

# **COMPREHENSIVE STEWARDSHIP PLAN**

**FERNALD CLOSURE PROJECT  
FERNALD, OHIO**



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## LIST OF ACRONYMS

AEC	Atomic Energy Commission
AWWT	Advanced Waste Water Treatment
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
DOE	Department of Energy
EM	Environmental Management
EPA	Environmental Protection Agency
FCAB	Fernald Citizens Advisory Board
FCP	Fernald Closure Project
FEMP	Fernald Environmental Management Project
FIU	Florida International University
FMPC	Feed Materials Production Center
FRESH	Fernald Residents for Environmental Safety and Health
FRL	final remediation level
GJO	Grand Junction Office
G/LD&LMP	Groundwater/Leak Detection & Leachate Monitoring Plan
GMA	Great Miami Aquifer
LCS	leachate collection system
LDS	leak detection system
MUEF	Multi-Use Educational Facility
NDAA	National Defense Authorization Act
NRRP	Natural Resources Restoration Plan
OSDF	on-site disposal facility
OU	operable unit
PCCIP	Post Closure Care and Inspection Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	remedial investigation/feasibility study
ROD	record of decision
SEP	Sitewide Excavation Plan
SRS	Savannah River Site
SSOD	storm sewer outfall ditch
WAC	waste acceptance criteria

# COMPREHENSIVE STEWARDSHIP PLAN

## 1.0 INTRODUCTION

Long-term stewardship is required at the Fernald Closure Project (FCP) to ensure that all remediation activities continue to be effective and protective of human health and the environment following the completion of site remediation. This Comprehensive Stewardship Plan (Plan) represents DOE's first step in planning long-term care of the FCP. The purpose of this draft of the Plan is to satisfy the requirements of DOE-HQ to begin the planning process for long-term care of sites like the FCP. It is DOE's intent to continue to refine this plan with the full involvement of stakeholders and the regulators to ensure that stewardship activities are appropriately planned to meet regulatory and stakeholder requirements. The term "stewardship" is used throughout this Plan and is intended to encompass long-term stewardship activities as defined in Department of Energy (DOE) policy and guidance.

DOE policy and guidance clearly identify protectiveness of the remedies carried out at the FCP (e.g., groundwater, OSDF, institutional controls) as the top priorities for stewardship. Specifically, the on-site disposal facility (OSDF) will require regular monitoring and maintenance to ensure its integrity and performance. The restored areas of the site will also require monitoring to ensure applicable laws and regulations are followed. Departmental policy and funding priorities regarding long term stewardship emphasize supporting the remediation remedies as described in Fernald's Records of Decision. Accordingly, this plan stresses monitoring and maintenance of the OSDF and other controls and infrastructure critical to maintaining the remedy.

The construction of public use amenities, such as trails and overlooks, and their placement is contingent upon settlement of the Natural Resource Injury claim at Fernald. It is recognized that there is stakeholder support for public use amenities as a result of the Future of Fernald Process and the Public Use discussions DOE held earlier in 2002. Settlement negotiations are on-going and this Plan will be revised to reflect the results of the Natural Resource Damage Assessment (NRDA) negotiations.

Fernald stakeholders have also expressed support for a Multi-Use Education Facility (MUEF) which would serve as a combination interpretive center, museum and records repository. Current DOE policy will only consider funding a utilitarian-type structure for record's storage purposes. Based on this policy, a MUEF, or anything beyond a basic Records/Information Center for record's storage, must be funded and sustained through alternative means such as a foundation or a local funding initiative.

### 1.1 Purpose and Organization of this Comprehensive Stewardship Plan

Developing a Plan now, prior to the completion of remediation, allows for improved management of site closure both before and after site remediation is complete. It also allows for more accurate development of a baseline scope, schedule and cost for stewardship, and a smoother transition from site remediation to stewardship. In addition, the personnel most knowledgeable about the site remediation process are readily available as resources for the transition to stewardship. This Plan also provides a mechanism for demonstrating to the public DOE's accountability by clearly communicating the

defined end-state, maintenance and monitoring requirements, as well as contingencies that are in place to address any changes made to the end state.

