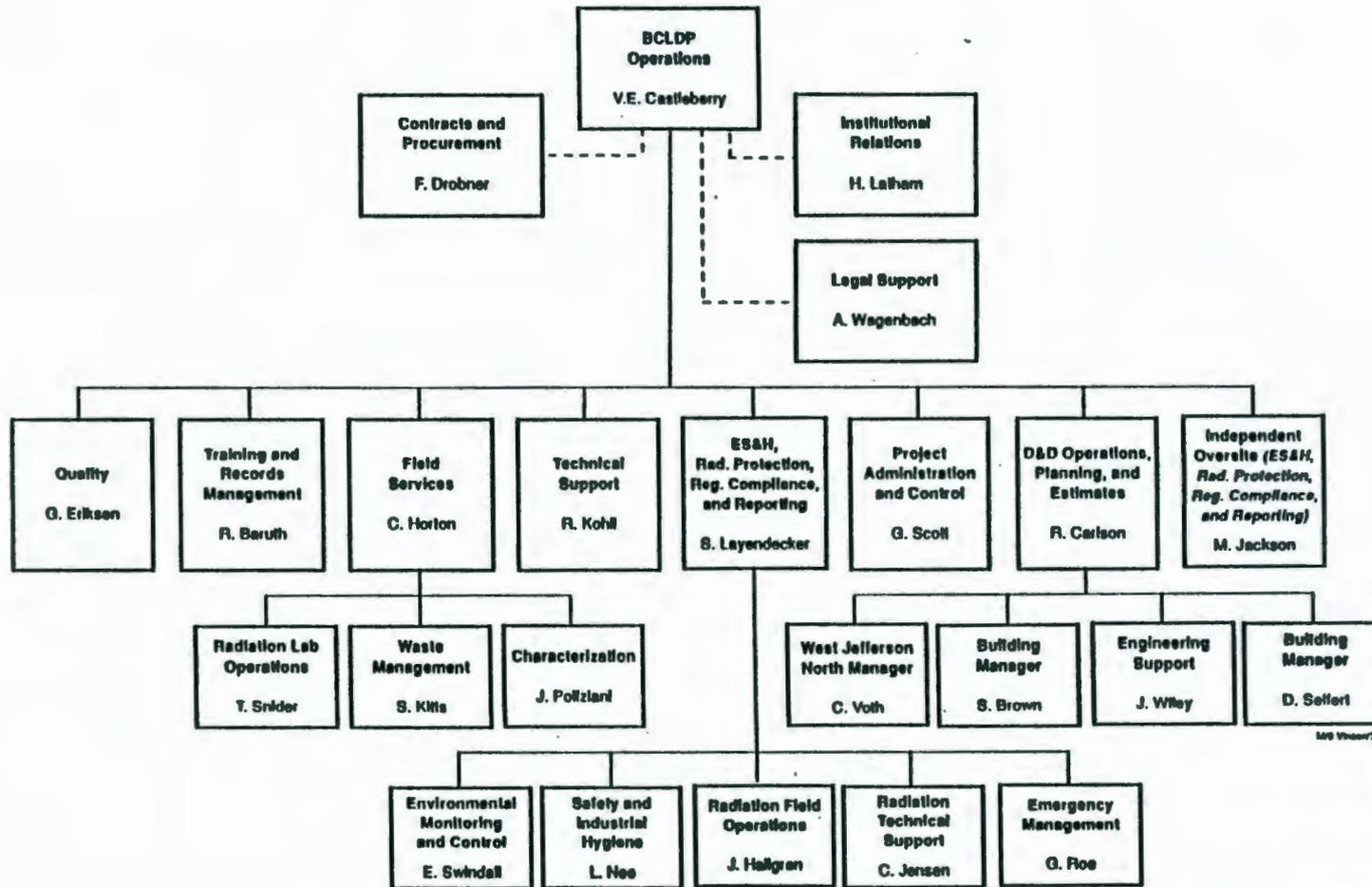


February, 1995

1023 10001-01

Figure 1-3. DOE-BCLDP Organization Chart

BCLDP Organization



2/95

Figure 1-4 Battelle Decontamination and Decommissioning Operations Organization

supercompaction, and smelting) prior to final shipment of wastes to Hanford or Envirocare. Wastes are shipped in accordance with all applicable Department of Transportation regulations in order to assure public health and safety.

1.3 Framework For Developing DOE's Site Treatment Plans

The following paragraphs describe the relationships between the requirements that led to the process the DOE is following to prepare the Site Treatment Plans. Key components of this regulatory framework are as follows.

RCRA Land Disposal Restriction (LDR) requirements mandate the treatment of hazardous waste (including the hazardous component of mixed waste) to certain standards before land disposal. The Land Disposal Restrictions 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 at many of its sites, inconsistent with the LDR provisions, because treatment capacity for such wastes is not adequate or is simply unavailable at this time.

The Federal Facilities Compliance Act signed on October 6, 1992 (P.L. 102-386) waives sovereign immunity for fines and penalties for RCRA violations at Federal facilities. However, a provision of the Act postpones that waiver for three years for mixed waste LDR storage prohibition violations at DOE sites. The Act requires that the DOE prepare site-specific treatment plans "for each facility at which the Department of Energy generates or stores mixed wastes." While the Battelle Columbus Laboratories are not a DOE Facility, the language of the Act has been interpreted to include the BCLDP because any mixed wastes generated during the clean-up of the site will be accepted contractually by the DOE for treatment and disposal.

The Act requires that the DOE submit the site-specific treatment plan to the appropriate state authority for "review and approval, modification, or disapproval." The plans will be approved by the State or EPA, after consultation with other affected States and consideration of public comment, and an order issued by the regulator requiring compliance with the plan. The DOE and the State of Ohio EPA have entered discussions on how to implement the required compliance order at a non-DOE site. This is described more fully in the *Compliance Volume* of this plan. The Act further provides that DOE will not be subject to fines and penalties for LDR storage violations as long as it is in compliance with the approved plan and order.

The Act specifies that the *Site Treatment Plans* must address all mixed waste at a site, regardless of the time of generation. For mixed waste for which identified treatment technologies exist, the plan must provide a schedule and milestones for constructing the necessary treatment capacity. For mixed waste without an identified existing treatment technology, the plan must include a schedule for identifying and developing technologies. The Act also requires the plan to address wastes where DOE proposes radionuclide separation and to provide an estimate of the volume of waste that would exist without such separation. Section 3021(b)(1)(C) of RCRA states that the plans may provide for centralized, regional, or on-site treatment of mixed waste, or any combination thereof. Section 3021(b)(2) 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). In the Notice, DOE committed to providing the Site Treatment Plans in three phases: a “conceptual plan” completed in October 1993, a “draft plan” no later than August 1994, and a “final proposed plan” no later than February 1995. This process provides opportunity for early involvement by the States and other stakeholders to discuss technical and equity issues associated with the plans.

