ARGONNE NATIONAL LABORATORY-EAST

Final Draft
Annotated Outline and Gap Analysis for a Long-Term Stewardship Implementation Plan at Argonne National Laboratory-East, March 15, 2002

Prepared for

DOE-CH Long-Term Stewardship Pilot Project

Planning Critical Elements of the Transition to Long-Term Stewardship at Chicago Operations Facilities

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NOTATION

The following is a list of the acronyms, initialisms, and abbreviations used in this report. Acronyms and abbreviations used only in tables are defined in the respective tables.

ACRONYMS, INTIALISMS, AND ABBREVIATIONS

ANL-E	Argonne National Laboratory-East
ANL-W	Argonne National Laboratory-West
DOE	U.S. Department of Energy
DOE-CH	DOE-Chicago Headquarters
D&D	decontamination and decommissioning
EM	DOE Office of Environmental Management
EMS	Environmental Management System
EQO	Environment, Safety and Health and Quality Assurance Oversight
FY	fiscal year
GIS	Geographical Information System
IEPA	Illinois Environmental Protection Agency
ISM	Integrated Safety Management
ISO	International Organization for Standardization
LTS	long-term stewardship
LTS-MS	Long-Term Stewardship Management System
O&M	operation and maintenance
PMP	Program Management Plan
PSO	Program Secretarial Office
SC	DOE Office of Science

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1 INTRODUCTION

This document describes a proposed outline for a Long-Term Stewardship Implementation Plan (LTS Plan) for Argonne National Laboratory-East (ANL-E). This LTS Plan would be prepared in accordance with the April 2001 guidance for such plans issued by the U.S. Department of Energy (DOE) Office of Long-Term Stewardship. This outline was prepared by first reviewing LTS requirements contained in the April 2001 guidance, the document entitled *Site-Specific Requirements in Support of LTS Transfer for Argonne National Laboratory-East*, and other sources. A method for addressing these LTS requirements at ANL-E was developed and is described in this document. In addition to preparing the outline, the DOE guidance itself was reviewed, an evaluation of the magnitude of the effort required to prepare the LTS Plan was developed, and a gap analysis was prepared. The gap analysis describes needed information, organizational entities needed to implement the plan that are not yet in place, and required decisions that have not yet been made.

This work was performed as part of a DOE-Chicago Headquarters (DOE-CH) pilot study regarding the development of LTS Plans for three DOE-Chicago Laboratories — ANL-E, Argonne National Laboratory-West (ANL-W), and Brookhaven National Laboratory (BNL).

2 BACKGROUND

The ANL-E site will be completing planned remedial actions at former waste management sites in fiscal year (FY) 2003 or FY 2004. A parallel program for decontamination and decommissioning former nuclear facilities (D&D program) has also been underway and is approaching completion. It was temporarily halted in early FY 2002 because of funding constraints. The remaining D&D work will resume when funds allow. Both of these activities have been funded and managed by the DOE Office of Environmental Management (EM).

Former waste sites and nuclear facilities at ANL-E have been remediated in a number of different ways. Some have been completely cleaned of contamination, some have been cleaned to acceptable levels of contamination for continued industrial/commercial uses, and some have been closed with significant amounts of waste and contamination left in place. The sites that have been closed with waste in place will require ongoing operation of remedial systems, surveillance (inspection of site conditions), maintenance of engineered systems, environmental monitoring, and institutional control as part of the LTS of these sites. These and the sites cleaned only to levels suitable for future industrial/commercial usage will also require careful long-term

management of historic records to document that cleanup was completed to the satisfaction of the Illinois Environmental Protection Agency (IEPA) and DOE, and to describe how much contamination is still present. These activities and administrative mechanisms needed to support these activities will constitute the LTS program for ANL-E.

3 TECHNICAL SCOPE OF LTS PROGRAM

Listings of the remediation sites at ANL-E that will require some type of long-term stewardship and an indication of the general nature of LTS requirements for those sites are contained in Tables 1, 2, and 3. The former waste sites are grouped into two types. Those with residual contamination that require some form of stewardship in addition to record keeping are shown in Table 1. Sites that were closed by removing residual contamination to below acceptable levels and that require only record keeping are listed in Table 2. All former nuclear facilities are listed in Table 3. The former nuclear facilities that contain significant amounts of residual contamination requiring ongoing management are shown first; D&D projects that were halted in FY 2002 are shown second; and facilities that were cleaned to "free release" levels (i.e., maximum levels of surface contamination allowed for unrestricted use) are shown last. The tables also give an indication of the type of residual contamination and which LTS activities are required at each site.

The remediation of several of the former waste sites shown in Tables 1, 2, and 3 is not yet complete, either because the remedial actions have not yet been carried out, or completed actions have not yet been approved by the IEPA (chemical constituents) or DOE (radioactive constituents). These active sites are shown in bold in the tables. The anticipated end state of these sites is listed in their respective table. If the incomplete cleanup work is not able to achieve the desired end state, or completed actions are not approved by the IEPA or DOE as anticipated, the final LTS work scope could vary somewhat from that discussed in this document.

To identify the nature of activities necessary to properly manage the closed remediation sites and former nuclear facilities, the following sources were reviewed to identify all requirements of the program:

- Regulatory requirements in various work plans, reports, and regulatory correspondence;
- DOE guidance regarding preparation of LTS Plans; and
- *Site-Specific Requirements in Support of LTS Transfer for Argonne National Laboratory-East.*

The nature of LTS requirements for a given site is related to the degree of hazard posed by the residual contamination and the type of engineered controls (if any) put in place. Fortunately, all of the LTS sites at ANL-E contain relatively small amounts of hazardous materials. What hazardous materials remain are contained within structures (i.e., contaminated

concrete), under low-permeability caps, within low-permeability soil, or contained within a hydraulic control region that prevents movement of contaminated groundwater. As long as the engineering controls are operating as designed and institutional controls are maintained, there should be no significant health risk or damage to the environment from these sites, either on- or off-site. Many of the LTS activities are intended to ensure that these controls remain effective.

Tables 1, 2, and 3 list the general types of LTS activities required at each unit. The following is a description of these general activities. Appendix A gives a more detailed breakdown of specific LTS requirements for the units that contain residual contamination.

3.1 INSPECTION

On a regular basis, each waste site containing residual contamination needs to be inspected to ensure that the remedies put in place are working as planned, that engineered controls and facilities are being maintained properly, and that the institutional controls needed to protect the unit are in place. The frequency and nature of the inspection will vary from unit to unit.

3.2 OPERATION

A few sites (317 French Drain, 319 Landfill) utilize mechanical equipment or engineered plantings (in the case of the 317 Area phytoremediation system) to achieve the desired level of control. To continue to achieve the necessary level of control, these systems must remain in operation until the remediation objectives are met. The systems installed were chosen in part because they are very simple and require very little operator attention; however, maintaining effective operation still requires periodic assessment of the system's performance and adjustments and modifications as needed.

3.3 MAINTENANCE

Periodic maintenance of engineered controls and facilities is critical to ensuring long-term reliability and protectiveness. Maintenance requirements are relatively simple, including regular preventive maintenance and repair of groundwater extraction systems; replacement of diseased or damaged phytoremediation trees; repair of erosion or other damage to caps; repair of signs, fences, and other barriers; and upkeep and repair of building systems needed to prevent the release of radioactive materials from former nuclear facilities (roof systems, heating and ventilation, sump pumps, electrical power, etc.).

TABLE 1 Summary of Former Wastes Sites Requiring Long-Term Stewardship

SWMU No.	Description	Actual or Expected End State	Residual Contamination	Inspection	Operation	Maintenance	Monitoring
Sites Requiring Long-Term Operations and Maintenance							
1	Facility 318 Compressed Gas Cylinder Burial	NFR[a]	Hazardous compressed gases	X		X	
2	319 Area Landfill	NFR[b]	Solid and hazardous waste, tritium	X	X	X	X
4	**800 Area Landfill**[c]	**NFR**	Nonhazardous solid waste, tritium	X		X	X
11	317 Area French Drain	NFR	VOCs in soil and groundwater	X	X	X	X
12	317 Area Map Tube Vault	NFA[b,d,e]	Buried concrete with radioactive contamination				X
13	**317 Area East Vaults Footing Drain**	**NFR**	Partly sealed, rest will stay in operation				X
18	319 Area French Drain	NFR	VOCs in waste and groundwater	X	X	X	X
19	**ENE 319 Landfill**	**NFR**[b]	Nonhazardous solid waste	X		X	X
20	**800 Area French Drain**	**NFR**	VOCs in waste and leachate, some tritium	X		X	X
744	**Newly Identified Suspected Solid Waste Landfill**	**NFR**	Nonhazardous waste, metals in groundwater				X
AOC-C	**800 Area Landfill Leachate Seep**	**NFR**	Part of 800 Landfill (seeps no longer exist)				
AOC-G	Off-Site Seep	NFR[b]	VOCs and tritium off-site				X
NA[f]	**317 Area North Vault**	**NFA**[b,g]	Buried concrete with radioactive contamination				X
NA[f]	**317 Area Deep Vault**	**NFA**[b,g]	Buried concrete with radioactive contamination				X
NA[f]	Former South Vaults	NFA[b,g]	Buried concrete with radioactive contamination				X

[a] A No Further Remediation (NFR) designation indicates that all planned remedial actions have been completed, but ongoing operation, maintenance, and monitoring are required.

[b] These units contain both chemical and radioactive materials and, thus, are subject to both IEPA and DOE regulatory authority.

[c] Bold type indicates an active site, that is, remediation is not yet complete because the remedial actions have not been implemented, or completed actions have not been approved by the IEPA.

[d] A No Further Action (NFA) designation indicates that all planned remedial efforts are complete, thus no further action is required.

[e] This facility was cleaned under the authority of both the IEPA (chemical contaminants) and the DOE (radioactive material).

[f] NA indicates that these units are not SWMUs and do not have SWMU numbers assigned to them.

[g] These units are not SWMUs and are not subject to IEPA authority; the NFA designation is based on a DOE determination that remedial actions are complete.

Notation: AOC = area of concern; SWMU = solid waste management unit; VOC = volatile organic compound.

TABLE 2 Former Waste Sites Requiring Only Information Management

SWMU No.	Description	Actual or Expected End State
5	East Area Sewage Treatment Sand Filter Beds	NFA[a]
6	FEUL Settling Pond	NFA
7	**Freund Ponds[b]**	**NFA**
8	**Lime Sludge Pond**	**NFA[c]**
9	Bldg. 108 - Equalization Pond	NFA
21	Laboratory Sewer	NFA
104–106	**Laboratory Retention Tanks (Bldg. 310)**	**NFA[d]**
132	Sanitary Sewer	NFA
133	**570 Area - Unlined Holding Basin**	**NFA[d]**
134	570 Area - Laboratory Wastewater Sludge Drying Beds	NFA
136	**570 Area - Sanitary Wastewater Sludge Drying Beds**	**NFA**
137	Canal Water Treatment Plant Settling Ponds	NFA
138	East Area Sanitary Sewers	NFA
142	East Area Burn Pit	NFA
146	**A^2R^2 Reactor Excavation Fill**	**NFA**
148	South of 381 - Ravines Filled with Trash	NFA
150	**Bldg. 34 Mixed Liquid Waste Treatment**	**NFA[d]**
151	**Bldg. 330 Yard with Mixed Materials for Decommissioning**	**NFA[d]**
152	Waste Oil Storage Area	NFA
159	Waste Oil SAA (B-205)	NFA
161	Waste Oil SAA (B-208)	NFA
162	Waste Oil SAA (B-211)	NFA
163	Waste Oil SAA (B-212)	NFA
170	Waste Oil SAA (Bldg. 815)	NFA
175	Boiler House Spent Sorbent Silo	NFA
176	Scrap Metal Storage West of Bldg. 827	NFA
177	Boiler House Ash Silo	NFA
178	360 Area Fenced Low-Level Radioactive Staging Area	NFA[d]
179	**Storm Sewers – Cooling Tower Wastewater**	**NFA**
180	Scrap Disposal Staging Area East of 377 Cooling Towers	NFA
182	Waste Oil Spread on Roads	NFA
498	**319 Area Shooting Range**	**NFA**
693	Bldg. 24 Former Boiler House Pit	NFA
694	Bldg. 108B – Baghouse Unit	NFA
721	**Laboratory Retention Tank Sump (Bldg. 310)**	**NFA[d]**
725	Central Boiler House Ash Loader	NFA
736	800 Area Non-PCB Transformer Storage Pad	NFA
745	Bldg. 214 Sump	NFA
AOC-B	AOC-B 800 Area Landfill Wetland Area	NFA
AOC-F	**AOC-F Contaminated Soil near Bldg. 827**	**NFA**
AOC-H	**AOC-H Contaminated Soil near Bldg. 24**	**NFA**

See next page for footnotes.

TABLE 2 (Cont.)

[a] A No Further Action (NFA) designation indicates that all planned remedial efforts are complete, thus no further action is required.