Under existing federal requirements (see Section 1.2), DOE is required to conduct stewardship activities at facilities that have achieved completion of site remediation. Existing laws, regulations, policies and directives provide broad requirements for DOE to conduct stewardship activities. These activities include monitoring, reporting, record keeping, and long-term surveillance and maintenance for various facilities and media, including engineered waste disposal units, and surface and groundwater.

Although regulations are in place, they do not necessarily include all stewardship activities that may be required at the FCP and other DOE facilities. Specific requirements for monitoring and maintenance of engineered waste disposal units (such as the OSDF) are contained in DOE orders and policies. This Plan provides monitoring parameters and frequencies consistent with those orders and policies to ensure remedy protection.

Taking into consideration the current future use plans for the site, the scope of stewardship activities at the FCP falls into two categories: 1) maintenance of the remedy and 2) stewardship in restored areas, as it relates to those areas. Stewardship activities related to the maintenance of the remedies will include monitoring and maintenance of the OSDF and ensuring that remedy-driven restrictions on access and use of the FCP are enforced. Stewardship in restored areas will focus on protecting natural resources in accordance with applicable laws and regulations.

This Plan is an initial guidance document for stewardship activities at the FCP. This Plan will be revised and updated as stakeholder and regulator involvement further refine stewardship planning at the FCP. It is intended to outline the scope of stewardship activities at the FCP, summarize monitoring parameters and frequencies, and provide the general approach to records management during stewardship. To the extent possible, this Plan also attempts to represent stakeholder desires for long-term stewardship at Fernald. Additional subject-specific documents will be prepared which will provide greater detail on monitoring and maintenance requirements at the FCP following remediation. Examples of subject-specific documents include future revisions to the *OSDF Post Closure Care and Inspection Plan* (PCCIP, DOE 1997a), the *OSDF Systems Plan* (DOE 1997b), *Enhanced Permanent Leachate Transmission System Plan* (DOE 2001a) and the *Groundwater/Leak Detection and Leachate Monitoring Plan* (G/LD&LMP, DOE 1997c). An Institutional Control Plan will also be developed as required by U.S. EPA to describe the physical controls on access, as well as the administrative and other institutional controls that will be implemented at the site.

This Plan is organized into the following sections to describe planned stewardship activities at the FCP, as well as issues related to stewardship.

**1.0 Introduction** – provides an introduction to this Plan and discusses the purpose and necessity of stewardship at DOE facilities.

**2.0 Site Background** - provides a background and history of the FCP beginning with construction of the site in the 1950's. There is a discussion of the production activities, the FCP's remediation, and the anticipated conditions at the time of site completion.

**3.0 Scope of Comprehensive Stewardship at the FCP** – discusses the scope of stewardship at the FCP.

**4.0 Stewardship of the On Site Disposal Facility** - outlines the stewardship monitoring and maintenance requirements for the OSDF.

**5.0 Stewardship of Restored Areas** - outlines the stewardship monitoring and maintenance issues for the restored areas.

**6.0 Public Participation** - describes the role the public will play in the stewardship of the FCP. Also included is a description of the role stewardship will play in support of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Five - Year Review.

**7.0 Records Management** – describes the importance of record management, preservation, and its applicability to stewardship. Also describes various avenues for record management during stewardship.

**8.0 Funding** – discusses the funding needs, to implement and sustain a long-term stewardship program at the FCP.

## **1.2 What is Stewardship?**

In recent years, DOE has increased focus on the need for long-term stewardship following completion of remediation activities. DOE orders and policies that provide the framework for stewardship include the following (DOE 1999a):

- **DOE Order 450.1 Environmental Protection Program** requires the implementation of sound stewardship practices that are protective of the air, water, land, and other natural and cultural resources impacted by DOE operations.
- **DOE Order 200.1 Information Management Program** provides a framework for managing information, information resources, and information technology investment.
- **DOE Order 430.1 A Life Cycle Asset Management and DOE Order 4320.1B Site Development Planning** identify what analyses must be conducted in order to determine whether a particular portion of DOE real property is considered to be excess and available for transfer to another entity.
- **DOE Order 435.1 Radioactive Waste Management** requires DOE radioactive waste management activities to be systematically planned,

documented, executed, and evaluated in a manner that protects worker and public safety, as well as the environment.