The *Conceptual Plan* submitted October 1993, focused on identifying treatment needs, capabilities, and options for treating the site’s mixed waste. The *Draft Plan* submitted last August focused on identifying preferred options for treating the site’s mixed wastes, wherever possible, as well as proposed schedules for constructing capacity. The options presented represented the site’s best judgment of the available information and the States’ preferences, and were viewed as a starting point for discussion leading to the development of this *Final Proposed Plan*, which is being submitted to the regulatory agency for review and approval, approval with modification, or disapproval, as required by the Act. Each version of the *Plan* has reflected discussions among states, as well as site-specific input from the individual regulatory agency and other interested parties on the previous submittal. It is DOE’s intent that this iterative process, with ample opportunity for input and discussion, will facilitate *approval of the Site Treatment Plan and issuance of the compliance order* required by the Act. DOE’s goal is to have all plans and orders in place by October 1995.

1.4 Proposed Site Treatment Plan Organization

The BCLDP *Proposed Plan* follows the same format as the *Proposed Plans* of other DOE sites to facilitate cross-site comparisons. The *Proposed Plan* is organized in two separate, but integrated volumes. The *Background Volume* provides the detailed discussion of the options: it contains information on the waste streams and treatability groups a particular treatment option or options would address and describes

uncertainties associated with that option, as well as the budget status of the option, and regulator and stakeholder input. 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 Act. The *Plan Volume* also contains a mechanism to implement the *Plan* and establish milestones that will be enforced by the Order. It references, but does not duplicate, details on the options in the Background Volume.

Section 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 *Draft Plan* and the site in section 1.0 and provides top-level assumptions and a description of the process used to determine the preferred options in section 2.0.

Sections 1.0 and 2.0 of the *Compliance Plan Volume* propose certain administrative provisions appropriate for implementing the *Plan* when approved. These include provisions such as the approach to setting milestones, updates to the *Plan*, additions or removals to waste streams covered by the *Plan*, and funding considerations. It is expected that the specific language will be developed in conjunction with the regulatory agency and may eventually be expanded to address other administrative provisions or incorporated into a separate consent order.

Sections 3.0 through 5.0 discuss the preferred option or options for low-level mixed waste, mixed transuranic waste, and mixed high-level waste, and 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, to the extent feasible, as required under the Act. The BCLDP expects to have low-level mixed waste, and possibly transuranic mixed wastes, but does not expect to have any high-level mixed waste.

Section 3.0, "Low-Level Mixed Waste," is further organized according to the availability of capacity and treatment technology to treat the waste stream:

- 3.1 Waste Streams for Which Technology Exists
- 3.2 Waste Streams for Which Technology Exists But Needs Adaptation or for Which No Technology Exists
- 3.3 Mixed Waste Streams Requiring Further Characterization or For Which Technology Assessment Has Not Been Done.

The options identified are those that appear technically able to treat the waste, given the limits in the data on waste streams and facilities, particularly facilities in the early planning stages. The intention has been to narrow the field of feasible options.

Sections 4.0 and 5.0 on TRU and high-level mixed wastes have similar formats. BCLDP generation of TRU mixed waste is possible but not anticipated based on current knowledge. Consequently, this section is abbreviated and will be expanded in a future version of the STP if necessary. BCLDP generation of high-level mixed waste is not expected.

Section 6.0 describes wastes expected to be generated in the future within the next five year period, including environmental restoration wastes and wastes resulting from D&D activities.

Section 7.0 contains information regarding the future compliant storage of mixed wastes, such as RCRA Part B status and facility capacities both present and future.

Section 8.0 describes a process being followed by DOE and the states for evaluating options for disposal of mixed waste treatment residues. Although the Act does not require disposal to be covered in the *Plans*, DOE is including disposal information to be responsive to the states' request that disposal be addressed and to support state discussions. *Section 8.0* identifies whether BCLDP is being further considered as a disposal site and explains why or why not.

1.5 Other Activities Related to DSTP Development

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.

1.5.1 Mixed Waste Inventory Report

The Mixed Waste Inventory Report, (MWIR) required by the Act, 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 1994. The May 1994 MWIR data represents the best record of DOE's mixed waste inventory at the beginning of 1994. However, because data is constantly being refined and the processing of D&D

waste is on-going, waste stream information in BCLDP's *Proposed Plan* may differ somewhat from the May 1994 MWIR data. Any changes in waste stream information are explained in the *Background Volume*.

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

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

The Draft WM PEIS is scheduled to be published in May, 1995. The Final PEIS will be issued after a public comment period, at or near the time of issuance of the Consent 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 their legislative requirement of issuing the Consent Orders.

2.0 METHODOLOGY

2.1 Assumptions

All sites used the following assumptions to provide for a degree of consistency in the preparation of the Draft STPs, even though not all assumptions may be fully applicable for a given site. The assumptions were developed as a part of the *"Draft Site Treatment Plan Development Framework"* and reflect review and comment from the states and EPA.

- (1) High-level waste will continue to be managed according to current plans at each site (i.e., Hanford, West Valley, Savannah River, 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 STPs will not change management strategies for HLW.
- (2) Regarding defense related TRU Waste, the PSTPs reflect DOE's current strategy that the Waste Isolation Pilot Project (WIPP) will open and receive a No Migration Variance. The PSTPs identify characterization, processing, and treatment of TRU waste to meet the current WIPP Waste Acceptance Criteria. Consistent with this policy, treatment of mixed TRU waste to meet LDR standards will not be included in the PSTPs at this time.

However, DOE's policy regarding WIPP is under review and may change in the future. The PSTPs will provide for the flexibility to modify activities and milestones regarding TRU waste to reflect potential future changes in DOE policy.

- (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 D&D activities will be factored into planning activities and equity discussions, particularly where utilization of facilities identified in the PSTPs is being considered for managing ER and D&D waste.

-
- (6) The DSTP will address all wastes in the updated Mixed Waste Inventory Report (MWIR). Any changes/corrections to the MWIR waste stream and treatment facility 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 wastes. In addition, other large volume waste streams will generally be treated on-site. At a minimum, Richland (RL), Oak Ridge (OR), Idaho (ID) and Savannah River (SR) will have on-site facilities to treat the majority of their wastes.
 - (8) The Environmental Management PEIS is being prepared in parallel with the development of the STPs. The PSTP process will provide information to the 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) In support of DOE's cradle-to-grave waste management philosophy, disposal site location and criteria will be factored into state equity discussions, waste treatment facility designs, and the characteristics of the final waste forms.