[b] Bold type indicates an active site, that is, remediation is not yet complete because the remedial actions have not been implemented, or completed actions have not been approved by the IEPA.

[c] The lime sludge pond was originally considered a SWMU and was assigned a SWMU number; however, it is no longer under the corrective action program. DOE will make an NFA determination when all the sludge has been removed and the site has been restored.

[d] These units contain both chemical and radioactive materials and, thus, are subject to both IEPA and DOE regulatory authority.

Notation: AOC = area of concern; A^2R^2 = Argonne Advanced Research Reactor; FEUL = Fossil Energy User's Laboratory; SAA = satellite accumulation area.

3.4 MONITORING

Collecting information regarding the presence of contaminants in the environment (and other factors) within and surrounding the LTS sites constitutes the monitoring program. This takes a variety of forms; the most common type of monitoring at ANL-E is groundwater sampling and analysis. Some surface water and air sampling are also conducted. Other measurements, such as groundwater elevation and pump flow rates, are also recorded. The frequency of these efforts varies from unit to unit and is primarily identified in IEPA-approved work plans and similar documents. Monitoring of former nuclear facilities is limited to groundwater sampling around Bldg. 330.

3.5 SURVEILLANCE

Five former nuclear facilities have residual contamination and require periodic inspections to detect potential releases. The Bldg. 200 M-Wing Hot Cell is only partially decontaminated. Funds are being sought to complete the D&D process. Bldg. 330 contains residual tritium contamination in the concrete, which is being managed through an effective surveillance and maintenance program. The three partially complete D&D projects — Bldg. 301 Hot Cells, Bldg. 315 Zero Power Reactor (ZPR) Cell 6, and the Bldg. 335 Juggernaut Reactor — will contain significant amounts of radioactive materials until the D&D is completed. In the mean time, periodic surveillance of the sites is required. Continuous monitoring of these sites, however, is not required at this time.

TABLE 3 Former Nuclear Facilities Requiring Long-Term Stewardship

Description	Current Status	Residual Contamination	Surveillance	Maintenance
Completed D&D Projects that Require Long-Term Surveillance and Maintenance				
Bldg. 200 M-Wing Hot Cells (partial decontamination only)	Active facility	Multiple radionuclides on surfaces and within concrete	X	X
Bldg 330, CP-5 Reactor	Unused, in S&M	Tritium in concrete, other radioactive contamination in inaccessible areas.	X[a]	X
Incomplete D&D Projects Requiring Surveillance and Maintenance				
Bldg 315 ZPR Cells 6&9[b]	**Characterization only, in S&M**	Nature of residual contamination being determined.	X	X
Bldg. 301 Hot Cells	**Halted, in S&M**	Nature of residual contamination being determined.	X	X
Bldg 335 (Juggernaut)	**Characterization only, in S&M**	Nature of residual contamination being determined.	X	X
Completed D&D Project Requiring Only Records Retention				
Bldg. 316 ATSR Reactor	Office/lab space	Surfaces cleaned, cesium-137 under floor.		
Bldg. 597 Ion Exchange Building	Demolished	No contamination remains.		
Bldg. 211 60-in. Cyclotron	Office/lab space	Activated concrete and contamination in inaccessible areas remain.		
Bldg. 310 Retention Tanks	Ongoing	Surfaces partially cleaned; may be volume contamination or soil contamination under floor.		
Bldg. 202 Janus Reactor	Sealed off	Activated bioshield remains.		
Bldg. 331 EBWR Reactor	Waste storage	Activated bioshield remains.		
Bldg. 314 Fast Neutron Generator	Storage	Surfaces cleaned; may be volume contamination.		
Bldg. 212 Plutonium Glove Boxes	Office/lab space	Surfaces cleaned; volume contamination may remain.		

[a] Surveillance of the CP-5 reactor included a program of monitoring groundwater in the vicinity of the structure. This monitoring is part of the sitewide monitoring and surveillance program.

[b] Bold type indicates an active site, that is, remediation is not yet complete because the remedial actions have not been implemented or completed actions have not been approved by the IEPA.

Notation: ATSR = Argonne Thermal Source Reactor; CP-5 = Chicago Pile-5; D&D = decontamination and decommissioning; EBWR = Experimental Boiling Water Reactor; S&M = surveillance and monitoring; ZPR = Zero Power Reactor.

3.6 INFORMATION MANAGEMENT

This element applies to all of the LTS sites. It includes retention of historic records of the site that may be of value to future site users, including retention of the full administrative record (IEPA-approved documents, progress reports, correspondence, and other pertinent information) for corrective actions of former waste sites regulated by the IEPA, and compilation and presentation of monitoring data and other routine reports. It also involves various techniques to make this mass of data available to current and future site users, regulatory agencies, ANL-E and DOE managers, and other affected stakeholders.

3.7 OTHER REQUIREMENTS

The above six elements represent the routine, ongoing activities necessary to ensure that remedial actions continue to meet the project objectives. In addition to these elements, several nonroutine activities are also required:

3.7.1 Periodic Performance Assessment

On a regular basis (not yet determined but likely to be every five years), monitoring data and other information regarding the performance of the various engineered remedial systems should be assessed in greater detail to determine how well each system is performing and if any improvements or modifications are needed. This assessment will determine if performance objectives have been met and the site can be closed, or if additional remedial efforts are needed to improve or accelerate the cleanup of residual contamination. It will assess advances in remedial or monitoring technologies since the last review to identify potential improvements or cost-reducing measures that could be implemented. The systems requiring such a review at ANL-E are the phytoremediation system and groundwater extraction systems in the 317 and 319 Areas as well as the engineered cap in the 319 Area. Such reviews are required by the IEPA as part of the Groundwater Management Zone requirements. While reviews are not yet required by the IEPA for the 800 Landfill cap or the ENE Landfill cap, periodic assessment of these units is also advisable.

3.7.2 Contingency Planning

To prepare for the possible failure of engineered controls, either through catastrophic natural or man-made events, or slow degradation of the systems causing damage beyond the capability of routine maintenance to repair, a contingency plan is needed.

3.7.3 Final Project Closeout

At the completion of all remedial actions for a former waste site, when the site has achieved its stable final end point, the remedial systems currently in place may need to be

removed and the site restored to natural conditions. This involves removing groundwater extractions wells and pumps; removing monitoring wells; removing signs and fences; and removing nonnative phytoremediation trees and replacing them with native vegetation consistent with the surrounding environment. In the 317 Area, a final set of soil samples will be needed to document that remediation objectives have been met. For several of the former nuclear facilities (CP-5, Bldg. 301, Bldg. 200 Hot Cells), final project closeout represents the demolition and off-site disposal of the facility and all associated structures. If the facility is demolished in place, leaving contaminated demolition debris on-site, some LTS requirements would remain.

Table A.1 in Appendix A gives more detailed descriptions than Tables 1, 2, and 3 of the activities required at LTS sites that contain residual contamination. Sites that require only information management are not listed in Table A.1.

3.8 GENERAL CONSIDERATIONS

LTS requirements can be categorized as those required by regulatory agencies, those required by DOE (radioactive materials management requirements under DOE), current DOE LTS Plan guidance, and elements needed to ensure that best management practices are used in the execution of the LTS program. Each type of requirement carries a different level of importance, with regulatory (IEPA and DOE) requirements being the most significant. As a result, the program will focus primarily on the regulatory requirements; lesser importance will be given to requirements identified only by DOE LTS guidance or best management practices that would be desirable but are not required. The list of LTS requirements in Table A.1 of Appendix A identifies the source of each requirement.

The LTS program at ANL-E would be designed and implemented to ensure that all of the critical requirements would be satisfied for as long as necessary. The time frame over which this program would be required is uncertain; however, it is clear that aspects of it would need to continue for many years, since some of the residual hazards will exist for many years. In several cases, continuing soil and groundwater cleanup (by phytoremediation or natural attenuation) or radioactive decay should eventually decrease residual contamination to levels acceptable for unrestricted use and unlimited access. However, in the case of long-lived radionuclides, buried solid waste, inaccessible contaminants (contaminated soil under structures) or recalcitrant chemical contaminants (i.e., polychlorinated biphenyls or chlorinated solvents), it may be hundreds of years or longer before these areas will be suitable for unrestricted use and unlimited access.

In addition to describing the means of ensuring that required LTS activities are carried out, the LTS plan would describe the administrative mechanisms needed to support these actions. The magnitude of LTS activities at ANL-E is not great; however, adequate management attention will be needed to ensure that such activities are reliably carried out many years into the future. In addition, LTS requirements will change over time as sites achieve cleanup goals, former nuclear facilities are demolished, or currently active nuclear facilities are decommissioned. As a result, the LTS program will require regular updates and modifications as the result of these changes.

4 REVIEW OF DOE GUIDANCE

One purpose of the LTS pilot project is to evaluate the effectiveness of the current LTS Plan guidance by using it to prepare plans for representative sites. In pursuit of this objective, the LTS guidance was carefully examined in light of the LTS requirements at ANL-E. This involved examining the guidance itself in terms of its usefulness to a site such as ANL-E, which has a continuing mission; examining the completeness of the guidance in terms of identifying and addressing all important issues; and evaluating the usefulness of the guidance in terms of structuring an LTS Plan for ANL-E. This review yielded numerous comments, both general in nature and specific to certain aspects of the document. All the comments are contained in Appendix B. Several general comments on the guidance are discussed in this section.

The guidance appears to be written with large, EM-managed sites in mind that do not have a continuing mission. For a site like ANL-E, which has a relatively small program that will transfer from EM to the DOE Office of Science (SC), a number of issues that affect the program are not dealt with at all or only in a cursory manner. These issues include defining the process of transferring the sites from EM to SC, the allocation of funds to support the program, the integration of the program into existing ANL-E entities, and the management and oversight of an integrated program.

The guidance is very prescriptive in describing the information to include in the plan and the structure of that plan. Its focus is almost entirely on developing a written plan, with little discussion of the requirements of the LTS program itself. The guidance would be more effective if it focused on describing important requirements and key elements of an LTS program and allowed each site to determine the most effective way of addressing these requirements. The plan could then be developed in a manner that fits the individual sites better, rather than trying to fit the plan to a generic model. At ANL-E, the LTS requirements would be met by integrating these requirements into existing activities and programs. This being the case, the organizational structure of the LTS program would depend primarily on the larger structures into which the requirements would be integrated. Since the LTS Plan would reflect the organizational structure of the LTS program, the plan would likely have a structure unique to ANL-E.

The guidance identifies large amounts of information that should be included in the plan, with minimal discussion of other ways of addressing the needed information. Rather than reproducing large amounts of historical information, which would result in a cumbersome, difficult to maintain document, existing documents should be incorporated into the plan by reference wherever possible. Also, the amount of information included or referenced should be tailored to the degree of real or perceived residual hazard represented by the LTS site, thus focusing the program on the most significant sites.

The guidance does not address a number of issues that are important to ANL-E. These include the management of historical information for “clean-closed” sites, performing periodic assessments of the effectiveness of the remedial system and LTS program, proper management of residual materials from the demolition or excavation of former waste sites, the ultimate removal of remedial systems at former waste sites, and demolition of former nuclear facilities.

5 STRUCTURE OF THE LTS IMPLEMENTATION PLAN FOR ANL-E

To identify the most effective structure of the LTS Plan for ANL-E, the full set of requirements for the program was reviewed, and various ways of satisfying these requirements were compared. A review of the compiled requirements revealed that they fall into three general categories: (1) those that describe the transfer of the LTS program from EM to SC, (2) those that describe the nature of residual risk and the efforts needed to manage that risk, and (3) the administrative measures needed to manage these efforts. The organization of the LTS requirements into these three categories led to the conception of a series of three interrelated plans rather than a single plan, with each plan having a different purpose and emphasis.

To conform to DOE directives (stemming from Executive Order 13148), ANL-E is planning on utilizing International Organization for Standardization (ISO) 14001 standards to develop a management system for environmental management activities. This management system would follow the general structure of an Environmental Management System (EMS); however, formal ISO 14001 certification would not be sought. Therefore, ISO 14001 standards were taken into account as the content and structure of the plan were considered.

5.1 TRANSITION PLAN

This plan will describe the process of moving funding oversight responsibility for management of former waste sites and nuclear facilities from the EM program to SC. It will discuss specific agreements and commitments between EM and SC related to the transfer and the schedule for the transfer. It will consist of a paper document that is needed only to facilitate the transfer and that will not be updated after the transfer is complete.

5.2 LONG-TERM STEWARDSHIP MANAGEMENT SYSTEM (LTS-MS)

This element will describe the LTS program and the procedures that will be used to satisfy LTS requirements. It will consist of an electronic document (Web site) that will be made available at an Internet site. It will contain summary information on the former remediation sites and on the LTS program elements. Additional detailed information will be made available through the extensive use of hyperlinks to project documents and other detailed information sources. It will serve as a focal point for accessing information about the LTS program, descriptions of the individual sites and actions being taken, and data related to the LTS sites. The audience of this system will be internal ANL-E and DOE personnel as well as regulatory agencies and other interested stakeholders. It may be designed entirely, or in part, as a public document; however, security systems will be built in to limit access to preliminary information (such as raw analytical data from monitoring activities) that is not yet ready for viewing by the regulatory agencies or the general public.