- **DOE Order 1230.2 DOE American Indian Tribal Government Policy** requires DOE sites to consult with potentially affected Tribes concerning impacts of proposed DOE actions (including real property transfers), and to avoid unnecessary interference with traditional religious practices.
- **DOE Order 5400.5 Radiation Protection of the Public and the Environment** establishes acceptable levels for the release of property on which any radioactive substances or residual radioactive material was present.
- **The Secretary of Energy's Land and Facility Use Policy, issued December 21, 1994, and DOE Policy 430.1, also titled "Land and Facility Use Planning Policy," issued July 9, 1996,** state that DOE sites must consider how best to use DOE land and facilities to support critical missions and to stimulate the economy while preserving natural resources, diverse ecosystems, and cultural resources.

Other documents and reports have been written that address stewardship issues across the DOE complex and help to better define the activities that may be required for stewardship purposes. These documents include:

- *From Cleanup to Stewardship* (DOE 1999a) addresses the nature of long-term stewardship at DOE sites, anticipated long-term stewardship at DOE sites, and planning for long-term stewardship.
- *A Report to Congress on Long-Term Stewardship* (DOE 2001b) (required by the FY 2000 National Defense Authorization Act (NDAA)) represents the most comprehensive compilation of DOE's anticipated long-term stewardship obligations to date and provides summary information for site-specific, long-term stewardship scope, cost, and schedule. The report provides a "snapshot" of DOE's current understanding of stewardship activities and highlights areas where significant uncertainties still remain.
- *Managing Data for Long-Term Stewardship* (ICF 1998) represents a preliminary assessment of how successfully information about the hazards that remain at DOE sites will be preserved and made accessible for the duration of long-term stewardship.
- *Long-Term Stewardship Study* (DOE 2000a) describes and analyzes several significant national or cross-cutting issues associated with long-term stewardship and, where possible, options for addressing these issues. The principal purposes are to promote information exchange and to provide information on the decision-making processes at the national level and at individual sites.

- *The Long-Term Control of Property: Overview of Requirements in Orders DOE 5400.1 and DOE 5400.5* (DOE 1999b) summarizes DOE requirements for radiation protection of the public and environment, with the intent of assisting DOE elements in planning and implementing programs for the long-term control (stewardship) of property.
- *Memorandum – Long-Term Stewardship “Guiding Principles”* (DOE 2000b) incorporates broad concepts pertaining to stewardship and incorporates elements identified by Ohio stakeholders as critical to the success of stewardship planning.
- *Selecting and Implementing Institutional Controls in RCRA and CERCLA Response Actions at Department of Energy Facilities* (DOE 2000c) provides DOE environmental restoration project managers with the information on institutional controls they will need when making environmental restoration remedy decisions under CERCLA and RCRA.
- *Institutional Controls: A Site Manager’s Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups* (USEPA 2000) provides an overview of the types of institutional controls that are commonly available, including their relative strengths and weaknesses. It also provides a discussion of the key factors to consider when evaluating and selecting institutional controls in Superfund and RCRA corrective Action cleanups.

Most of the DOE sites that are in the cleanup phases are currently planning their long-term stewardship activities. There are, however, a few facilities at which stewardship has been initiated. The applicable laws and regulations provide a foundation for stewardship practices, but each site is different. Each facility will have to work in conjunction with those laws and regulations, using them as guidelines, to develop stewardship plans that best suit that facility. Part of the stewardship planning at Fernald includes a study conducted by Florida International University (FIU) that resulted in the creation of a database of laws, regulations, orders, etc. on the federal and state level that pertain to long term stewardship. The database includes the titles and a summary of the requirements, including a discussion of their applicability to the FCP. A summary report has been generated that describes the project and the development of the database (FIU 2002a).

DOE guidance identifies why we need to address stewardship while remediation is still on-going (DOE 1999a):

- To provide for a smooth transition from cleanup to stewardship;
- To emphasize that the “cleanup” goal in many cases is to reduce and control, not eliminate, risk and cost;
- To ensure that Congress, regulators and stakeholders have a clear understanding of the cleanup mission and to clarify that there is an endpoint;
- To set realistic expectations and show interim successes and results;
- To identify technology research and development needs; and

- To assure regulators and the public that DOE will not walk away from its post-remediation obligations.