2.2 Preferred Option Selection Process

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' FFCA 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 FFCA, 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 Coordination with Regulatory Agencies and Other Stakeholders

The Act offers an opportunity for DOE and the state and EPA regulators who will be approving the *Plans* to work cooperatively toward defining mixed waste treatment plans. As requested by the states, DOE signed a cooperative agreement in August 1993 with the National Governor's Association (NGA) to facilitate the DOE-to-State interactions. To date, the NGA has sponsored several national meetings between DOE, the states, EPA, and the Indian Nations to discuss the development of the STPs. Two working groups have been formed to discuss technical issues related to treatment and disposal of mixed waste. NGA and the states have also reviewed and provided comment on the guidance documents discussed in *Section 2.2*.

The Act requires the states and EPA to provide for public involvement after the *Final Proposed Plans* are submitted in March, 1995. It is the intent of the Department and the Ohio EPA to involve the public at an early stage in the development of the Site Treatment Plans. To the extent possible, public interactions related to mixed waste issues will be incorporated into existing public involvement programs at each DOE site. Staff from Ohio EPA will be invited to participate in any public interactions where information related to the Federal Facilities Compliance Act is presented. Additionally, the DOE and Ohio EPA will coordinate the distribution of copies of the plan to interested members of the public, and share copies of all comments.

A summary of interactions conducted with Ohio EPA and other stakeholders regarding the DSTP is as follows:

- In October 1993, the *BCLDP Conceptual Site Treatment Plan* was submitted to the Ohio EPA.
- Since October 1993, several meetings have been held with representatives from the five Ohio DOE sites to discuss mixed waste treatment needs, capacity and technology development that would be common according to waste streams at each of the various Ohio sites.
- On March 22, 1994, a meeting was held with the Ohio EPA and the five Ohio sites to discuss the progress that is being made on the development of treatment technologies for wastes that are common to the Ohio sites.
- On April 14, 1994, a meeting was held to update the Ohio EPA on progress that is being made among the Ohio DOE sites on the Ohio treatment options. A presentation was made by EM-50 for mobile "skid-mounted" treatment modules that could be used by two or more of the Ohio DOE sites consecutively, thereby reducing or eliminating the need for intersite or interstate shipment of wastes for treatment.
- On May 5, 1994, a meeting was held at DOE-CH to discuss the DSTP text and format. Presentations were given on mixed waste treatment technologies being developed at Argonne National Laboratories.
- On June 6, 1994, a meeting was held with the Ohio EPA and the five Ohio DOE sites. A presentation was made on the progress being made with the Ohio treatment options.
- On June 21, 1994, a conference call with Ohio EPA and the five Ohio DOE sites was conducted. The main topic discussed was the Agency's comments on the Ohio Work Group's fact sheet entitled "*Evaluation of Alternative Treatment Technologies*".
- On August 30, 1994, The Draft Site Treatment Plan for the BCLDP was issued to Ohio EPA, USEPA Region V, interested stakeholders, public reading rooms and local libraries.
- On October 6, 1994, a meeting was held with Ohio EPA and the five Ohio DOE sites. Discussed were some preliminary comments OEPA had on the DSTP's, including the perceived lack of substance to the Ohio treatment option.

- Acting upon OEPA comments regarding the Ohio treatment option, the Ohio Work Group met several times in the months of October and November to give the Ohio treatment option improved commitments and validity.
- On November 1, 1994, the BCLDP received from Ohio EPA site specific comments on the DSTP. These comments have been incorporated into this PSTP.

All the DOE mixed waste generators in Ohio will continue to conduct periodic meetings to develop a common approach to address areas of wastes stream classification and treatment and public participation. BCLDP anticipates periodic meetings with the State of Ohio and the other DOE facilities to review activities related to implementation of the Federal Facility Compliance Act (FFCA). One or more public meetings will be held at Ohio DOE sites to present the requirements of the FFCA, discuss the treatment strategies to be presented in the PSTPs, and solicit feedback on the preferred options presented. Battelle's future interactions with stakeholders are outlined in the *BCLDP Public Participation Plan* supplement (Appendix C). These interactions are described in the project's public participation plan. Additionally, the BCLDP will work with state officials to establish a distribution list for the final *Site Treatment Plan* to meet the statutory requirement that the State make copies of the plan available to the public and consider any comments received.

A related on-going public information activity has been the public hearings on Battelle's application for a Part B Hazardous Waste facility. Although not directly related to the Federal Facility Compliance Act, the outcome of the Part B hearings will have an indirect effect on the future storage capacity of BCLDP radioactive mixed wastes. Subsequent to the Part B hearings, public and regulatory interaction activities have included tours of the current Battelle Part A storage facilities, BCLDP < 90 day accumulation areas, and satellite accumulation areas. Group members which have toured these facilities include the University Area Commission, Harrison West Society, University Community Association, members of the Ohio Attorney General's Office, Battelle permit opposition committee, community emergency response teams, Victorian Village Society, Columbus Department of Health, and representatives from various local news media. These tours are in addition to annual scheduled facility inspections conducted by the Ohio EPA, Central District Office officials.

At the National level, DOE has presented information on the development of the STPs to the Environmental Management Advisory Board (EMAB) and will continue to provide information to the EMAB and other national stakeholder groups as the STPs are developed. Other national level stakeholder involvement may be conducted after submission of the Proposed STPs.

Because of the statewide and national scope of the selection of mixed waste treatment technologies, all of the DOE sites within the State of Ohio have been working together as appropriate when providing information to the public. For the BCLDP this means providing project fact sheets and having technical representatives available to participate in briefings and public meetings sponsored by other DOE sites.

The mixed wastes which may possibly be produced as a result of decontamination activities have been subdivided into treatability groups as shown in section 3. These groups have been identified based on historical knowledge of facility operations, and the level of site characterization conducted to date. This grouping has been applied uniformly for sites in the State of Ohio, to provide a consistent data base upon which to make decisions regarding consolidated treatment and technology development. Because the exact volume of mixed wastes from decontamination and decommissioning of the Battelle facilities is speculative prior to detailed characterization and analysis, a range is given for each treatability group. The lower end of the range is based on waste in less-than-ninety day storage and satellite accumulation areas at the time the table was prepared. The maximum waste volume (mass) is based on conservative estimates of building rubble, soil, and other residues which may have both hazardous and radioactive residual contaminants. Care is taken in the planning of each major decontamination campaign to avoid the generation of mixed wastes.

2.4 Characterization of Mixed Wastes

First and foremost, wastes are characterized for the presence of radionuclides by gamma spectroscopy. If the matrix is proven to have an isotopic concentration of less than detectable limits or levels of isotopes less than the NRC-approved BCLDP volumetric release criteria, the waste is released by the project to Battelle Columbus Operations (BCO) Waste Management for any further characterization and disposition.