5.3 LTS PROGRAM MANAGEMENT PLAN (PMP)

This document will describe procedures internal to DOE and ANL-E designed to assure adequate management of the program, provide sufficient funding to support the program, and ensure that mechanisms for financial accountability of the funds provided are in place. The plan will describe the development and maintenance of the LTS-MS and assign responsibility for this element of the program. It will be linked to the LTS-MS as needed to describe the management of the LTS program.

In the conceptualization of the three documents, an attempt was made to identify how they conform to the projected ANL-E EMS format. The EMS structure was found to fit the requirements of the LTS program quite well. Table 4 shows a comparison between the LTS requirements and the anticipated EMS structure.

On the basis of this three-pronged approach to LTS planning, the detailed descriptions contained in Appendix C were prepared. The document in Appendix C contains descriptions of key sections of the three plans, along with model language for some of the introductory sections.

6 DEVELOPING THE LTS IMPLEMENTATION PLAN

Preparing the three elements of the LTS Program for ANL-E will require considerable effort to compile the large amount of information needed, put it in the proper format, and prepare the main Web site and subsidiary documents that do not currently exist. To complete some sections, a number of outstanding issues will need to be resolved through discussions and negotiations with EM, DOE, the IEPA, and ANL-E. Appendix D contains a list of the activities needed to complete the plan. It identifies any unresolved issues that must be resolved before the plan could be completed or any required information that does not currently exist (gaps). The general tasks to complete the plan can be summarized as follows:

- Describe agreements related to roles, responsibilities, commitments, and schedules negotiated between EM and SC.

- Prepare new text that contains background information, program descriptions, summary level site information, description of LTS activities, management strategies, etc.

TABLE 4 Comparison between LTS Requirements and EMS Structure

EMS Element	Source of Requirement[a]	LTS Plan Elements
Introductory Information		
Scope	1	Need for LTS
Definition of program	1	Purpose of LTS plan
Mission of program	1	Organization of LTS Plan
Site description	1	Scope of LTS program
Management approach	12	Integration of LTS activities
LTS Policy Statement	EMS[b]	New policy statement
Planning		
Environmental aspects and impacts	3	Detailed list of sites in LTS program
	3	Physical location and boundaries of LTS sites
	3	Legal description of sites and units
	3	History of operations
	3	Site setting
	3	Off-site areas description
	3	Actions taken to date
	3	Location and nature of residual contamination and wastes
	3	Conceptual site model
	3	Characterization of residual risk
	6	Assumptions and uncertainties
Legal and other requirements	3	Regulatory or institutional requirements
Objectives and targets	1	Objectives of LTS program
Management program	1	Implementation of LTS Program
	SSRD[c]	Definition of LTS planning window
Implementation and Operation		
Structure and responsibilities	9	Responsibilities of site steward
	9	Responsibilities of LTS management team
	9	Responsibilities of regulatory lead
	7	Cost estimating
	7	Funding
	7	Financial management
Training, awareness, and competency	4	Resource management and personnel training
Communication and reporting	11	Section II, Part 11: What are the expectations for community involvement?
	SSRD[c]	Information access
Documentation	1	Objectives of LTS Plan
	SSRD[c]	Documentation of LTS program activities
Document control	EMS[b]	New document control process

TABLE 4 (Cont.)

EMS Element	Source of Requirement[a]	LTS Plan Elements
Operational control	4	Institutional controls
	4	Land use planning
	4	Surveillance
	4	O&M
	SSRD[c]	Future remedial actions and LTS
	SSRD[c]	Resumption of D&D program
	SSRD[c]	Periodic performance assessments
	SSRD[c]	Mortgage reduction
	6	Science and technology review and implementation
Emergency preparedness and response	6	Threshold planning and contingency plans
	SSRD[c]	Nonroutine repairs
Checking and Corrective Actions		
Monitoring and measurement	5	Monitoring program
	5	Site-wide monitoring and surveillance
Nonconformance, corrective and preventive actions	EMS[b]	New Compliance Review Process
Records management	5	Preserving LTS records
Audits	EMS[b]	New Audit Arrangement
Management Review		
Continuous improvement	EMS[b] & SSRD[c]	Process improvement

[a] Sources designated by a number are from the DOE LTS Plan guidance. The number designates the section in Part II that discusses this requirement

[b] This requirement is related to the EMS only and does not appear in the DOE guidance or the Site-Specific Requirements Document.

[c] This requirement was identified in the Site-Specific Requirements Document but does not appear in the DOE guidance.

Notation: EMS = Environmental Management System; O&M = operation and maintenance; SSRD = Site-specific Requirements Document.

- Develop the LTS-MS Web site, establishing links to project documents, Web sites of other organizations, site fact sheets, photographs, site Geographical Information System (GIS), and other supporting information.

- Compile the best available project documents and convert key documents into an electronic format for linking with the main Web page.

- Develop a permanent, redundant records storehouse for project documents.

- Develop a database and data visualization system to make monitoring data available and understandable to interested stakeholders.

- Update the site GIS to include information on former waste sites. Link the GIS to the LTS-MS Web site.

- Prepare summary fact sheets for each LTS site, providing basic information about each site, the nature of residual contamination, and the LTS activities performed.

- Develop a plan and schedule for periodic performance assessments, final site closure, facility demolition, and other nonroutine future work.

- Prepare a contingency plan for the former waste sites on the basis of an assessment of credible potential failures and resulting adverse impacts.

In addition to the technical efforts of preparing the plan components, DOE policy requires that the site stakeholders be involved in developing the program. With the exception of the IEPA, the ANL-E stakeholder community has not been heavily involved in planning efforts in the past. The IEPA, which is a critical stakeholder, has been heavily involved in the nonradiological aspects of the remedial program since the mid 1990s. Other stakeholders, including local government bodies, local community groups, and the general public, have been much less involved. Currently, there is only limited interaction with the general community, primarily though the Community Leaders Round Table. Effort is needed to identify appropriate opportunities for stakeholder involvement in the planning effort, and then to foster meaningful participation.

7 GAP ANALYSIS

In evaluating the development of a LTS Plan for ANL-E, it was found that some of the existing information, plans, procedures, and other elements do not completely satisfy the identified requirements. Appendix D lists specific deficiencies for individual elements of the LTS program. In general, the following gaps between requirements and the actual situation were identified:

- Currently, no DOE or ANL-E policy statements exist regarding LTS. Such policy statements are required for an EMS-compliant system.

- Organizational responsibilities, management procedures, and a funding source for implementing the LTS program have not yet been determined, though discussions to that end have begun. Final decisions regarding the implementation of LTS requirements at ANL-E will not likely be made until final guidance from DOE describing the required elements of a LTS Program are received.

- The historic information available about each site varies significantly from site to site. In some cases, the information is not sufficient to address all of the information needs discussed in the DOE guidance. In many cases, the available information is out of date since it describes conditions before remediation was completed.

- Most of the sites that have been declared "clean" were evaluated against standards for industrial/commercial land use. Often contaminant levels were not compared with standards for residential land use (typically the most restrictive). Thus, there is limited documentation as to the suitability of these sites for unrestricted use and unlimited access.

- Exact location information has not been generated on most of the sites. Elements of most of the sites have been surveyed, such as monitoring wells. However, the exact locations and boundaries of the sites have not been surveyed in all cases.

- Currently, no single up-to-date document exists that describes monitoring or operation and maintenance requirements and procedures. The requirements and procedures to be used are contained in a number of different project documents, some of which are now outdated.

- The nature, extent, and risk posed by residual contamination have not been fully assessed for many sites. The documentation of the degree of contamination varies from site to site. If risk was specifically addressed at all during the remedial phase, it was based on the levels of contamination prior to the start of remediation. No formal risk assessments exist for any of the sites. Risk evaluation, when it was conducted at all, was limited to preparation of a Site Conceptual Exposure Model (SCEM) describing preremediation conditions.

- The procedures needed to remove remedial systems, stabilize the sites, and document that remedial objectives have been met have not yet been devised or documented.

- The approach to completing suspended D&D work and demolishing unneeded D&D facilities has not been determined.

- The monitoring is performed by two independent groups that manage monitoring data in two different ways. No common database or information management system exists.

8 SUMMARY

This document describes a LTS Plan for ANL-E. Appendix C contains a description of the proposed document. The structure of the LTS Plan was developed by compiling a list of all applicable requirements pertaining to LTS that apply to ANL-E. The list of requirements was then used to identify the structure of a program that would be integrated within existing ANL-E environmental management functions. The LTS Plan will describe this program and provide management tools to ensure its effective implementation.

The LTS Plan will consist of three components: the Transition Plan, the LTS Management System, and the PMP. The first component will discuss the specific commitments, roles, and responsibilities of SC and EM relating to the transition and the schedule of the transition. The LTS-MS will consist of an electronic document that will not only describe the means of addressing LTS requirements but will be the primary information management tool to satisfy those requirements. It will provide a focal point for accessing historic and recent information about the sites for both on-site users and off-site stakeholders. The PMP will describe internal administrative procedures relating to funding, management, and oversight of LTS activities.

In the process of preparing this outline, the DOE guidance itself was evaluated and numerous general and specific comments were generated. In addition, the effort needed to develop the three components of the plan was evaluated. Finally, missing, incomplete, or out-dated information; inadequate organizational structures or programs; critical decisions that have not yet been made; and other deficiencies were identified as gaps that will need to be resolved prior to preparing the final LTS Plan.

APPENDIX A:

REMEDIAL ACTION SITES AND REQUIRED LTS ACTIVITIES

TABLE A.1 LTS Work Scope Items at Closed Former Waste Sites Containing Residual Contamination

Activity	Source	Site Where Activity Is Needed: 317 Area French Drain	319 Area Landfill and French Drain	Off-Site Groundwater Seeps	ENE Area Landfill	317/319 Area GMZ	800 Area Landfill	800 Area Disposal Area	317 Area Former Vaults
System Management Function (common to all sites)									
Transition Plan Preparation	DOE								
LTS Management System preparation	DOE								
LTS Management System maintenance	DOE								
LTS Program management and oversight									
Program Management Plan preparation	DOE								
Program Management Plan maintenance	DOE								
Cost estimating and project controls	DOE								
Health and Safety support	BMP								
Regulatory Compliance support	BMP								
Stakeholder involvement	DOE								
Planning for future site closure	BMP								
Management oversight	BMP								
Technical Functions									
Cap inspection	IEPA		X		X		X	?[a]	
Cap maintenance	IEPA		X		X		X	?	
Groundwater collection system inspection	IEPA	X	X						
Groundwater collection system operation	IEPA	X	X						
Groundwater collection system maintenance	IEPA	X	X						
Phytoremediation system inspection	IEPA	X	X						
Phytoremediation system maintenance	IEPA	X	X						
Environmental monitoring	IEPA								
Performance assessment monitoring	IEPA	X	X	X			X	X	X
Release detection monitoring	IEPA				X				
Sentinel wells (317/319 GMZ)	IEPA					X			
Monitoring and surveillance	DOE	X	X	X	X		X		X

TABLE A.1 (Cont.)

Activity	Source	317 Area French Drain	319 Area Landfill and French Drain	Off-Site Groundwater Seeps	ENE Area Landfill	317/319 Area GMZ	800 Area Landfill	800 Area Disposal Area	317 Area Former Vaults
		Site Where Activity Is Needed							
Data review and performance analysis									
Compliance reporting	IEPA	X	X	X	X	X	X	X	
Informational reporting (SER)	DOE	X	X	X	X		X		X
Periodic performance assessment	IEPA	X	X	X	X	X	X	?	X
System upgrade or repair as needed	IEPA	X	X		X	X	X	?	X
Contingency planning									
Emergency response	DOE	X	X		X		X		
Failure prevention or recovery	DOE	X	X		X		X	?	X
Information management									
Management of Administrative Record	IEPA	X	X	X	X	X	X	X	X
Historic project records retention	DOE	X	X	X	X	X	X	X	X
Monitoring data management	BMP	X	X	X	X	X	X	X	X
Information access	BMP	X	X	X	X	X	X	X	X
Institutional Controls									
Land and facility use management	DOE	X	X		X		X	X	X
Access controls	IEPA	X	X		X		X	X	X
Digging restriction enforcement	BMP	X	X		X		X	X	X
Residuals disposal management	IEPA	X	X		X		X	X	X
Interagency agreements (FPD)	DOE			X		X			
Final project closeout									
Remediation site closure	IEPA	X	X		X	X	X	X	X
Facility demolition	BMP								X

[a] The final disposition of a waste disposal unit in the 800 Area, known as the Newly Identified Suspected Solid Waste Landfill, SWMU No. 744, has not yet been determined. A cap and groundwater remediation may or may not be required.

Notation: BMP = best management practice; DOE = U.S. Department of Energy; FPD = Forest Preserve District of DuPage County; GMZ = groundwater management zone; IEPA = Illinois Environmental Protection Agency; SER = Site Environmental Report.