DOE defines stewardship as "all activities required to protect human health and the environment from hazards remaining after remediation is completed (DOE 1999a)." Three categories, or levels, of stewardship are recognized: active, passive, and no stewardship required. Active stewardship is defined as "the direct performance of continuous or periodic custodial activities such as controlling access to the site; preventing releases from a site; performing maintenance operations; or monitoring performance parameters". Passive stewardship is defined as "the long-term responsibility to convey information warning about the hazards at a site or limiting access to, or use of, a site through physical or legal mechanisms". No stewardship is required "where cleanup has been completed to levels that will allow for unrestricted or residential future use" (DOE 1999a). The FCP will have a combination of "active" and "passive" measures during stewardship of the site. This Plan describes both "active" and "passive" stewardship measures, ranging from regular monitoring and maintenance to zoning restrictions and postings.

The input of the public and regulators throughout the stewardship process and providing access to site information during stewardship are also fundamental components of the long-term care of the FCP (DOE 1999). Public involvement and access to information during stewardship are emphasized in all DOE policy and guidance and this plan is intended to clearly outline DOE's commitment to those aspects of stewardship.

### **1.3 Why is Stewardship Necessary?**

At many sites, including the FCP, completing remediation to levels acceptable for unrestricted use is not feasible. As a result, stewardship is necessary to ensure that all remedial efforts continue to be effective and protective of human health and the environment. As part of cleanup of many DOE sites, disposal facilities are constructed to contain waste materials that will remain on DOE property. These facilities must be monitored and maintained to ensure integrity and public safety.

### **1.4 DOE Management of the Stewardship Program**

The mission of the DOE Long Term Stewardship Program includes providing sustained human and environmental protection through the mitigation of residual risks and the protection of natural and cultural resources at DOE facilities. The Office of Long Term Stewardship at DOE Headquarters provides overall departmental policy, direction and program guidance on matters affecting stewardship.

The individual DOE Site Office will work with the appropriate Field Office and DOE Headquarters to determine what is required for the close-out of facility activities and the implementation of long-term stewardship. For example, in the case of the FCP, the DOE-FCP Office will work with the DOE Ohio Field Office and DOE-Headquarters on determining what is required to close and care for the

facility. The DOE Grand Junction Office will be the FCP long term steward responsible for implementing post-remediation requirements.

DOE continues to develop documentation of the remediation and stewardship activities under their programs. DOE recently published *From Cleanup to Stewardship*, a document which provides background information on the DOE long term stewardship obligations and activities [*From Cleanup to Stewardship* is a companion report to *Accelerating Cleanup: Paths to Closure* (DOE 1998a)]. *From Cleanup to Stewardship* examines the transition from cleanup to long term stewardship, and it includes brief site profiles covering the remediation and stewardship activities at various DOE sites.

*A Report to Congress on Long Term Stewardship* was issued in January 2001. The *Report to Congress* was required by the FY2000 NDAA to document existing and anticipated stewardship obligations. The report also summarizes stewardship efforts and planning across the DOE complex. Also included is a summary of stewardship planning and activities at numerous DOE facilities.

### **1.5 Examples of Stewardship Activities at Other DOE Facilities**

The final cleanup of the FCP will involve restoring a majority of the site to natural areas. It is possible that stewardship of the restored portion of the site, outside of the OSDF, will be performed by a non-DOE entity. It has also been suggested that an education facility be part of the final land use. DOE is currently evaluating the feasibility of any additional stewardship activities. Other sites across the DOE complex are conducting or planning very similar activities as part of their final land use and stewardship, and may provide a model for a similar arrangement at the FCP. The Weldon Spring site, although a smaller facility, has a post-closure set-up much like the one anticipated at Fernald. DOE constructed a disposal facility on the property. The disposal facility is accessible by the public; however, the Fernald OSDF will be a restricted area. DOE also converted an existing building at the Weldon Spring facility into a Public Information center. It has been suggested that a facility should be constructed at Fernald to house copies of records and other information needed during long term stewardship.