Since RCRA regulations apply to containerized wastes, samples are generally taken from waste vessels ranging from 1 to 55 gallons in volume. When preliminary data for the building designated to be decontaminated indicates elevated levels of chemical contamination or historical process knowledge warrants, a specific accumulation container for the suspect mixed waste is provided by BCLDP waste management. Once the entire waste stream is containerized, a representative sample is taken. However, if a finite Solid Waste Management Unit exists, such as a sump or wood flooring which is destined to be removed in the process of D&D activities and is suspected to be RCRA regulated, pre-characterization sampling will be performed in-situ to facilitate the proper packaging, labelling and accumulation once it is removed. The respective sample is taken in accordance with EPA SW-846, under the guidance of established operating procedures.

Battelle has contracts with two separate outside analytical laboratories, Ecotek Laboratory Services, Inc. and IT Corporation Analytical Services. Both laboratories possess an NRC license to handle radioactive material in addition to performing EPA SW-846 test methods.

The analytical method selection is based upon the process knowledge of the activities conducted in the formerly utilized process area or laboratory, historical data, and pre-characterization "wet-chem" screening tests. These screening tests are utilized when there is little or no historical data on the specific waste stream. Test examples include pH measurement, presence/absence of cyanides and sulfides, flashpoint, air/water reactivity, presence/absence of peroxides or chlorine in oil. These tests can give indications on the group of compounds which need further analysis to confirm or refute that the radioactive waste is RCRA hazardous. All contract laboratory data is reported QC level III, which includes a matrix spike, matrix blank, and all of the raw data affiliated with the specific sample analysis for result validation.

Another factor in method analysis selection is the disposal site testing requirements. There are analyses which are State imposed or required under the sites' waste acceptance criteria such as leachable zinc and copper, percent moisture, or to perform totals in addition to leachable metals.

2.5 Waste Minimization

(The following information is summarized from the *Waste Minimization and Pollution Prevention Awareness Plan for the BCLDP*, Revision 2, April 21, 1994.)

The *BCLDP Waste Minimization Plan* outlines the policies, goals, and responsibilities for waste minimization and pollution prevention for the BCLDP. Battelle Corporate Operations and the BCLDP have a strong commitment and ongoing effort to make waste minimization and pollution prevention a standard operating philosophy.

The objective of the waste minimization and pollution prevention program is to systematically eliminate or reduce the generation of waste during the BCLDP project, to prevent or minimize the release of pollution in any environmental medium, to make source reduction and environmentally sound recycling an integral part of the operating philosophy of the BCLDP. It also seeks to develop in all employees an awareness of environmental problems and encourage their participation in minimizing the generation of waste.

Pollution Prevention consists of methods to eliminate or reduce waste volumes prior to generation. The BCLDP is continually placing emphasis on the safe, economical and environmentally sound disposal of waste material. The environmental impact of waste disposal is also taken into account while choosing methods and disposal sites. This is reflected by this project's continuous development and optimum utilization of the disposal options available today.

2.5.1 Pollution Prevention

2.5.1.1 Past Activities

In the past, the philosophy was to decontaminate and radiologically release materials for transfer to the BCO property disposal group for final disposition. The remaining radioactive waste was then shipped to the Westinghouse Hanford Company (WHC) in Washington for storage or disposal. This practice was modified in 1993 to include the use of SEG in Oak Ridge Tennessee for volume reduction prior to disposal. Currently these same options remain in use with the addition of Envirocare of Utah as a safe economical disposal option.

2.5.1.2 Current Pollution Prevention Activities

The principal techniques are product substitution and process changes. The BCLDP continually strives to improve upon its current practices and to identify additional areas in which it can reduce pollution at the source. Some examples of current BCLDP practices are listed below.

2.5.1.2.1 Product Substitution

The BCLDP has restricted the use of cleaners and solvents within radiological control areas to those which are non hazardous and non toxic. All purchased chemical products are required to under go a review, using the associated Material Safety Data Sheet (MSDS) to determine if hazardous constituents are present. Substitution with non-hazardous equivalents occurs whenever possible.

2.5.1.2.2 Process Changes

The following are examples of process changes which have been implemented to reduce or eliminate the generation of waste.

- Grit blasting has been used as an alternative to chemical decontamination.
- Soil pipe drain lines containing mercury contamination are now being honed and decontaminated to reduce the volume of mercury contaminated waste.
- Soil pipe drain joints sealed with poured lead are now being broken. The lead is removed and radiologically released to reduce the volume of contaminated lead entering the mixed waste disposal stream.

- Packaging, such as boxes, crates, and cushioning materials are now removed from new materials prior to entering radiological control areas, reducing the potential for creating contaminated waste unnecessarily.
- Training is provided and great care is taken to prevent the commingling of contaminated oil and chemical wastes with uncontaminated wastes.

2.5.2 Current Waste Minimization Activities

Waste minimization consists of techniques applied to waste after it is generated. Many opportunities are currently in use on site and off site. Examples of on site techniques to reduce waste volumes include separation of radioactively contaminated and non-contaminated items, decontamination of contaminated items, removal of contaminated parts from an item and reclaiming potential waste materials. Off site techniques include volume reduction through super compaction, incineration and metal melting.

2.5.2.1 Segregation to Prevent Commingling

The practice of segregating to prevent cross contamination is best demonstrated by the BCLDP chemical disposal process. Contaminated chemicals are segregated from uncontaminated chemicals. Those chemicals which are uncontaminated are radiologically released and transferred to the BCO hazardous waste group for reuse or disposal, thereby reducing the quantities of chemical waste generated by the BCLDP. Field sampling evaluations are performed as applicable to determine whether potential hazardous wastes meet the regulatory criteria to be categorized and regulated as hazardous waste. Radiologically contaminated chemical waste is further segregated to comply with various disposal site criteria. Similar emphasis is placed on the importance of preventing cross contamination throughout the entire waste segregation process.

2.5.2.2 Separation of Hazardous Components

Whenever feasible, hazardous components are removed from waste to reduce the volumes of hazardous waste. For example, decontamination of mercury from drain lines creates a relatively small quantity of mercury sludge waste and a large quantity of cast iron drain line which can then be disposed of separately. Pipe joints sealed with poured lead are broken and the lead is removed.

In many cases the lead is radiologically released, then transferred to the BCO hazardous waste group for disposition. Florescent light bulbs, mercury vapor light bulbs and vacuum tubes are also decontaminated when necessary and radiologically released, further reducing the quantities of hazardous wastes.