TABLE A.2 LTS Work Scope Items at Former Nuclear Facilities with Significant Residual Contamination

Activity	Source	Site Where Activity Is Needed[a]				
		Bldg. 200 M-Wing Hot Cells	Bldg. 301 Hot Cells	Bldg. 315 ZPR 6	Bldg. 330 CP-5	Bldg. 335 Juggernaut Reactor
System Management Function (common to all sites)						
Transition Plan preparation	DOE					
LTS Management System preparation	DOE					
LTS Management System maintenance	DOE					
LTS Program management and oversight						
Program Management Plan preparation	DOE					
Program Management Plan maintenance	DOE					
Cost estimating and project controls	DOE					
Health and Safety support	BMP					
Regulatory Compliance support	BMP					
Stakeholder involvement	DOE					
Planning for future site closure	BMP					
Management oversight	BMP					
Technical Functions						
D&D facility surveillance	DOE	X	X	X	X	X
D&D facility maintenance	DOE	X	X	X	X	X
Completion of D&D activities	BMP				X	
Environmental monitoring	DOE			X		
Data review and performance analysis						
Informational reporting (SER)	DOE	X			X	
Periodic performance assessment	BMP		X	X	X	X
System upgrade or repair as needed	BMP		X	X	X	X

TABLE A.2 (Cont.)

Activity	Source	Site Where Activity Is Needed[a] Bldg. 200 M-Wing Hot Cells	Bldg. 301 Hot Cells	Bldg. 315 ZPR 6	Bldg. 330 CP-5	Bldg. 335 Juggernaut Reactor
Contingency planning						
Emergency response	DOE	X	X	X	X	X
Failure prevention or recovery	BMP	X	X	X	X	X
Information management						
Historic project records retention	DOE	X	X	X	X	X
Monitoring data management	DOE	X	X	X	X	X
Information access	BMP	X	X	X	X	X
Institutional Controls						
Land and facility use management	DOE	X	X	X	X	X
Access controls	DOE	X	X	X	X	X
Digging restriction enforcement	BMP			X	X	
Residuals disposal management	DOE	X	X	X	X	X
Final project closeout						
Facility demolition	BMP	X	X	X	X	X

[a] In addition to the sites shown, several former D&D sites contain low levels of residual radioactive contamination that is managed by the organization operating that facility. Such sites include the Bldg. 202 Janus Reactor, Bldg. 331 EBWR, and Bldg. 310 Retention Tanks.

Notation: BMP = best management practice; D&D = decontamination and decommissioning; DOE = U.S. Department of Energy; CP-5 = Chicago Pile-5 Reactor; SER = Site Environmental Report; ZPR = Zero Power Reactor.

APPENDIX B:

DOE LTS PLAN PREPARATION GUIDANCE REVIEW COMMENTS PREPARED FOR THE LTS PLAN ANNOTATED OUTLINE FOR ANL-E

APPENDIX B:

DOE LTS PLAN PREPARATION GUIDANCE REVIEW COMMENTS PREPARED FOR THE LTS PLAN ANNOTATED OUTLINE FOR ANL-E

B.1 INTRODUCTION

This document summarizes observations regarding the current U.S. Department of Energy (DOE) guidance relating to preparation of Long-Term Stewardship (LTS) Implementation Plans. These observations are presented from the perspective of the Argonne National Laboratory-East (ANL-E) site. Many of the comments relate to how well the guidance meets the needs of ANL-E. Other sites may have an entirely different perspective on the guidance.

B.2 GENERAL COMMENTS

The DOE guidance is intended to apply to all sites that will require LTS in the future, regardless of the regulatory vehicle under which the work is performed or the Program Secretarial Office (PSO, the site landlord) responsible for the site. It provides a framework that, in general, is adequate to capture most of the technical issues and concerns involved in LTS activities; however, the guidance does not address a number of key issues that a site such as ANL-E has because of its ongoing mission. Perhaps the most significant issue is the process of transferring LTS responsibilities from the DOE Office of Environmental Management (EM) to the landlord, which in the case of ANL-E is the DOE Office of Science (SC). The guidance does not address this critical matter.

A second issue that the guidance does not adequately address is integration of the LTS program into existing programs. At ANL-E, as with other small sites, the LTS requirements will be a relatively small part of the site's overall environmental management program. The activities required are similar in nature to many ongoing activities and can easily be absorbed by existing organizations. The tone of the guidance appears to be based on the notion of a separate, stand-alone program with its own project organization, direct funding, and project controls. It is more likely that the ANL-E LTS program will utilize a number of different organizations within the site, each with its own operating budget, personnel, and management strategies. Thus, such a program will not fit within the normal definition of a project and will need to use unique tools to describe it.

The DOE guidance appears to focus primarily on preparing a written report that discusses the LTS program. As such, it may lead to the preparation of long, complex plans that may not be well suited for the individual sites. It would be more effective for the guidance to focus on LTS requirements and the development of a robust LTS program that can operate for many years into the future. The structure of a plan, if a written plan is considered absolutely necessary, should be left to the determination of individual sites.

Section 2.3 of the guidance states that, currently, sites for which record keeping is the only long-term requirement are not addressed. While this approach will focus LTS planning efforts on the most significant sites, it is important that all former waste sites be included in the LTS program, which would allow it to serve as the single reference point for information about all closed waste sites. It is very likely that after the EM program is complete, information on the clean-closed sites may be lost or become very difficult to locate because of the loss of knowledgeable personnel. It is likely that no organization other than the LTS program will be tasked with tracking the history of the remediation program; therefore, all historical information about this program should be managed by this effort.

A second factor related to the LTS of clean-closed sites is that, even though a given site has been declared clean, this does not mean that the site is suitable for unrestricted use and unlimited access. In most cases at ANL-E, the sites were cleaned to risk-based standards developed on the basis of the assumption that the site would be used only for industrial or commercial purposes. The use of these standards is entirely appropriate for a site such as ANL-E that maintains tight controls over the type of activities that occur on-site through limiting site access, internal (ANL-E) and external (DOE) review and approval procedures for new construction, establishment of deed restrictions, and other mechanisms. Under these conditions, the degree of contamination left in place is perfectly safe, but if the land use in the future would change to residential or if the site is disturbed by construction activities, the residual levels may no longer be adequately protective of residents or construction worker's health. Additional remedial actions may be needed at that time. Retaining the data regarding the levels of contamination remaining and the criteria used to declare the site clean is very important. Managing information about clean-closed sites should be included in the LTS program and discussed in the guidance.

Section 3 of the guidance discusses the start date for LTS. This concept is not very useful since it has little bearing on the program. In most cases, the transition from active remediation to LTS is seamless, with operations and monitoring starting immediately after construction is complete. The more important concept, which has a major impact on the LTS program at ANL-E, is the transition of these activities from EM to SC. The LTS plan should address criteria that must be met before the site is ready for transfer to SC.

The guidance is very prescriptive in the way it lays out the content and organization of the plan; it even provides two sample outlines that sites are supposed to adapt to their individual site. However, each site represents a unique situation that will demand a unique approach to implementation. The current guidance does not provide sufficient flexibility in developing plans that fit each particular site. A better approach would be to list the requirements that need to be addressed by any LTS program and leave the implementation and structure of the LTS program and plan up to the individual sites. With such a focus, the two model outlines would not be needed. Rather, a single checklist could be provided that lists the LTS requirements that must be met. The checklist would help ensure that all necessary and applicable requirements would be met at that site regardless of the structure of the particular LTS program. Such an approach would lead to plans more appropriate for each individual site and allow for innovative approaches to LTS planning. It would also be particularly important for a site with an ongoing program, such as ANL-E, since LTS activities would be integrated within existing programs. The

structure of the LTS Plan for a site with an ongoing mission could be quite unconventional, since it would describe something other than a typical stand-alone organization.

The guidance stipulates that large volumes of highly detailed information be included in the LTS Plan. Though the possibility of referencing documents that already contain this information is mentioned, the annotations in Sections 3 through 5 of Part II indicate that the requested information should be described within the document. All of the requested information, to the extent that it currently exists, should already be contained in existing documents that could easily be referenced by the LTS Plan. Not only would referencing this large body of information reduce the effort needed to complete the LTS plan, it would eliminate duplication of information that could lead to transcription errors and difficulties in keeping the duplicate information up to date. Therefore, the guidance should put a strong emphasis on referencing the best up-to-date documents that satisfy the information needs.

To make the plan meaningful and manageable, the information included or referenced must be sufficient to describe the site or activities in question; however, it should also be tailored to the significance of each site. Each site is treated the same in the guidance, regardless of the nature and extent of residual contamination. To ensure that the program wisely utilizes the limited resources that will likely be available to support these programs, the sites should be prioritized on the basis of the actual or perceived risk to human health or the environment. The amount of information provided to future stakeholders and the ease of accessing this information would then be tailored to the level of significance of each site.

Much of the information requested in Sections 3 through 5 of Part II does not exist in the manner or to the degree of detail requested. The degree of site information varies greatly from site to site, with little uniformity of content or organization. Some elements are absent altogether. For example, two items in Section 3.3, Development of Conceptual Site Model and Characterization of Residual Risk, do not exist for most of the closed waste sites and any of the decontamination and decommissioning (D&D) projects. Requiring this information for all sites would result in significant effort and cost that may not be justifiable on the basis of the nature and degree of residual contamination. The guidance should be less prescriptive in identifying required information, which would allow for more flexibility in the use of the best available information that addresses the needs of the LTS Plan. The guidance should also discuss an approach for the missing information; that is, indicate whether the best existing information should be used, or if missing information must be generated. This issue could have a tremendous impact on the cost and schedule for completing the LTS Plan.

The role of the sitewide Monitoring and Surveillance program (required by DOE Order 5400.1) in relation to LTS activities is not defined in the guidance. To avoid duplication of effort, the roles of the unit-specific performance monitoring and the sitewide monitoring programs should be addressed in the plan.

Section 7.3 is based on a stand-alone program with direct funding. It is unlikely that the LTS program at ANL-E would be either a stand-alone program or receive direct funding. Therefore, the information requested by this section in not applicable to ANL-E. An entirely

different financial management scheme other than the one briefly described in this section would be needed.

The guidance appears to be relatively weak on the management of information generated by the LTS program. While preserving LTS records is addressed Section 5.1, its importance is not stressed adequately. Retaining and making information about wastes sites easily available are critical elements of the program and need to be robust elements with redundant capabilities. The development of a robust, user-friendly means of providing needed information at an appropriate level of detail to all stakeholders is an extremely important element of the program and should be given more prominence.

B.3 SPECIFIC COMMENTS RELATED TO GUIDANCE STRUCTURE

Sections 2.1 and 2.3 of Part II are very similar and could easily be combined.

Section 2.5 appears to be redundant with Section 3.3. The two sections could be combined.

Section 5, which discusses the elements of environmental monitoring, appears to be out of place. Monitoring is an integral part of many of the remedial actions, and, in many cases, represents the entire remedial action. Thus, it appears that monitoring should be considered a part of the remedial actions discussed in Section 4 rather than a part of information management discussed in Section 5.

Section 6.1, which discusses assumptions and uncertainty management, belongs in Section 3.3, in which the residual risk is discussed.

Section 6.2, which discusses threshold criteria and contingency plans, should be combined with Section 4.6, in which emergency response and contingency plans are also discussed.

Section 10 appears to be a continuation of Section 9 rather than a new section. These two sections should be combined and the organization of the report revised.

Section 12, regarding integration of the LTS program, is a critical issue for sites with an ongoing mission. The way in which the program would be integrated into other sitewide programs would greatly influence the structure of the LTS program, and, as a result, influence the structure of the LTS Plan. Therefore, this issue should be addressed very early in the plan rather than at the very end.

B.4 COMMENTS REGARDING THE COMPLETENESS OF DOE GUIDANCE

A review of the guidance and Site-Specific Requirements Document identified a number of issues that the DOE guidance did not address, including the following:

- *The transfer process*. Transferring the EM sites to SC will require careful planning, identification of roles and responsibilities, establishing a schedule, and identifying transfer criteria and other factors. A formal Transition Plan or Memorandum of Agreement may be required for this process.

- *Management of residual materials from LTS sites*. Former EM sites often contain residual contamination at levels that are suitable for limited reuse of the site but that would affect the way in which residual materials, such as demolition debris or excavated soil, could be disposed of. To avoid improper disposal of these materials and potential health and safety concerns, information about levels of residual contamination needs to be retained and made available when the affected site or facility is modified, demolished, or excavated in the future.

- *Periodic performance assessments*. The need to periodically assess the performance of the remedial actions and make improvements as needed are important parts of the overall LTS strategy. These assessments would include identifying opportunities to improve the effectiveness of the remedial actions, accelerating the cleanup of residual contamination, and reducing the cost of LTS activities. Such an assessment is required for sites cleaned up under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). These assessments are not mentioned in the guidance.