An example of part of a site being managed by a non-DOE entity is at the Savannah River Site (SRS) in South Carolina. The U.S. Forest Service now manages a timber and forestry research center on SRS property. SRS also houses the Savannah River Ecology Laboratory, and environmental research center operated for DOE by the University of Georgia. In 1972, the site was designated as a National Environmental Research Park.

At the Hanford Site in Washington, the Richland Operations Office has made progress in transferring land to other land managers and in opening new facilities for research and training. A portion of the site, following cleanup, was transferred to the Port of Benton for economic development. Two other areas of the site were removed from the National Priorities List and are now managed by the U.S. Fish and Wildlife Service as part of the Hanford Reach National Monument. The William R. Wiley Environmental Molecular Sciences Laboratory was opened to researchers investigating atmospheric chemistry, health effects, bioremediation, geosciences, and computational modeling.

## 2.0 SITE BACKGROUND

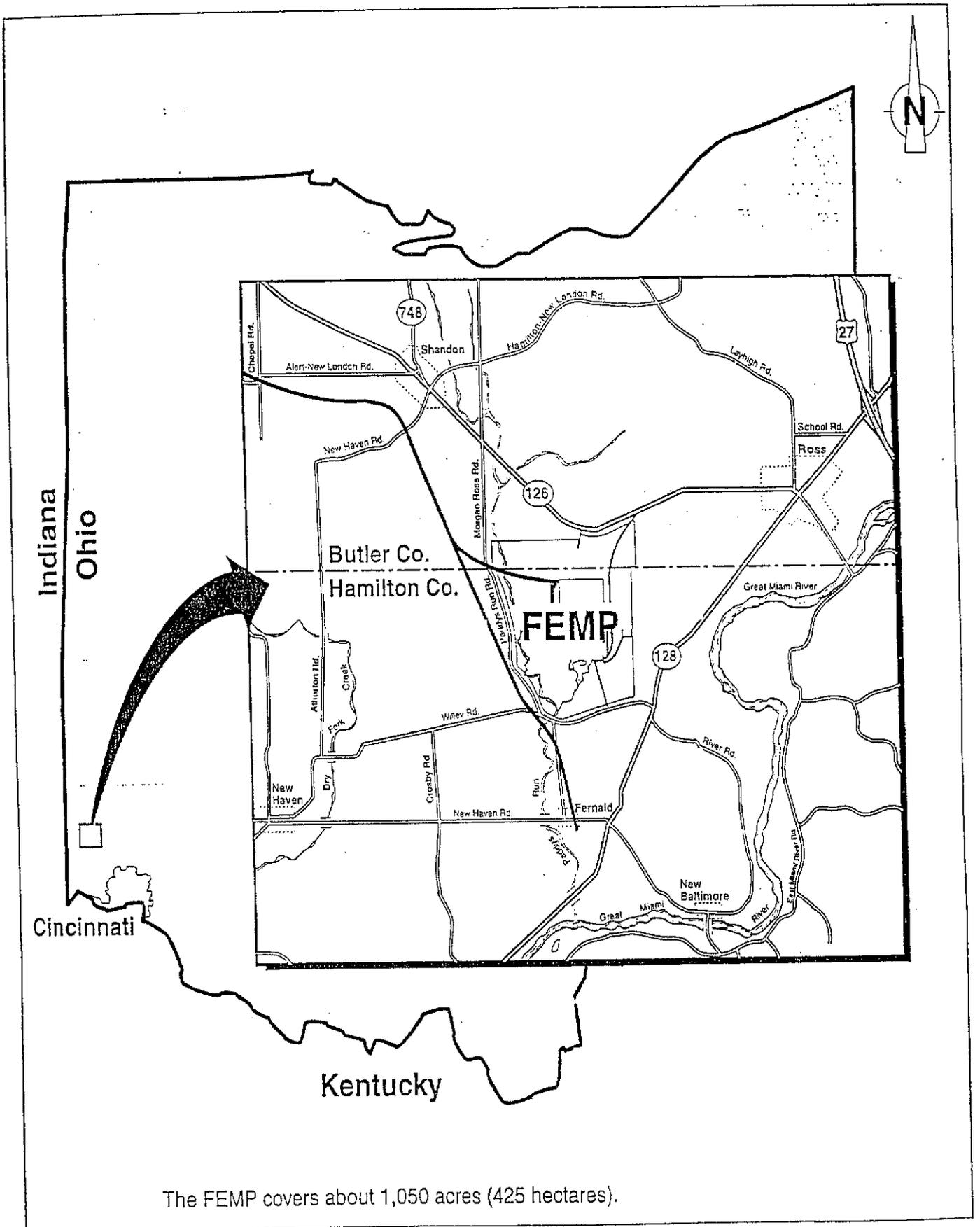
### 2.1 Site Description

#### 2.1.1 FCP Site Description

The FCP is situated on a 1,050-acre tract of land, approximately 18 miles northwest of Cincinnati, Ohio. The FCP site is located near the unincorporated communities of Ross, Fernald, Shandon and New Haven (Figure 1). The former production area occupies approximately 136 acres in the center of the site. The waste pit area and the K-65 silos are located adjacent to the western edge of the production area. Paddys Run flows from north to south along the FCP's western boundary and empties into the Great Miami River approximately 1.5 miles south of the site. The FCP lies on a terrace that slopes gently between vegetated bedrock outcroppings to the north, southeast, and southwest. The site is situated on a layer of glacial overburden, consisting primarily of clay and silt with minor amounts of sand and gravel, that overlies the Great Miami Aquifer (GMA). Paddys Run and the storm sewer outfall ditch (SSOD), which empties into Paddys Run, have eroded the glacial overburden, exposing the sand and gravel that make up the GMA.