2.5.2.3 Recycling and Reuse

Valuable equipment is radiologically released whenever feasible. Non contaminated items are transferred to the BCO property disposal group for reuse throughout Battelle, recycling through off site concerns, or release to staff for home use through a sealed competitive bid process. BCLDP participates in BCO programs for the collection of recyclable metals and office paper sent off site for recycling.

2.5.2.4 Off Site Volume Reduction

Off site volume reduction of low-level radioactive waste (not radioactive mixed waste) is performed through SEG in Oak Ridge, Tennessee. Volume reduction services provided to the BCLDP include super compaction at a volume reduction ratio of approximately 42:1, incineration of compactible and combustible materials at a volume reduction factor of approximately 100:1, and metal melting at a volume reduction factor of approximately 100:1. The ash from incineration, the slag from metal melting, and the super compacted containers are returned to BCLDP for shipment to the offsite disposal facility (Westinghouse Hanford Company). The blocks of cast metal are recycled through an internal DOE project.

3.0 LOW-LEVEL MIXED WASTE STREAMS

3.1 Mixed Waste Streams for Which Technology Exists (*Summarized in Table 3-1*)

The following is a description of the mixed-waste streams which have been identified by the project at this time. Based on historical knowledge and the level of characterization performed to date, it is assumed that future mixed wastes encountered during decontamination activities will fall into these categories as well. The volumes indicated are subject to change as work proceeds and material is sent off-site for treatment and disposal. It is anticipated that D&D activities at the King Avenue facility will be completed by the fall of 1996. By this time, the majority of EM waste will have been generated and shipped off-site for treatment and disposal. Actions required for the treatment site to accept mixed waste from the BCLDP have been

Table 3-1 Mixed Waste Streams (Updated Inventories/Projections as of February 9, 1995)

Treatability Group	Waste Description	EPA Code	Current Inventory (Kg/m ³) (Satellite Accumulation Areas)	5 Year Projected Generation (Kg/m ³)	Treat. Tech.	Basis	Status	Issues/Comments
Lab Packs (Inorganic) BC-W001	Laboratory reagents in containers (flammable metal powders)	D001	77/0.042	130/0.208	DEACT.	C	2	Characterized by a combination of lab analysis and process knowledge. High level of confidence in characterization.
Lab Packs (Organic) BC-W002	Paint, oils with solvents, cleaning compounds	D001 D040	212.72/0.511	1,365/1.664	INCIN. RORGS.	C	2	Characterized by a combination of lab analysis and process knowledge. High level of confidence in characterization.
Elemental Lead BC-W003	Shielding blocks, weights, lead shielding contained in walls, casks, and lead shot	D008	0/0	1180/1.282	MACRO.	T	2	Approximately 315,454 kg of lead shielding associated with the BCLDP. The majority of the shielding will not become waste until the end of the project (2000). It is anticipated that most of the lead can be decontaminated with treatment of the residues as appropriate. Characterized by lab analysis and process knowledge. High level of confidence in characterization.
Inorganic Sludges/ Particulates Drain Lines BC-W004	Debris generated from decontamination of ductile iron drain lines	D009 D008	0/0	6545/12.0	AMLGM. MACRO.	T	2	Characterized by a combination of laboratory analysis and process knowledge. High level of confidence in characterization.

EPA Code comes from the listings found in 40 CFR 265
 (*Not found in 40 CFR 268.42, Table 1. Proposed treatment technologies only.)

INCIN. - Incineration
 DEACT. - Deactivation
 RORGS. - Recovery of Organics
 MACRO. - Macroencapsulation
 AMLGM. - Amalgamation

Basis: C = concentration based treatment standard;
 T = technology based treatment standard
 Status 2 = waste stream for which technology exists, but without capacity on-site

discussed with each site's operator, and are listed in the following sections. Where treatment facilities have not yet been constructed, it will be necessary to ship project mixed-waste for pre-treatment storage.

3.1.1 Lab Packs (Inorganic)

- *Lab Packs (Inorganic)*. Laboratory reagents in their original containers (flammable metal powders). RCRA Waste Code: D001.
- *Current Inventory*: Quantity in Satellite Accumulation = 77 kg/0.042 m³. Five-year projected = 130.0 kg/0.208 m³. Further characterization will be conducted to verify that the metal powders which are projected to be generated meet ignitibility criteria per 40 CFR 261.21. Based upon this further analysis, some of the metal powders may be able to be managed as low-level radioactive waste.
- *Treatment Technology*: Deactivation
- *Characterization Level of Confidence*: High

3.1.1.1 Description of Technology and Capacity Needs

Waste Stream Name:	Lab Packs (Inorganic)
MWIR No.:	BC-W001
LDR Treatment Standard:	Deactivate so the waste does not exhibit the characteristic of ignitibility
Technology Needed:	Deactivation
Capacity Required:	0.042 m ³ initially; approximately 0.208 m ³ by 1998

3.1.1.2 Preferred Option

Waste Stream Name:	Lab Packs (Inorganic)
MWIR No.:	BC-W001
Treatment Location:	Fernald, Ohio
Facility Name:	FM-S804
Technology Needed:	Deactivation by stabilization
Actions Needed to Implement:	RCRA Part B Permit Contract Amendment or OEPA Director's Finding and Order
Facility Status:	Planned

3.1.1.3 Alternate Options

Waste Stream Name: Lab Packs (Inorganic)
 MWIR No.: BC-W001
 Treatment Location: Envirocare, Clive, Utah
 Facility Name: Mixed Waste Treatment Facility
 Technology Needed: Deactivation by stabilization
 Actions Needed to Implement: Treatability study and finalization of acceptance criteria
 Facility Status: Construction completed.

3.1.1.4 Schedule for activities to ship waste off-site:

Activity	Type	Date
Request approval to ship waste	milestone	October 1995
Prepare waste for shipment	milestone	January 1996
Ship waste	milestone	March 1996

3.1.2 Lab Packs (Organic)

- *Lab Packs (Organic):* RCRA Waste Code: D001, D040
- *Current Inventory:* Quantity in Satellite Accumulation = 5.0 kg/0.511 m³. Five-year projected = 40.0 kg/1.664 m³.
- *Treatment Technology:* Incineration, organic destruction
- *Characterization Level of Confidence:* High

3.1.2.1 Description of Technology and Capacity Needs

Waste Stream Name: Lab Packs (Organic)
 MWIR No.: BC-W002
 LDR Treatment Standard: Deactivate so the waste does not exhibit the characteristic of ignitibility
 Technology Needed: Incineration, organic destruction
 Capacity Required: 0.511 m³ initially; approximately 1.664 m³ by 1998