- *Future remedial actions*. The ANL-E site will have a number of nuclear facilities similar to those that have already been cleaned up that will require LTS at some point in the future after they have been closed. In addition, it is possible that some portions of the site are still contaminated, which may require remedial actions in the future. Dealing with future remedial actions and resulting LTS requirements should be addressed to some degree in the LTS Plan.

- *Final site closure and demolition*. Some of the remedial action sites will require future effort and expense when the remedial systems are shut down or contaminated facilities are eventually demolished. These future costs should be captured in the LTS Plan.

APPENDIX C:

ELEMENTS OF A LONG-TERM STEWARDSHIP IMPLEMENTATION PLAN FOR ANL-E

APPENDIX C:

ELEMENTS OF A LONG-TERM STEWARDSHIP PROGRAM IMPLEMENTATION PLAN FOR ARGONNE NATIONAL LABORATORY-EAST MARCH 15, 2002

C.1 INTRODUCTION

This document was prepared to facilitate the development of a Long-Term Stewardship Implementation Plan (LTS Plan) as defined by U.S. Department of Energy (DOE) guidance. It was developed by reviewing all known LTS requirements contained in regulatory documents, the April 2001 DOE guidance for preparing a LTS Plan, the document entitled *Site-Specific Requirements in Support of LTS Transfer for Argonne National Laboratory-East*, International Organization for Standardization (ISO) 14001 standards regarding Environmental Management Systems (EMSs), and other sources. It was prepared on the basis of the assumption that LTS work will be integrated into existing programs and practices within the Argonne National Laboratory-East (ANL-E) site. It was prepared in a manner that addresses the requirements of an EMS in accordance with ISO 14001 guidelines.

LTS requirements address a wide range of topics and issues. Dealing with all of these issues in a single document would result in an overly complex, cumbersome document, which could hamper its usefulness. To generate planning information and management systems that are more appropriate for the topics and issues addressed, the LTS Plan for ANL-E will consist of three elements: the LTS Transition Plan, the LTS Management System (LTS-MS), and the LTS Program Management Plan (PMP).

The Transition Plan will describe the process of moving funding and oversight responsibility for management of former waste sites and nuclear facilities from the DOE Office of Environmental Management (EM) to the DOE Office of Science (SC). It will discuss specific agreements and commitments between EM and SC related to the transfer and will consist of a paper document that is needed only to facilitate the transfer.

The LTS-MS will describe the LTS program elements and the procedures that will be used to satisfy LTS requirements. It will consist of an electronic document that will be made available at an Internet Web site. No paper plan will be prepared. This element of the plan is viewed as an active management and information tool that will be updated frequently, rather than as a static plan. It will contain summary level information on the former remediation sites and on LTS program elements. Additional detailed information will be made available through the extensive use of hyperlinks to project documents and other information sources. It will utilize graphical information, where such information exists, through links to the ANL-E Geographical Information System (GIS). Through this Web site, ANL-E site users, ANL-E and DOE management, state and federal regulators, and, to a limited extent, the general public will have access to large amounts of up-to-date information about the LTS program.

The third element is the LTS Program Management Plan, which will describe procedures internal to DOE and ANL-E to ensure adequate management of the program, sufficient funding to support the program, and mechanisms for financial accountability to ensure proper use of the funds provided. Information in this document would be linked to the LTS-MS where necessary, and it would be updated on a regular basis.

In the following sections, the organization of the three documents, the content of each section, and interrelationships between various sections and plans are discussed. In some of the more general sections, model language (shown in italics) adapted from various sources is provided. This language will likely change as the final document is prepared.

2 TRANSITION PLAN DESCRIPTION

This section describes the likely content of the Transition Plan. The actual content will be determined following discussions and negotiations between EM and SC. The information in this document is not pertinent to the day-to-day operation of the LTS program and, thus, will not be a part of the routine LTS program for ANL-E. The final document could take the form of a Memorandum of Agreement or other formal document; in any case, the content should be similar to that shown in this section.

2.1 INTRODUCTION

This section will describe the purpose of the document and its relationship to other LTS planning documents.

This plan describes the process to be followed by EM and SC for transferring the responsibility for funding and implementing LTS activities at closed EM-funded remediation sites from EM to SC. It also describes specific roles, responsibilities, and commitments of both parties during and after the transfer.

2.2 USE OF TERMS

Key terms used in the Transition Plan will be defined to ensure accurate communication and consistent understanding among the affected parties.

2.3 ROLES AND RESPONSIBILITIES

Specific roles and responsibilities for EM and SC during and after the transfer will be defined. Areas where roles and responsibilities will be defined include LTS program management; funding; completing ongoing remedial actions; conducting LTS activities, including operation and maintenance (O&M), environmental monitoring, surveillance and maintenance, periodic performance assessment, process improvements, institutional controls, and contingency planning; planning and executing future remedial actions; final closeout of former EM sites (removal of remedial systems, demolition of former nuclear facilities, etc.); management of information regarding closed waste sites; and other areas.

2.4 TRANSFER CRITERIA

This section will include a list of criteria that define when remedial actions for a site are complete and the site is in a suitably stable condition for transfer to the LTS program. The criteria will include both regulatory and technical factors. A preliminary list of likely criteria includes the following:

- Active remedial actions (soil removal or treatment, well installation, cap construction, D&D work, final surveys of D&D facilities, etc.) must be complete,

- Site restoration following the remedial actions must be complete (e.g., excavations filled and the site restored, D&D equipment removed, and the facility left in an industrially safe condition),

- Remedial systems installed must have been shown to be working as designed,

- The remedial actions must be approved by the Illinois Environmental Protection Agency (IEPA) and DOE (in the case of former waste sites) or DOE (in the case of D&D projects),

- LTS requirements must be well defined, and

- Reliable cost estimates for ongoing LTS requirements must be prepared.

2.5 COMPLETION OF ONGOING REMEDIAL ACTIONS

At the time this plan will be prepared (possibly in late fiscal year [FY] 2002 or early FY 2003), several remedial actions at former waste sites may not yet be complete. These include the Lime Sludge Pond, 320 Shooting Range, East Vaults Footing Drain, 317 Area North Vault, and the 570 Holding Pond. Three D&D projects will not be completed: the Bldg. 301 Hot Cells, Juggernaut Reactor, and the Zero Power Reactor (ZPR) Reactor (currently only Cell 6 is scheduled for D&D but Cell 9 may also require D&D in the future, after it is no longer needed). These three projects were halted in FY 2002 for an undetermined period of time; no date has been set for their completion. The schedule for completing the outstanding waste site projects will be addressed. Some discussion of the completion of the outstanding D&D projects will also be included. A commitment by EM to complete the outstanding projects with a view toward minimizing LTS requirements and cost may be included.

2.6 TRANSFER SCHEDULE

This section will define the schedule for the transfer. It will identify the important events in the transfer and the sequence in which these events will occur. It will also address the sequence of the transfer of sites from EM to SC, and whether the transfer will occur one site at a time or multiples sites together. In addition, it will discuss the outstanding D&D activities and clarify the current programmatic ownership of surveillance and maintenance for completed D&D sites.

2.7 RENEGOTIATION TRIGGERS

The various agreements described in the Transition Plan will be based on a certain understanding of site conditions and future LTS requirements. The projected funding needs and technical requirements will be based on this understanding. Should conditions develop that are significantly different than those anticipated, some of the agreements and commitments may need to be revisited. A list of criteria that include a number of such possible conditions will be included. Such conditions could include the following:

- Major process failure of remedial systems;
- Catastrophic damage to remedial systems or facilities resulting from fires, floods, tornadoes, or other factors;
- Changes in land ownership or land usage, on- or off-site;
- Changing cleanup standards; and
- Changing regulatory requirements.

3 LONG-TERM STEWARDSHIP MANAGEMENT SYSTEM DESCRIPTION

The LTS-MS will consist of an electronic document incorporated into an Internet Web site linked to the ANL-E home page and other ANL-E Web pages. The site will make large quantities of information easily available to interested stakeholders. This site should serve as an important management tool for the program, for organizations on-site that will be responsible for LTS activities, and on-site and off-site stakeholders who are seeking information about the former waste sites. All or part of the site will be made available to the general public. This description of the system is loosely based on a Web page format. The actual format and structure of the Web page will be developed as the site is constructed. The site will be organized to provide summary level information about the LTS program on the main page, with increasingly detailed information about specific aspects of the sites and the program linked to the main page. Wherever possible, information sources that are consistently updated and maintained by the various participants in the LTS program will be linked to the main page. The main page should be viewed as the entry port into the management system; the bulk of the content will be generated and managed by the organizations that actually implement the program.

As a general principle, important information that could change with time will not reside on the main Web page. For information such as this, the most authoritative and current document will be linked to the main Web page. This will reduce the need to identify all references to time-sensitive information and to update these references as the information changes.

LTS requirements will eventually be addressed by the EMS for the entire site. To facilitate addressing LTS requirements in the EMS, this description is organized around the primary EMS elements. The way in which the information is displayed and accessed through the Web site, however, will not necessarily be consistent with the EMS structure. The most logical and user-friendly arrangement of information will be used to make the Web site efficient and helpful, regardless of whether or not this structure coincides with the EMS structure.

3.1 BACKGROUND INFORMATION ON THE LTS-MS HOME PAGE

The LTS-MS Home Page introduces the LTS program and the LTS-MS to the reader. It describes why an LTS program and a management system are needed at ANL-E and the purpose of the LTS program. It describes the organization of the LTS-MS and its relationship to other planning documents related to LTS. It describes the way the LTS program will be implemented and administered at ANL-E.

Since this will be the main interface among ANL-E, DOE, and site stakeholders, it will be developed in a visually interesting, user-friendly manner. It will be designed to satisfy the majority of casual inquiries into the LTS program and provide enough information to satisfy a casual user without the need to explore more complex documents. However, should access to more detailed information be needed, it will include many hyperlinks to detailed explanations of key terms and concepts, site maps, and project documents and monitoring data.

Some but not all of the information generated by the LTS Program would be of interest to the local residents and other members of the general public. To facilitate public access to the appropriate type of site information (summary level information rather than detailed project documents), a separate module of the main Web page, or possibly an entirely separate page, would be prepared. The page would also include information about persons to contact for further information and would allow the visitor to the site to provide comments and questions about the site.

3.1.1 Introduction to the LTS Program

This section will describe the LTS Program at ANL-E in general terms. Each key term will be linked to a pop-up window or site that gives a more extensive definition and examples at ANL-E. The description will be similar to the following:

The LTS program at ANL-E consists of activities designed to minimize any hazards posed by residual contamination or wastes remaining at sites (or portions of sites) after cleanup is complete. These activities include institutional controls, operation and maintenance, environmental monitoring and reporting, performance assessment, contingency planning, and information management. The program will be funded and overseen by DOE and administered by various organizations within ANL-E. LTS activities are designed to ensure that the remedial actions in place remain effective for an extended, possibly indefinite, period of time —until such time that the residual hazard is reduced to levels that allow unrestricted use and unlimited access.

3.1.2 Mission of the LTS Program

The section will describe the mission of the LTS program at ANL-E.

The ANL-E LTS Program will maintain and continuously improve protection of public health, safety, and the environment at closed remediation sites within and adjacent to the ANL-E site. This mission includes ensuring human and environmental well-being through the reduction of residual risks and the conservation of the site's natural, ecological, and cultural resources. Mission activities will include vigilantly maintaining "post-cleanup" controls on residual hazards; sustaining and maintaining engineered controls, infrastructure, and institutional controls; and periodic re-evaluation of remedial actions in response to changes in knowledge, science, technology, site conditions, or regional setting.

3.1.3 General Site Information

This page will contain a brief description of the ANL-E site and the waste sites for which LTS activities are needed. A list of sites will be hyperlinked to fact sheets for each unit that provide a great deal of summary level information about each site. These fact sheets will then be hyperlinked to more detailed project documents that provide more background information. This page also will be linked to the site GIS map. Site names and symbols will be hyperlinked to the same fact sheets.

3.1.3.1 ANL-E Site Description

ANL-E is a DOE research and development laboratory that conducts a broad program of research in the basic energy and related sciences (i.e., physical, chemical, material, computer, nuclear, biomedical, and environmental) and serves as an important engineering center for the study of nuclear and nonnuclear energy sources. See the ANL-E home page for more information about the various programs carried out at ANL-E.

The ANL-E site occupies the central 607 ha (1,500 acres) of a 1,514-ha (3,740-acre) tract in DuPage County. The site is 43 km (27 mi) southwest of downtown Chicago and 39 km (24 mi) west of Lake Michigan. It is north of the Des Plaines River Valley, south of Interstate Highway 55 (I-55), and west of Illinois Highway 83. Much of the 907-ha (2,240-acre) Waterfall Glen Forest Preserve surrounding the site was part of the ANL-E site before it was deeded to the DuPage County Forest Preserve District in 1973 for use as a public recreational area, nature preserve, and demonstration forest.