#### 2.1.2 FCP Surrounding Area

In the vicinity of the FCP are the communities of Shandon (northwest), Ross (northeast), New Baltimore (southeast), Fernald (south), and New Haven (southwest) (Figure 1). Land use in the area consists primarily of residential use, farming and gravel excavation operations. Some land in the vicinity of the FCP is dedicated to housing development, light industry and park land. The Great Miami River is located to the east, and, like Paddys Run and the SSOD, has eroded away significant portions of the glacial overburden, exposing the sand and gravel that make up the GMA.



The FEMP covers about 1,050 acres (425 hectares).

Figure 1 FEMP and Vicinity

## 2.2 Site History

### 2.2.1 Feed Materials Production Center

The Feed Materials Production Center (FMPC) was the original name given to the Fernald site. The FMPC was constructed by the Atomic Energy Commission (AEC) in the early 1950's for the purpose of producing pure uranium metal from ores and process residues for use at other government facilities involved in the production of nuclear weapons for the nation's defense. A variety of materials were utilized throughout the production process, including ore concentrates and recycle materials which were dissolved in nitric acid to produce a uranyl nitrate hexahydrate (UNH) feed solution. The UNH was then concentrated and thermally denitrated to uranium trioxide (UO<sub>3</sub>), or orange oxide. The orange oxide was either shipped to the gaseous diffusion plant in Paducah, Kentucky, or was converted to uranium tetrafluoride (UF<sub>4</sub>), or green salt. The green salt was blended with magnesium-metal granules and placed in a closed reduction pot to produce a mass of uranium metal called a derby. Some derbies were shipped to other facilities but the remainder were melted and poured into pre-heated graphite molds to form ingots. Some ingots were rolled or extruded to form billets. Two reports that explain in greater detail the role of the Fernald site within the DOE complex and the processes that took place at the Fernald site are: *Historical Documentation of the Fernald Site and Its Role Within the U.S. Department of Energy Weapons Complex* (DOE 1998b) and *Historical Documentation of Facilities and Structures at the Fernald Site* (DOE 1998c).

Uranium metal was produced at the site from 1952 through 1989. During that time, it is estimated that from 400,000 to 1,000,000 pounds of uranium were released to the environment, resulting in contamination of soil, surface water, sediment, and groundwater on and around the site.