3.1.2.2 Preferred Option

Waste Stream Name:	Lab Packs (Organic)
MWIR No.:	BC-W002
Treatment Location:	Oak Ridge, TN
Facility Name:	K-25 TSCA Incinerator
Technology Needed:	Organic destruction
Actions Needed to Implement:	Variance to facility's Part B Permit and further waste analysis
Facility Status:	Operating

3.1.2.3 Alternate Option

Waste Stream Name:	Lab Packs (Organic)
MWIR No.:	BC-W002
Treatment Location:	Idaho National Engineering Laboratory
Facility Name:	WERF Incinerator
Technology Needed:	Incineration
Actions Needed to Implement:	Part B Permit

3.1.2.4 Schedule for activities to ship waste off-site:

Activity	Type	Date
Request approval to ship waste	milestone	January 1996
Prepare waste for shipment	milestone	June 1996
Ship waste	milestone	August 1996

3.1.3 Elemental Lead

- *Elemental Lead*: RCRA Waste Code: D008 Currently exists as weights, shielding material and joint filling. Surface radiation contamination may be removable by abrasion to reduce volume.
- *Current Inventory*: Quantity in Satellite Accumulation = 0.0 kg/0.0 m³ Five-year projected = 1180 kg/1.282 m³.
- *Treatment Technology*: Stabilization, Macroencapsulation
- *Characterization Level of Confidence*: High

3.1.3.1 Description of Technology and Capacity Needs

Waste Stream Name:	Elemental Lead
MWIR No.:	BC-W003
LDR Treatment Standard:	Macroencapsulation so waste does not exhibit leachability characteristic
Technology Needed:	Macroencapsulation
Capacity Required:	1.282 m ³ by 1998

3.1.3.2 Preferred Option

Waste Stream Name:	Elemental Lead
MWIR No.:	BC-W003
Treatment Location:	Hanford, Washington
Facility Name:	WRAP II A
Technology Needed:	Macroencapsulation

Facility Status: The Hanford Site is proposing to seek treatment services from the private sector for waste streams, including wastes from other DOE sites, that were to be treated in a new facility, WRAP IIA. Accordingly, DOE-Richland has requested that the Milestone M-19-00, "Complete WRAP II Module Construction and Initiate Operations" in the Hanford Tri-Party Agreement, be amended. The proposed amendment would not change the milestone date for initiating operations on September 30, 1999. If the amendment is approved, the specific nature and location of the facility will be determined through the contracting process. The status of the privatization effort, progress in securing treatment services by DOE-Hanford and any change to the facility title will be reported in subsequent Annual Update Reports to the Plan.

3.1.3.3 Alternate Option

Waste Stream Name:	Elemental Lead
MWIR No.:	BC-W003
Treatment Location:	Fernald, Ohio
Facility Name:	FM-S804
Technology Needed:	Macroencapsulation
Actions Needed to Implement:	Treatability study and finalization of acceptance criteria; site contract amendment

3.1.3.4 Schedule for activities to ship waste off-site:

Activity	Type	Date
Request approval to ship waste	milestone	January 1996
Prepare waste for shipment	milestone	June 1996
Ship waste	milestone	August 1996

3.1.4 Mercury Contaminated Particulate/Debris from Ductile Iron Drain Line

- *Mercury Contaminated Particulate/Debris from Ductile Iron and Ceramic Drain Lines: RCRA Waste Code: D008, D009*
- *Current Inventory: 0.0 kg/0.0 m³. Five-year projected = 6545 kg/12.0 m³.*
- *Treatment Technology: Amalgamation, Macroencapsulation*
- *Characterization Level of Confidence: High*

3.1.4.1 Description of Technology and Capacity Needs

Waste Stream Name:	Mercury Contaminated Particulate/Debris
MWIR No.:	BC-W004
LDR Treatment Standard:	Amalgamation and macroencapsulation so the waste does not exhibit the characteristics of leachability
Technology Needed:	Amalgamation and macroencapsulation
Capacity Required:	12.0 m ³ by 1998

3.1.4.2 Preferred Option

Waste Stream Name:	Mercury Contaminated Particulate/Debris
MWIR No.:	BC-W004
Treatment Location:	Hanford, Washington
Facility Name:	WRAP II A
Technology Needed:	Amalgamation, macroencapsulation

Facility Status: The Hanford Site is proposing to seek treatment services from the private sector for waste streams, including wastes from other DOE sites, that were to be treated in a new facility, WRAP IIA. Accordingly, DOE-Richland has requested that the Milestone M-19-00, "Complete WRAP II Module Construction and Initiate Operations" in the Hanford Tri-Party Agreement, be amended. The proposed amendment would not change the milestone date for initiating operations on September 30, 1999. If the amendment is approved, the specific nature and location of the facility will be determined through the contracting process. The status of the privatization effort, progress in securing treatment services by DOE-Hanford and any change to the facility title will be reported in subsequent Annual Update Reports to the Plan.

3.1.4.3 Alternate Option

Waste Stream Name: Mercury Contaminated
Particulate/Debris
MWIR No.: BC-W004
Treatment Location: *to be determined*
Facility Name: *to be determined*
Technology Needed: Amalgamation,
macroencapsulation
Actions Needed to Implement: Commercial treatability
study

3.1.4.4 Schedule for activities to ship waste off-site:

Activity	Type	Date
Request approval to ship waste	milestone	January 1996
Prepare waste for shipment	milestone	May 1996
Ship waste	milestone	July 1996

3.2 Waste Streams for Which Technology Exists But Needs Adaptation or for Which No Technology Exists

Not Applicable. All anticipated mixed wastes resulting from decontamination efforts are treatable with available technology.

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

Not Applicable. All anticipated mixed wastes resulting from decontamination efforts are treatable with available technology.

4.0 TRU MIXED WASTE STREAMS

4.1 Description of Waste Streams

The types of Transuranic wastes identified by the BCLDP include metallurgical samples of spent nuclear fuel, contaminated laboratory equipment, particulate contamination on interior hot cell walls and surfaces, and contaminated filters and resins. The potential generation of TRU mixed waste by the project is speculative at this time; further characterization of the JN-1 hot cell is required to make a determination. TRU mixed wastes are not anticipated based upon current knowledge.

4.2 National Strategy for Managing Transuranic Waste

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 in WIPP. Compliance with the requirements of the Federal Facility Compliance Act (FFCA) 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.

5.0 HIGH-LEVEL MIXED WASTE STREAMS

Not applicable. The BCLDP does not anticipate generation of high-level wastes.