3.1.3.2 Cleanup Program Description

Since the late 1980s the ANL-E site has been conducting a program of identifying, characterizing, and cleaning up numerous former waste disposal sites, former waste processing and storage areas, materials storage areas, former nuclear research and waste processing facilities, and similar sites that had been contaminated with chemical or radioactive materials as a result of past operations. This cleanup program is nearing completion. For most of the sites, the cleanup program resulted in the removal of the contamination to below acceptable levels. However, a few units were closed by constructing an engineered system over waste or contamination that was left in place. These units consist mostly of former landfills, land disposal units (French Drains), and several former nuclear research facilities. The sites that were cleaned up by this program are listed in Table1 (not included in this outline). Map 1 (not included in this outline) shows the location of the most significant of these closed remediation sites. Click on the unit name or map symbol to see more information about each site.

3.1.3.3 Long-Term Stewardship Program Description

This LTS program is designed to ensure that the sites that were closed with waste in place are managed in such a way that any risk to human health or the environment resulting from residual waste or contamination is minimized. This will be done in a number of ways. Table 2 (not included in this outline) lists the sites requiring some form of stewardship activities and also lists the activities required at each of these sites. Click on each activity name to see a more detailed explanation of that activity.

3.2 LTS PROGRAM IMPLEMENTATION

This section will explain the general approach to carrying out the LTS program.

The LTS program will be managed by the DOE Argonne Area Office. Day-to-day implementation will be the responsibility of ANL-E, an element of the University of Chicago. The LTS program will be carried out by a number of different entities within ANL-E, primarily in two support organizations — Plant Facilities and Services (PFS) and Environment, Safety and Health and Quality Assurance Oversight (EQO). The various LTS functions will be integrated into ongoing programs within these organizations. The LTS activities will be coordinated by an individual who resides within ANL-E. This individual will serve as the single point of contact for all LTS issues.

3.2.1 Relationship to Integrated Safety Management Principles

The ANL-E LTS program will be addressed by existing and planned management systems, including Integrated Safety Management (ISM) and EMS. ISM has been fully implemented at ANL-E. The LTS program will be developed in accordance with this philosophy. The Laboratory has made a commitment to establish an EMS for the site, but it has not yet been prepared. The LTS plan will be prepared with the EMS guidelines in mind to make it easier to incorporate LTS requirements into the site's EMS. The following model language was prepared as if the EMS was already in place.

The overriding management principle for Environmental Protection, Safety and Health at ANL-E is the principle of Integrated Safety Management (ISM). ISM is a comprehensive management strategy that integrates Environment, Safety, and Health (ESH) requirements into work planning and operational processes and is designed to protect workers, the public, and the environment, and to comply with regulatory requirements.

The Seven Guiding Principles of DOE's ISM Policy describe the principles, programs, and responsibilities that are essential elements of sound environmental management and LTS programs. These principles, as applied to the LTS program, are:

- *Line Management Responsibility for Safety: ANL-E's Line Management is directly responsible for protecting human health and the environment.*

- *Clear Roles and Responsibilities: Clear and unambiguous lines of authority and responsibility for ensuring environmental protection mechanisms are established and maintained by ANL-E at all appropriate organizational levels, including its contractors.*

- *Competence Commensurate with Responsibilities: ANL-E personnel responsible for LTS activities possess the experience, knowledge, skills, and abilities necessary to discharge their environmental responsibilities.*

- *Balanced Priorities: ANL-E effectively allocates resources for LTS activities and operations. Protecting human health and the environment is a priority at ANL-E whenever LTS activities are planned and carried out.*

- *Identification of Environmental Standards and Requirements: As part of the remedial action work, ANL-E evaluates the degree of environmental hazards; an agreed-upon set of requirements and standards is then established which, when properly implemented, adequately assures that human health and the environment are protected from adverse consequences.*

- *Hazard Controls Tailored to Work Being Performed: ANL-E has established the administrative and engineering controls needed to prevent and mitigate environmental hazards associated with closed remedial action sites.*

- *Operations Authorization: ANL-E has identified the environmental conditions and requirements that the closed remediation sites must maintain. If the sites deviate from these conditions or requirements, corrective actions are required.*

LTS functions will be performed in accordance with the five core functions of ISM:

1. *Define the scope of work,*

2. *Analyze the hazards,*

3. *Develop and implement hazard controls,*

4. *Perform work within controls, and*

5. *Feedback and improvement.*

3.2.2 Relationship to EMS principles

ANL-E is committed to carrying out environmental management responsibilities within the EMS model, consistent with the International Organization for Standardization (ISO) 14001 standards for environmental management. Carrying out LTS requirements in an effective and

efficient manner will be achieved through the inclusion of LTS in the EMS. The following list is a brief description of the EMS system components that are related to the EMS and the ISO 14001 criteria.

- *ANL-E Policy regarding LTS;*
- *Planning for LTS;*
- *Implementation and operation of LTS systems, controls, procedures, and techniques;*
- *Checking and corrective action for LTS activities; and*
- *Management review of LTS site management performance.*

The following sections of the outline are presented in a structure consistent with EMS guidelines to show how the LTS program will be addressed by components of the future EMS.

3.3 LTS POLICY STATEMENT

The main Web page will contain links to the DOE and ANL-E environmental and LTS policy statements. DOE and ANL-E policy statements that reflect the necessary degree of commitment to protect human health and the environment will be prepared and included in this section. They will tier off of general DOE and ANL-E environmental protection policy statements, which will be linked to this section. The following model language was prepared on the basis of existing policy statements or similar documents.

DOE will avoid, delay, or reduce the frequency or impact of harmful exposures to hazardous substances remaining after DOE cleanup projects and other operations have been completed. DOE will ensure that design, construction, and operation of new facilities avoid creating waste and contamination problems that will require long-term stewardship. DOE will use improved technologies and institutional structures that will improve the reliability and reduce the costs of long-term stewardship.

ANL-E LTS activities (including remedial system operation, institutional controls, monitoring and surveillance, and other activities) will be conducted in an environmentally safe and sound manner and be consistent with regulatory requirements and sound management practices. To support this policy, ANL-E is committed to leadership in environmental management by integrating LTS requirements into day-to-day activities and into long-term planning processes.

To support compliance with these commitments, ANL-E:

- *Ensures that remedial actions continue to meet or exceed applicable environmental permit expectations and regulatory requirements, until such*

time that the residual hazard is reduced to levels that allow unrestricted use and unlimited access;

- *Promptly and responsibly identifies and corrects adverse conditions to minimize the potential risk to human health or the environment; and*

- *Actively explores, creates, and implements better ways of minimizing residual risk arising from residual waste materials or contamination in closed remedial actions sites.*

3.4 PLANNING

The Web site will provide access to various sources of information that describe the nature of the closed waste sites and residual contamination. This information will provide the technical background for the LTS program.

3.4.1 Environmental Aspects and Impacts

A large body of highly detailed information on each of the former EM sites will be made available through the Web site. Most of the information will not reside on this Web site but will be hyperlinked to this Web site so it can be accessed as needed. Therefore, the Web site itself will contain only summary level information, or no information at all, on each site. It will serve essentially as an electronic index to facilitate gaining access to site fact sheets, site photographs and sketches, and detailed project documents.

To manage the large mass of information accessed in this part of the Web site, the sites will be separated into two types: those with residual contamination requiring ongoing LTS activities of greater magnitude than only records retention, and sites that were "clean-closed" and require only records retention as the entire LTS requirement. This will focus attention on the most significant sites without confusing the user with the entire list of former remediation sites.

The sources for the information referenced in this part of the Web site are shown in Table 1. The section will contain two tables; one listing each site with residual contamination present, and the other listing no further action (NFA) or "free release" sites where only information management is required. Summary information on each site (which would not need to be updated as the site situation changes) will be included in the tables. These tables will form one entry point for accessing site-specific information through hyperlinks. Each unit will be linked first to unit-specific fact sheets and from there to multiple information sources, some unique to that unit and some common to several or all the units. A parallel means of accessing this information may be through a GIS map that would show each of the units in a user-definable display. Clickable links on this map would lead the reader first to the unit fact sheets and from there to the site-specific information. The degree to which GIS-based geospatial information is integrated with text-based information would depend largely on the funding made available to develop and maintain the LTS-MS.

TABLE 1 Information to Include on the Web Site and Sources of Information

Information	Information Source
Information for entire site	
Detailed list of sites with residual contamination in the LTS program	Master list on Web site, link to GIS, link each unit to fact sheets
Detailed list of clean-closed sites that only require retention of project records	Master list on Web site, link to GIS, link each unit to fact sheets
Information for each waste site with residual contamination	
Physical location and boundaries of LTS site	Link to project fact sheet, from there link to project documents and GIS
Detailed description of unit location and size	Link to GIS system and project documents
History of operations	Link to project fact sheet, from there link to project documents
Site setting	Link to project fact sheet, from there link to project documents
Off-site areas description (when applicable)	Link to GIS system, from there link to project documents
Actions taken to date	Link to project fact sheet, from there link to project documents
Location and nature of residual contamination and wastes	Link to project fact sheet, from there link to project documents and GIS
Regulatory or institutional requirements	Link to project fact sheet, from there link to project documents and regulatory correspondence
Characterization of residual risk	Link to project fact sheet, from there link to project documents
Assumptions and uncertainty	Link to project fact sheet, from there link to project documents

In addition to the fact sheets, the project documents will consist of project work plans, final construction reports, final survey reports, correspondence, and other documents describing the actions taken and the final conditions of the site.

The information available will be the most recent, best information that exists; in many cases, however, it will not completely satisfy the information requested by the DOE LTS guidance. Examples of likely missing information are conceptual site models and characterization of residual risk. In several cases, risk was assessed prior to remediation; in only a very few cases, the risk was reassessed following remediation. A case-by-case judgment will be made as to the nature of any missing information and the value added to the program by generating this missing information will be examined. If it is determined that the missing information is critical to managing residual risk, plans will be made to generate the missing information (contingent on obtaining the necessary funds). If the missing information would not provide important information to the program, no attempt will be made to generate the missing information.

Not all project documents are available in linkable electronic form. A program of converting older reports to electronic format is underway, but it may not be possible or desirable to convert all project records to electronic formats. In the cases in which electronic versions of the reports do not exist, the links for that site would point to a document reference and a location where paper copies of the information could be found. In all cases, the links will contain information on obtaining copies of the paper documents if hard copies are needed.

This section of the Web site will also serve as the entry point into other information about the units that is discussed in later sections of this outline. This other information will reside in the fact sheets or in project documents linked to this section. The information shown in Table 2 for each waste site with residual contamination will also be included.

3.4.2 Regulatory Requirements

A section of the Web site will explain the Resource Conservation and Recovery Act (RCRA) Corrective Action Program, which regulates the cleanup of former waste sites, and the voluntary D&D program regulated by DOE. Hyperlinks will guide the reader to the RCRA

TABLE 2 LTS Activities and Requirements and Sources of Information

Information	Information Source
LTS activities required	Link to project fact sheet, from there link to project documents
Monitoring activities performed	Link to project fact sheet, from there link to project documents
Final site closure activities	Link to project fact sheet, from there link to project documents

Part B Permit, U.S. Environmental Protection Agency (EPA) Web sites, and to applicable sites discussing the D&D program. Detailed regulatory requirements will be included in the site-by-site information discussed above.

3.4.3 Objectives and Targets

The Web site will discuss the overall objectives of the LTS program. General objectives will be similar to those described below. Specific performance objectives for remedial actions will be discussed in the site-by-site discussions:

- *Ensure protectiveness of human health and the environment from residual hazards that remain on-site,*
- *Maintain site records and information so that future custodians can continue to provide effective stewardship,*
- *Assure regulators and stakeholders that DOE's institutional controls have been put in place and are accompanied by redundancy and a commitment to provide stewardship for the site for as long as required,*
- *Respond to regulatory and other stewardship requirements in a fully compliant manner,*
- *Provide accountability for the site,*
- *Provide a plan for emergency response,*
- *Perform adequate oversight to identify adverse trends and action thresholds at which future corrective actions must be taken, and*
- *Provide a forum for stakeholder and regulator involvement for ensuring enduring protection of the site.*

3.5 LTS MANAGEMENT PROGRAM

The site will explain the way in which LTS activities will be implemented at ANL-E, including oversight, administration, field implementation of requirements, monitoring, data management and review, and information management. The activities are to be integrated into ongoing programs with other missions similar to the new LTS responsibilities. Hyperlinks to any pertinent Web sites maintained by these other organizations will be provided. This element will also contain a list of individuals responsible for the LTS program and provide contact information for people interested in getting more information about the LTS program.

The main Web page will contain only summary level information on the management approach to the LTS Program. Much of the detail of the management of the LTS program will appear in the PMP, which will be a separate document. It will be linked to this part of the Web site where appropriate.

3.6 IMPLEMENTATION AND OPERATION

The types of activities needed to ensure the safety of the public and the environment will be explained. Only general descriptions of the activities being implemented will be included. A list of specific LTS activities at individual sites will be accessed through the site-by-site Web pages discussed above.

The information pertinent to this EMS topic area will be located in two separate documents. Information of general interest to stakeholders will be included in or referenced by the Web site. Information that is of an administrative nature that is of interest primarily to internal DOE and ANL-E personnel will reside in the PMP. Four of the first EMS elements will be addressed only in the PMP; Structure and Responsibilities; Training, Awareness, and Competency; LTS-MS Documentation; and Document Control. Communication and Reporting, Operational Controls, and Emergency Preparedness and Response will be described on the main Web page.

3.6.1 Structure and Responsibilities

This element, described in the PMP, will contain the list of organizations and individuals responsible for defined tasks within the LTS Program. A Responsibility Assignment Matrix will be included. Even though the program will be integrated into existing programs, a program manager with overall responsibility for implementing the program will be identified. This individual will have responsibility for coordinating LTS activities, reporting on the performance of the LTS program, responding to information requests, ensuring day-to-day activities occur as required, and periodic assessments and audits

3.6.2 Training, Awareness, and Competency

Any specific training, education, or other competence requirements for the LTS program personnel will be described in the PMP.

3.6.3 Communication and Reporting

Two key elements of the LTS program are Information Management and Stakeholder Involvement. The information management program is vital to the success of the LTS program and will involve the following:

- *Historic records retention*. This includes storage of all project records, correspondence, and project files. It is likely that historical records will be available in two forms: electronic files that are downloadable and searchable through the LTS-MS Web site, and paper copies that are stored in a central records repository or in off-site records archives. In determining which means of archiving historic data will be used, the likely future level of interest in the data will be taken into consideration. Information for sites that have no residual contamination and may be of little interest to future land users will be retained only as paper copies. These documents will need to be requested from the records repository and duplicate copies made. Information about sites with residual contamination, where remedial actions are continuing or outstanding issues have not yet been resolved, and where there is a likelihood of significant interest in the historical documents, will be converted to electronic format for easier access via the Web site. Hard copies of these documents will also be retained in the records storehouse.

- *Retention of active records*. Active records are reports, monitoring data, inspection reports, and other information that is generated on a regular basis in accordance with an approved schedule. These will be converted to electronic format. The most recent such report, as well as past reports, will be accessible through the main Web page and site-by-site Web pages.

- *Accessibility to records*. The electronic version of active and historic records will be made available though the main Web page and site-by-site Web pages, as discussed previously. Paper reports will be referenced, and the location of the report and procedure to follow to obtain copies will be included on the site, though the document itself will not.

- *Monitoring results*. Large quantities of analytical data are generated by the LTS program on a regular basis. The discussion of these monitoring programs is presented below. Data generated by these programs could be made accessible on the Web site. Management of the large body of historic and current monitoring data that the LTS program will generate is a difficult challenge. Making this data easily available over the Web site is possible but could prove to be very costly. The way in which monitoring data will be made available in the site will depend largely on the amount of funding available to develop such a system.

Specific opportunities to foster communication with site stakeholders will be identified and discussed. The LTS-EMS Web site will be one of the primary vehicles for stakeholder involvement. Opportunities for stakeholder access to waste site information will be provided in the Web site, as part of the main site itself (with appropriate security measures in place), or as a separate site designed for public access. Other avenues will include the Community Leaders Round Table, the Annual Site Environmental Report, the ANL-E open house, and the Argonne Information Center.

3.6.4 LTS-MS Documentation

This EMS element will be addressed by the PMP, which will describe the three documents that constitute the LTS program plan: the Transition Plan, the LTS-MS, and the PMP itself. It will assign a schedule and responsibility for updating the latter two documents.

3.6.5 Document Control

The three documents composing the LTS Plan will be managed as controlled documents. The Transition Plan should not require updating after it is finalized. Procedures to manage the review, updating, and distribution of the latter two documents, the LTS-MS and the PMP, will be discussed in the PMP. Procedures to ensure that other documents that contain information, procedures, plans, or other elements of the LTS program are kept up to date and accurately reflect the manner in which the program is implemented will also be discussed.

The maintenance of the LTS-MS Web site will also be discussed in the PMP. The site will be designed to minimize the need to update and maintain the content displayed; however, significant effort will still be needed to maintain the accuracy of the hyperlinks and to ensure that the information presented is up to date and accurate.

3.6.6 Operational Control

This topic area will be a key element of the LTS-MS. It will describe the LTS activities performed and provide descriptions of these activities, the schedule, performance expectations, and anticipated durations of these activities. It will contain general descriptions of the activities, including sketches, photographs, or other exhibits to illustrate the nature of these activities for the various stakeholders who may peruse this information. It will refer the reader to the site-specific Web pages to obtain descriptions of specific activities required at individual units. Reference will also be made to the various project documents and correspondence where the requirements are mandated. The activities that will be described include the following:

- Institutional controls
  - Access controls
  - Digging restriction
  - Land and facility use controls

- Surveillance
  - Waste site inspection
  - Facility surveillance and monitoring

- O&M
  - Caps
  - Groundwater collection systems
  - Phytoremediation
  - Facility maintenance

- Residuals disposal
  - Soil
  - Building materials/demolition debris

- Remedial systems removal and site closure
  - Removal of remedial systems
  - Facility demolition

- Periodic performance assessments

- Preparation and submittal of compliance reports

- Preparation of informational reports such as the Annual Site Environmental Report.

In addition to the specific LTS activities needed at individual waste sites, several requirements that apply to the ANL-E site as a whole need to be discussed. These requirements include:

- Health and safety,

- Science and technology review and implementation,

- Planning for future remedial actions and LTS, and

- Resumption of D&D program.

3.6.7 Emergency Preparedness and Response

The requirements under this part of the EMS structure will be dealt with by the generation of a Contingency Plan that will describe the procedures put in place to monitor for off-normal situations requiring some type of corrective action. It will discuss likely failure scenarios, define criteria that will determine when a failure is likely or has already occurred, and describe steps to plan and implement the necessary repairs. None of the former waste sites have the potential for catastrophic failure or uncontrolled release. However, the remedial system in place could degrade over time or be damaged by unauthorized excavation, equipment failure, extended power failure, fires, floods, tornadoes, or other natural events.

The sitewide Comprehensive Emergency Management Plan will provide adequate protection of human health and the environment in the very unlikely event of catastrophic damage. This document will be discussed and linked to the Web site.

3.7 CHECKING AND CORRECTIVE ACTIONS

This EMS element deals with ensuring that the LTS requirements are being met on an ongoing basis. This requirement will be addressed by several elements of the LTS program. Some of these elements are of general interest while others are internal procedures. The element of general interest (Monitoring and Measurement) will be discussed in the LTS-EM, while the other elements will reside in the PMP.

3.7.1 Monitoring and Measurement

The routine sampling and analysis programs conducted by ANL-E at the closed waste sites will be described on the Web site. It will describe the sampling being carried out by both the Environmental Remediation Program (ERP) and the Environmental Monitoring and Surveillance (EM&S) program. A general description will reside on the main Web page. Specific details will reside with the site-by-site Web pages.

The reports generated by these monitoring programs will be linked to this section of the Web site as well as the site-specific Web pages.

The analytical data generated by the monitoring program will be made available on the Web site. Past reports containing the results of the monitoring programs (Site Environmental Reports and Quarterly Progress Reports) will be linked to this site. If funds allow, an integrated environmental monitoring database will developed and will be linked to the Web site so that data can be examined in various ways, controllable by the user. All historic data, up to the most recent data, could be included, depending on the availability of funds. Trend plots and other graphical presentations of the data would be possible, if desired. Since preparing this part of the Web site will be time intensive and costly, it may be necessary to build this site incrementally, adding new capabilities and features as funding allows.

3.7.2 Nonconformance, Corrective and Preventive Actions

The PMP will discuss internal mechanisms to ensure that the LTS program integrated into various organizations is performing as desired. It will provide for internal checks by DOE and ANL-E management on environment compliance, site maintenance, operations, institutional controls, information management, environmental monitoring, and other key aspects of the program. A schedule and mechanism to identify, implement, and verify corrective actions will be described.

3.7.3 Records Management

The procedures to be used to ensure that all project records that constitute the official Administrative Record for the cleanup work are obtained from project personnel and retained for easy access in the future are discussed in this section, which will reside in the PMP. This is separate from the information management element, which is designed to allow easy access to key technical documents and correspondence that describe the current conditions of the area. This element focuses on maintaining the full set of project documents for each of the sites, from the first characterization activities through the completion of corrective actions and any ongoing monitoring. It will also include retention of records regarding the implementation of the LTS program, including plans, reports, assessments, or other documents that describe the implementation of LTS activities.

3.7.4 Audits

A system of periodic audits conducted by knowledgeable personnel not directly responsible for LTS activities will be described in the PMP. This will be part of the ongoing environmental auditing function of the EQO Division.

3.8 MANAGEMENT REVIEW

DOE and Laboratory management will conduct periodic assessments of the LTS program. These assessments will be implemented in conjunction with the LTS audits, results of routine inspection and monitoring activities, and other information, and will be described in the PMP. The program will rely on existing oversight and review functions for environmental protection issues.

3.8.1 Continuous Improvement

In addition to assessing the implementation of the existing program, the periodic review will also identify ways the program could be improved. Continuous improvement is expected in the technical activities as well as the management of these activities and the management of information derived from them.

4 PROGRAM MANAGEMENT PLAN

To describe the various management efforts needed to implement the LTS program, a PMP will be prepared. The plan will be prepared in a manner similar to a Project Implementation Plan as described in the ANL-E Project Management Manual. It is intended to describe internal processes and procedures that will be of limited interest to stakeholders. Some of the PMP elements were discussed above in the description of the LTS-MS. These elements, plus a number of others, will reside in the PMP and be referenced by the LTS-MS. The PMP will serve as background reference material to the LTS-MS; its contents, however, will not represent a major element of the LTS-MS. It will exist as a paper plan or electronic document managed by the LTS program manager. The PMP will provide information and instructions for the project team to:

- Manage and perform the work,
- Control costs and schedules,
- Manage needed changes, and
- Report program status to management,

Because the LTS Program will be a series of ongoing activities conducted by various organizations within ANL-E, it will have many unique implementation and oversight issues. The PMP will discuss the process used to ensure that these activities are carried out properly. The LTS program is not a typical project with well-defined beginning and end points and clear objectives. As a result, the PMP will vary somewhat from the normal format of a Project Implementation Plan. It will address the major elements of a Project Implementation Plan shown in Table 1, as they apply to the LTS program.

TABLE 1 Program Management Plan Contents

1.0 Introduction: Program title, brief history and summary of the program, including its purpose, summary of goals, and time frame. Includes major assumptions in preparing the PMP.

2.0 Justification of Mission: Program mission/goals, why the program is needed, and how the program will achieve its goals.

3.0 Program Description: Description of what will be implemented and how it will be accomplished: summary of technical and functional performance, what is to be accomplished.

4.0 Management Structure and Responsibilities: Description of the program management structure. Identifies roles and lines of authority, responsibility, communication, and interactions among organizations.

5.0 Work Breakdown Structure: Defines authorized program work through the Work Breakdown structure (WBS) used to manage the program. Includes the WBS and dictionary.

6.0 Resource Requirements: Describes funding and expenditure plans, budget by funding category, and life-cycle cost by fiscal year.

7.0 Program Technical, Schedule, and Cost Baselines (including separately identified contingencies): Identifies the technical baseline traceable to mission requirements and is self-consistent with cost and schedule baselines. Identifies the schedule baseline, milestones, and major events.

8.0 Baseline Change Control: Identifies thresholds for levels 0 and 1 as specified by DOE and defines change thresholds for levels 2 and lower for DOE and/or ANL-E.

9.0 Risk Management Assessment: Discusses the levels of risk associated with the technical requirements, cost, schedule, security, and ESH aspects.

10.0 Program Control System Description: Each of the following subsections (10.1 through 10.4) discusses the specific control system implementation used to satisfy the requirements of the program.

10.1 Cost Control: Description of the cost control system for the program. Defines the cost control level and relates it to the program Control Account Structure. Defines cost, contingency, and management reserve authority.

10.2 Schedule Control: Description of the schedule control system for the program. Establishes the method to be used for schedule tracking and defines schedule tracking responsibilities.

10.3 Technical Control: Description of the program technical control system. Establishes the method to be used to assure compliance with technical, quality, and ESH requirements.

10.4 Reporting: Listing of the reports to be submitted to DOE and ANL-E, and report recipients. Identifies report content and schedule.

11.0 Acquisition Plan: Discussion of methodology for accomplishing the program, including procurement contract strategy, use of internal labor, subcontracting, etc.

12.0 Integrated Safety Management Plan: Describes how Integrated Safety Management System principles are integrated into the overall management of the program to ensure worker, public, and environmental safety.

13.0 Technical Considerations: Discussion of topics, such as technology improvement, reliability, maintainability, and quality assurance.