6.0 FUTURE GENERATION OF MIXED WASTE STREAMS

6.1 Environmental Restoration Waste - The BCLDP is a D&D Project (see 6.2).

6.2 Decontamination and Decommissioning Waste - All of the mixed wastes described in Section 3.0 are the result of decontamination and decommissioning activities. The mixed waste types and volumes described herein are speculative, based on historic knowledge and preliminary characterization. See *Section 3.0* for information on current mixed waste projections by treatability group. It is likely that all future mixed wastes generated will fall into these groups as well. See *Section 2.4* for a discussion of the project's program to characterize waste media as part of the overall waste certification process.

6.3 Other Wastes - No "other wastes" are anticipated by the BCLDP. All BCLDP wastes will fall under *Sections 3.2 and 6.2*.

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 *Site Treatment Plans*.

For mixed waste to be shipped off-site for treatment, storage of the mixed waste before and after treatment 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 the need to facilitate closure of the shipping site will be considered in proposing shipping schedules. Under the current arrangements with Hanford, residues resulting from treatment of BCLDP's mixed waste in the facilities current possession will be kept at the Westinghouse facility for disposal. The BCLDP is seeking to continue this arrangement. This would be true for any mixed wastes sent for LDR pre-treatment at Envirocare. Treatment residues from either SEG, Fernald or the TSCA incinerator will be sent to the Hanford or Envirocare for disposal. The BCLDP does not have the ability to accept or store treatment residues on-site.

Since December 29, 1981, Battelle has been operating its hazardous waste facilities under a Part A Permit which allows interim operation while the Part B Application has undergone reviews and revisions. The Part A allows storage of certain waste codes, not to exceed 500 gallons over 90 days, but less than one year. Unfortunately, most of the waste codes refer to "listed" wastes such as "P", "U", and "K". Therefore, BCLDP will not have the option to store the majority of its current or projected radioactive mixed waste. Battelle has requested a revision to the Part A Permit to include waste codes D003 through D043.

As of January 13, Battelle has decided to withdraw its' application for the Part B permit as a recommendation under a corporate cost reduction program. It was determined that the estimated \$250,000 needed to renovate the designated existing facility to Part B status and other associated costs was not worth the anticipated benefits. This action negates Battelle's interim Part A permit and all its requested revisions.

Battelle is in the process of converting into a large quantity generator and closing interim status storage areas. Therefore all RCRA hazardous wastes must be shipped to an off-site TSDF in less than 90 days. Federal and Ohio regulations state that any large quantity generator storing wastes in excess of 90 days, without an approved 30 day extension, are operating a storage facility (TSDF). Without the necessary permits, Battelle would be in violation.

To maintain compliance in light of Battelle's permit restrictions, the BCLDP operates a <90 accumulation area for project generated mixed waste. Wastes are characterized, profiled according to WHC's waste acceptance criteria, and shipped prior to the 90-day storage limitation. This is done in a BCLDP area to ensure proper control of DOE radionuclides in the hazardous waste matrix.

A major concern of the BCLDP and stakeholders is that through the application of the FFCA implementing order, the BCLDP would no longer be able to send DOE-owned radioactive mixed waste to the Hanford facility, other DOE facilities or commercial mixed waste treatment facilities within the 90 day accumulation period. A worst-case scenario analysis would be that a newly defined DOE mixed waste stream would be identified with characteristics, such as PCB's in concentrations greater than 50 ppm, which no off-site TSDF could accept within the 90 day accumulation period. This could put Battelle in a situation where it would be defined as a storage facility, necessitating closure, and potentially initiating the Part B permit cycle over again from the beginning. Therefore, a TSDF or several TSDFs that can accept all BCLDP mixed waste stream is essential to maintain compliance.

8.0 PROCESS FOR EVALUATING DISPOSAL ISSUES IN SUPPORT OF THE STP DISCUSSIONS

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

8.1 Background

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

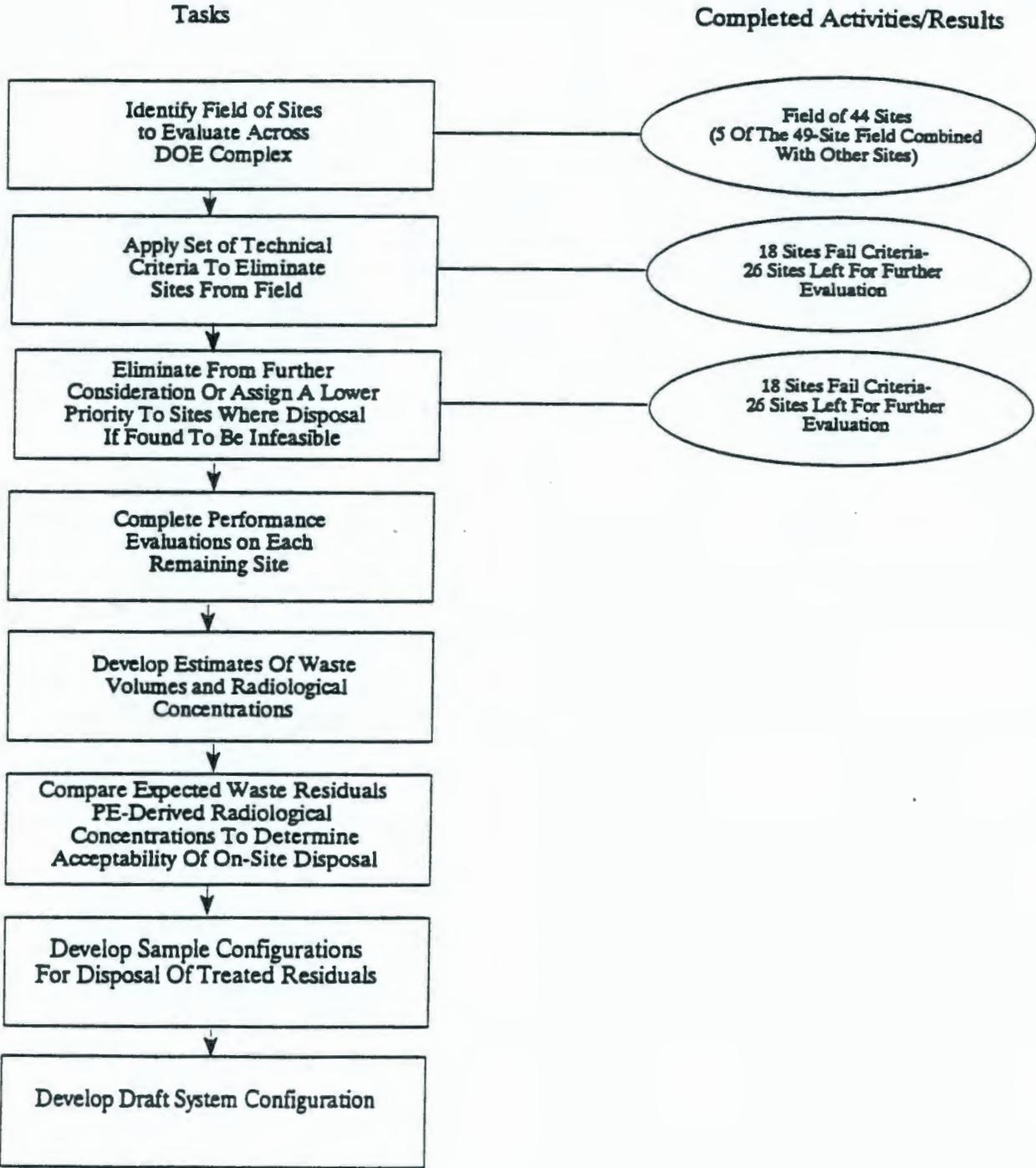
High-level and mixed transuranic wastes are among the mixed waste subject to the FFCA. Options for disposal of these mixed wastes are not identified by this process because there are established processes for studying, designing, constructing, and operating disposal facilities for these wastes.