APPENDIX D:

EFFORT TO COMPLETE THE LTS PLAN, UNRESOLVED ISSUES, AND RESOURCE GAPS

TABLE D.1 LTS Plan Elements and Effort to Complete Unresolved Issues and Resource Gap

Work Item	Summary of Actions Needed	Effort to Complete	Unresolved Issues	Identified Gaps
Transition Plan				
Introduction	New text	Prepare new text, finalize after negotiations.		
Use of Terms	New text	Prepare new text, finalize after negotiations.	Some of the key definitions may require negotiation between SC and EM to arrive at a mutually agreeable wording.	
Roles and Responsibilities	New text	Prepare new text, finalize after negotiations.	Some of the key roles and responsibilities may require negotiation between SC and EM.	
Transfer Criteria	New text	Prepare new text, finalize after negotiations.	Most of the criteria should be logical and self-evident; however, some may engender disagreement and require negotiation between SC and EM.	
Completion of Ongoing Remedial Actions	New text	Prepare new text, finalize after negotiations.	The completion of the D&D work could be controversial and will likely require negotiations between EM and SC.	
Transfer Schedule	New text	Prepare new text, finalize after negotiations.	The main outstanding decision affecting the schedule is when the transition will occur and how the outstanding D&D work will be completed.	

TABLE D.1 (Cont.)

	Work Item	Summary of Actions Needed	Effort to Complete	Unresolved Issues	Identified Gaps
	Renegotiation Triggers	New text	Prepare new text, finalize after negotiations.	The number and type of triggers will depend on the future relationship among EM, SC, and ANL-E. Triggers will need to be negotiated after the nature of the transfer agreement is resolved.	
Annotated Outline of Long-Term Stewardship Management System					
	LTS-MS Home Page	New Web site	Develop Web site and related pages.	Manager of Program and Web site not determined.	
	Introduction to LTS Program	New text on Web site, link to related sites.	Prepare new content, identify related links.		
	Mission of LTS Program	New text on Web site, link to related sites.	Prepare new content, identify related links.		
	Site Description	New text on Web site, link to related sites.	Prepare new content, identify related links.		
	ANL-E Site Description	New text on Web site, link to related sites.	Prepare new content, identify related links.		
	Cleanup Program Description	New text on Web site, link to related sites.	Prepare new content, identify related links.	Scope of LTS program not completely defined.	
	Long-Term Stewardship Program Description	New text on Web site , link to related sites.	Prepare new content, identify related links.		
	LTS Program Implementation	New text on Web site , link to related sites.	Prepare new content, identify related links.	Organizational responsibility not defined.	
	Relationship to ISM Principles	New text on Web site, link to related sites.	Prepare new content, identify related links.		

TABLE D.1 (Cont.)

	Work Item	Summary of Actions Needed	Effort to Complete	Unresolved Issues	Identified Gaps
	Relationship to EMS Principles	New text on Web site, link to related sites.	Prepare new content, identify related links.	The nature of the EMS for ANL-E has not yet been determined; thus, how the LTS work will fit within this future system is uncertain. Until the issue is resolved, the structure will follow ISO 14001 guidelines.	
	LTS Policy Statement	New text on Web site, link to related sites.	Policy statements need to be prepared and approved by DOE and ANL-E management.		Policy statements regarding LTS do not exist at this point in time.
	Planning	New introductory text on Web site.	Prepare content.		
	Environmental Aspects and Impacts	New text on Web site, link to related sites.	Prepare list of sites and gather supporting information.		The degree to which information exists to satisfy this section varies greatly, depending on the unit.
	Information for Entire Site				
	Detailed lists of sites with residual contamination in LTS program	New material	Prepare table with links to data sheets and project documents, prepare summary text for table, prepare fact sheets for each site.	Verify D&D sites with residual contamination. Definition of residual contamination not clear.	
	Detailed list of clean-closed sites that only require retention of project records	New material	Prepare table with links or references to data source, prepare summary text for table, prepare fact sheets for selected sites.	Which sites to include uncertain.	

TABLE D.1 (Cont.)

	Work Item	Summary of Actions Needed	Effort to Complete	Unresolved Issues	Identified Gaps
	Information for Each Waste Site with Residual Contamination				
	Physical location and boundaries of LTS site	Link to GIS map and project documents.	Best available information needs to be converted to electronic format, GIS system updated and validated.		Limited data available, some in GIS but accuracy is uncertain and not up-to-date. No sites have been surveyed.
	Detailed description of unit location and size	Link to GIS map and project documents.	Best available information needs to be converted to electronic format, GIS system updated and validated.		Limited data available, some in GIS but accuracy is uncertain and not up-to-date. No sites have been surveyed.
	History of operations	Use best information currently available in work plans or reports.	Identify sources of best historic information, make them electronically available where needed.		Limited information on history exists.
	Site setting	Use best information currently available in work plans or reports.	Identify sources of best up-to-date information, make them electronically available where needed.		
	Off-site areas description (when applicable)	Use best information currently available in work plans or reports.	Identify sources of best up-to-date information, make them electronically available where needed.		
	Actions taken to date	Use best information currently available in reports.	Identify sources of best up-to-date information, make them electronically available where needed.		Reports may be out of date, some actions not fully documented in a single document.
	Location and nature of residual contamination and wastes	Use best information currently available in reports.	Identify sources of best up-to-date information, make them electronically available where needed.		Extent of residual contamination not clearly documented in some cases.

TABLE D.1 (Cont.)

	Work Item	Summary of Actions Needed	Effort to Complete	Unresolved Issues	Identified Gaps
	Regulatory or institutional requirements	Use best information currently available in reports or correspondence.	Prepare new comprehensive list of requirements or place information in table.		No single source for all requirements, scattered through various reports, may be better to make new list.
	Characterization of residual risk	Very limited information available on post-remediation risk, generate new SCEMs.	Rely on SCEM only, verbal discussion of risk.	Degree of risk assessment in unclear. Is what we have enough?	Risk analysis has been limited, no detailed assessments, few SCEMs, none updated.
	Assumptions and uncertainty	New text	Prepare new text.		
	LTS Activities Required	Use best information currently available in reports or correspondence.	Prepare new comprehensive list of LTS activities required for each unit for table, link to descriptions.		No single source for all LTS requirements, scattered through various reports, may be better to make new list.
	Monitoring performed	Use best information currently available in reports or correspondence.	Prepare new comprehensive list of monitoring performed or place information in table.		No single source for all requirements, scattered through various reports, may be better to make new list.
	Final site closure activities	Only very limited references to site closure or eventual D&D, better to use a new table.	Prepare new list of future closure requirements and facilities to be demolished.	Future fate of several structures not determined (CP-5, 310, 317 Area).	No plans exist for final closure.
	Regulatory Requirements	New text	Prepare new text.		
	Objectives and Targets	New text	Prepare new text.		
	LTS Management Program	New text	Prepare new text.		
	Implementation and Operation	New text	Prepare new text.		
	Structure and Responsibilities	New summary text in LTS-MS, main body in PMP, link to LTS-MS.	Prepare new text.		

TABLE D.1 (Cont.)

Work Item		Summary of Actions Needed	Effort to Complete	Unresolved Issues	Identified Gaps
	Training, Awareness, and Competency	New summary text in LTS-MS, main body in PMP, link to LTS-MS.	Prepare new text.		
	Communication and Reporting				
	Historic records retention	A complete set of documents needs to be assembled, cataloged, and placed in permanent retention areas (redundant areas).	Collect at least two copies of all applicable project files, correspondence, and other documents. Transfer one copy to permanent repository (Administrative Record), make working library copy in second location.		
	Retention of active records	Identify responsible individual to manage Administrative Record and monitoring data.	Identify Administrative Record custodian; establish tools to manage and track documents.		
	Accessibility to records	Identify key documents that may have future interest, make these easily accessible through Web site.	Convert all key documents to electronic format and place in accessible location.	Information needs of stakeholders not well defined.	
	Monitoring results	Monitoring data are not easily available in electronic format for viewing on Web site.	Finish common database, update with all ERP data, make accessible through Web tool.		Data are not in electronic databases, no easy way to access data.
	Stakeholder Participation	Describe outreach activities, provide means of gathering input and providing feedback on Web site.	Prepare content for Web site, prepare feedback pages.	Degree of stakeholder involvement not known.	
	LTS-MS Documentation	New summary text in LTS-MS, main body in PMP, link to LTS-MS.	Prepare new text.		
	Document Control	New summary text in LTS-MS, main body in PMP, link to LTS-MS.	Prepare new text.		
	Operational Control	New text	Prepare new text.		

TABLE D.1 (Cont.)

Work Item	Summary of Actions Needed	Effort to Complete	Unresolved Issues	Identified Gaps
Institutional Controls				
Access controls	New text, detailed description, explain where it is needed and what is done.	Prepare new text, identify links to responsible organization home page.		Management responsibility not defined.
Digging restriction	New text, detailed description, explain where it is needed and what is done.	Prepare new text, identify links to responsible organization home page.		
Land and facility use controls	New text, detailed description, explain where it is needed and what is done.	Prepare new text, identify links to responsible organizations' home pages and planning documents.		
Surveillance	New text, general description.	Prepare new text.		
Waste site inspection	New text, detailed description, explain where it is needed and what is done.	Prepare new text, identify links to inspection reports.		Management responsibility not defined.
Facility surveillance and monitoring	New text, detailed description, explain where it is needed and what is done.	Prepare new text, identify links to responsible organization home page.	Scope of surveillance and monitoring not well defined.	Management responsibility not defined, no written surveillance and monitoring plans (verify).
O&M	New text, general description.	Prepare new text.		
Caps	New text, detailed description, explain where it is needed and what is done.	Prepare new text, identify links to responsible organization home page.		Management responsibility not defined.
Groundwater collection systems	New text, detailed description, explain where it is needed and what is done.	Prepare new text, identify links to responsible organization home page.		Management responsibility not defined.
Phytoremediation	New text, detailed description, explain where it is needed and what is done.	Prepare new text, identify links to responsible organization home page.		Management responsibility not defined.
Facility maintenance	New text, detailed description, explain where it is needed and what is done.	Prepare new text, identify links to responsible organization home page.		Management responsibility not defined.

TABLE D.1 (Cont.)

Work Item	Summary of Actions Needed	Effort to Complete	Unresolved Issues	Identified Gaps
Residuals Disposal				
Soil	New text, describe precautions to take in future when soil is removed from closed waste site.	Prepare new text.		
Building materials/ demolition debris	New text, describe precautions to be taken in future when facilities are demolished.	Prepare new text.		
Remedial systems removal and site closure	New text, general description.	Prepare new text.		
Removal of remedial systems	New text, describe actions to be taken in future when remediation is complete.	Prepare new text, detailed plan needed later.		Final site closure requirements not yet known.
Final site disposition	New text, describe future plans for waste sites and D&D facilities.	Prepare new text.	Future fate of several structures not determined (CP-5, 301, 317 Area).	Final site closure requirements not yet known.
Periodic performance assessments	New text	Prepare new text, detailed plan needed later.		Schedule and plans not defined.
Preparation and submittal of compliance reports	New text	Prepare new text, link to current and past reports.		Management responsibility not defined.
Preparation of informational reports such as Annual Site Environmental Report	New text	Prepare new text, link to current and past reports.		
General Requirements				
Health and Safety	New text in PMP	Prepare new text, prepare new H&S Plan, link to Web site.		
Science and technology review and implementa-tion	New text in PMP	Prepare new text, link to Need Statements or equivalent.		
Planning for future remedial actions and LTS	New text in PMP	Prepare new text, link to LCAM and FIMMS.		
Resumption of D&D program	New text in PMP	Prepare new text.	Responsibility for remaining D&D not defined.	No plan or schedule for completing D&D exists.

TABLE D.1 (Cont.)

Work Item	Summary of Actions Needed	Effort to Complete	Unresolved Issues	Identified Gaps
Emergency Preparedness and Response	New text	Prepare new text, prepare new Contingency Plan, link to Web site, link CEMP to Web site.		
Checking and Corrective Actions				
Monitoring and Measurement	New introductory text, link to more detailed information such as the Environmental Monitoring Plan.	Prepare new text, link to Need Statements or equivalent.	Responsibility for monitoring after ERP is done is not yet defined.	
Nonconformance, Corrective and Preventive Actions	New text in PMP, link to LTS-MS.	Prepare new text.		
Records Management	New summary text in LTS-MS, main body in PMP, link to LTS-MS.	Prepare new text.		
Audits	New text in PMP, link to LTS-MS.	Prepare new text.		
Management Review	New text in PMP, link to LTS-MS.	Prepare new text.		
Continuous Improvement	New summary text in LTS-MS, main body in PMP, link to LTS-MS.	Prepare new text.		
Program Management Plan	Separate document from LTS-MS, link to site as needed.	Prepare new plan, baseline, cost estimate and schedule, funding mechanism reporting etc.		Many organizational issues not resolved.

Notation: ANL-E = Argonne National Laboratory; CEMP = Comprehensive Emergency Management Plan; EM = DOE Office of Environmental Management; D&D = decontamination and decommissioning; EMS = Environmental Management System; ERP = Environmental Remediation Program; GIS = Geographical Information System; ISO = International Organization for Standardization; LTS = long-term stewardship; PMP = Program Management Plan; SC = DOE Office of Science; SCEM = Site Conceptual Exposure Model.