The DOE has historically planned to develop MLLW disposal facilities at the six DOE sites currently disposing of low-level waste. These sites are Hanford, Savannah River, Oak Ridge Reservation, Idaho National Engineering Laboratory, Nevada Test Site, and Los Alamos National Laboratory. Currently, the Hanford Site has the only active permitted facility operated by DOE for the disposal of residuals from the treatment of MLLW. This plan has been re-directed in conjunction with the planning efforts of the FFCA to include the results of the disposal planning process (Figure 8.1), and the Environmental Management Programmatic Environmental Impact Statement (EM PEIS). The sites subject to evaluation under this process are the 49 sites reported to Congress by DOE in the Mixed Waste Inventory Report (MWIR), April 1993, that are currently storing or expected to generate mixed waste.

8.2 Disposal Planning Process

Although the FFCA does not specifically address disposal of treated mixed wastes, both DOE and the States have recognized that disposal issues are an integral part of treatment discussions. A process was established to evaluate and discuss the issues related to the potential disposal of the residuals from the treatment of DOE MLLW at the sites subject to the FFCA, shown in Figure 8.1. The focus of this process has been to identify, from among the 49 sites that currently store or are expected to generate mixed waste, sites that are suitable for further evaluation of their potential as disposal sites. Sites determined to have marginal or no potential for disposal will be removed or deferred from further evaluation under this process. The remaining sites will be evaluated more extensively. Ultimately, a number of sites are expected to be identified that are technically acceptable for disposal of treated residuals.

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, while individually listed in the MWIR, were in such geographic proximity that further analysis could address them as a single site. This grouping reduced the number of sites to 44, as follows:

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

Initial Site Screening

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

- Must not be located within a 100-year floodplain;
- 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 criterion (100-year flood plain) is derived from both National Regulatory Commission (NRC) and Resource Conservation and Recovery Act (RCRA) requirements. The second criterion (active fault) was selected from requirements found in RCRA which restrict the location of waste treatment, storage, and disposal facilities. The third criterion (sufficient area for 100-meter buffer) is derived from guidance from the Environmental Protection Agency (EPA), NRC, and DOE for the proper operation of waste facilities.

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

Evaluation of the Remaining 26 Sites

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

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

Sites with marginal or no potential for disposal, based on these criteria, were recommended for removal or postponement from further evaluation. As a result of the meeting, DOE and the states agreed to eliminate five sites from further evaluation due to their limited potential for disposal. These are:

<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.

While not eliminated from further evaluation, it was agreed to lower the evaluation priority of an additional four sites. Issues such as the technical capabilities of the site, the volume of mixed waste that may be generated by the sites, and the acceptability of off-site waste contributed to a conclusion that further evaluation of some sites should not be a high priority. DOE and the

states agreed to evaluate these sites in terms of their capability to dispose of their own mixed waste if no other off-site disposal options could be identified. These sites will not be considered for disposal of wastes from other sites, and may be eliminated from further analysis if sufficient evidence suggests the potential for disposal is too limited. 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 being conducted for the 16 sites identified for further evaluation entails the collection of more detailed site-specific data related to the site characteristics. The performance evaluation methodology is based on the principles of radiological performance assessments and was developed by DOE performance assessment experts. Additionally, the evaluation will be based on RCRA-compliant engineered facilities. This information will be used to evaluate the sites and estimate the radionuclide concentration limits of waste that may be disposed at a given site. The performance evaluations were initiated in August 1994. The 16 sites for which performance evaluations are being prepared are:

<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 Laboratories	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 does not authorize the site to accept off-site wastes, the site will only be evaluated for disposal of on-site wastes.

8.2.2 Next Steps in the Evaluation Process

As illustrated in Figure 8.1, progress has been made in the planning of the disposal process. The following steps outline future activities that are either ongoing or are to be completed to facilitate an informed decision about the disposal of DOE MLLW. Coordination with the states will continue to ensure stakeholder input and to resolve concerns at the earliest possible stage.

Complete Remaining Performance Evaluations

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

Develop Estimates of Waste Volumes and Radionuclide Concentrations in Treated Residuals

Once treatment methods for the MLLW waste streams are finalized through the FFCA process, estimates of the volumes and radionuclide concentrations of the treated residuals will be developed for all waste streams; this analysis will take place after the PSTPs have been approved by the appropriate regulatory agencies. These estimates are needed to compare to the performance evaluation-derived radionuclide concentration guides.

Compare Estimates of Radionuclide Concentration in Treated Residuals to Performance Evaluation-Derived Radionuclide Concentration Guides

Radionuclide concentrations for each treated residual will be compared to those disposal values derived in the performance evaluation in this step. Comparing radionuclide concentrations in treated residuals with performance evaluation concentration guides will compare MLLW stream characteristics to potential disposal sites' capabilities. This evaluation will also include off-site DOE and commercial disposal site candidates for those treated waste streams which do not have on-site capabilities. Confirmation of the candidates streams and sites will be attained through detailed performance assessment efforts.

Develop Sample Configurations for Disposal of Treated Residuals

An Options Analysis Team (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. Under the OAT approach, other types of issues will be weighed during the configuration discussions such as transportation costs and distances.

Develop a Draft Disposal System Configuration

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

8.3 Integration with the STP Process

The FFCA does not require disposal to be included in the STPs; however, given the complex issues involved, DOE recognizes the importance of state input to facilitate resolution of issues related to disposal. Chapter 8.0 information is provided in the PSTP to continue to involve the states and inform them of DOE's continued work on the disposal issue. For more detailed information on the ongoing performance evaluation process, refer to 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.

LEFT BLANK

**THIS PAGE INTENTIONALLY
LEFT BLANK**