### 2.2.2 Change in Site Mission from Production to Remediation

In 1989, production ceased at the FMPC due to a decrease in the demand for the feed materials and an increase in environmental restoration efforts. The site was subsequently included on the U.S. Environmental Protection Agency's (EPA) National Priorities List. In 1991, the site was renamed the Fernald Environmental Management Project and the site was officially closed as a production facility. The DOE's management of the site switched from the Defense Programs division to the Environmental Restoration and Waste Management division. The National Lead Company of Ohio was the primary contractor to the AEC and DOE during production years. In 1986, Westinghouse was awarded management responsibilities of the facility. In 1992, the contract was awarded to the Fernald Environmental Restoration Management Corporation, now Fluor Fernald. The contract to complete the remediation of the facility through site completion was awarded to Fluor Fernald in November 2000. The current sitewide remediation effort is being conducted pursuant to CERCLA. Waste management is being

conducted according to the Resource Conservation and Recovery Act (RCRA).

## 2.3 Remediation Process

### 2.3.1 Summary of Remediation Efforts

CERCLA is the primary driver for environmental remediation of the FCP. The site was divided into five operable units (OU) as follows:

- Operable Unit 1 – Waste Pits Area
- Operable Unit 2 – Other Waste Units
- Operable Unit 3 – Production Area
- Operable Unit 4 – Silos 1-4
- Operable Unit 5 – Environmental Media

A Remedial Investigation and Feasibility Study (RI/FS) was conducted for each of the five operable units listed above. Based on the results of the RI/FS, records of decision (RODs) were issued outlining the selected remedy for each OU. A summary of the remedies follows.

The remedy for OU1 includes removing all material from the waste pits, stabilizing the material by drying, and shipping it off-site for disposal. The remedy for OU2 includes removing material from the various units, disposing of material that meets the on-site waste acceptance criteria (WAC) in the OSDF, and shipping all other material off-site for disposal. WAC were developed by DOE and regulators to strictly control the type of waste disposed on site. The OU3 remedy includes decontaminating and decommissioning all contaminated structures and buildings, recycling waste materials if possible, disposing of material that meets the on-site WAC in the OSDF, and shipping all other material off-site for disposal. The OU4 remedy includes removal and treatment of all material from the silos and shipping it off-site for disposal.

OU5 includes all environmental media, including soil, surface water, groundwater and vegetation. The Sitewide Excavation Plan (SEP; DOE 1998d) describes the remediation of soils. First, material exceeding the WAC for the OSDF will be dispositioned by one of the following: 1) transporting material to an off-site disposal facility for treatment and disposal; 2) treating material on site and transporting to an off-site disposal facility; or 3) treating material on-site and disposing of it in the OSDF. Details and exceptions for the above are outlined in the SEP.

Soil and sediment exceeding final remediation levels (FRLs), which are defined in the SEP, but are below the OSDF WAC will be excavated and placed in the OSDF. Soil certification processes will be performed to ensure that excavation has removed all impacted material, as outlined in the SEP.

The OU5 ROD (DOE 1996) describes the approved remediation method of pump-and-treat for groundwater. The OU5 ROD also committed to continual evaluation of remediation technologies to allow for the improvement of the remedy with new technologies. As a result, an enhanced groundwater remedy, which could reduce groundwater remediation by ten years, was suggested and subsequently approved. The enhanced remedy includes additional extraction wells and the re-injection of treated groundwater to increase the rate at which contaminants move through the aquifer and are removed by the extraction wells.

The primary constituent of concern for groundwater is uranium. Other constituents have been identified and will be removed during the remediation of the uranium. A complete list of all of the constituents identified in groundwater can be found in the OU5 ROD. The final remediation level for uranium in groundwater is 30 parts per billion. DOE and regulators based the target cleanup levels for groundwater on use of the aquifer as a potable water supply and incorporated Safe Drinking Water Act standards for all constituents for which these standards were available.

Ecological restoration follows remediation and is the final step to completing cleanup of the site. Ecological restoration is being implemented in order to achieve settlement of the natural resource damage claim at Fernald. A Natural Resource Damage claim was filed by the state of Ohio against DOE for the damages at the Fernald site pursuant to CERCLA. The restoration activities for the site are in response to the claim. For the FCP, ecological restoration is outlined in the *Natural Resource Restoration Plan* (NRRP, DOE 2001c).

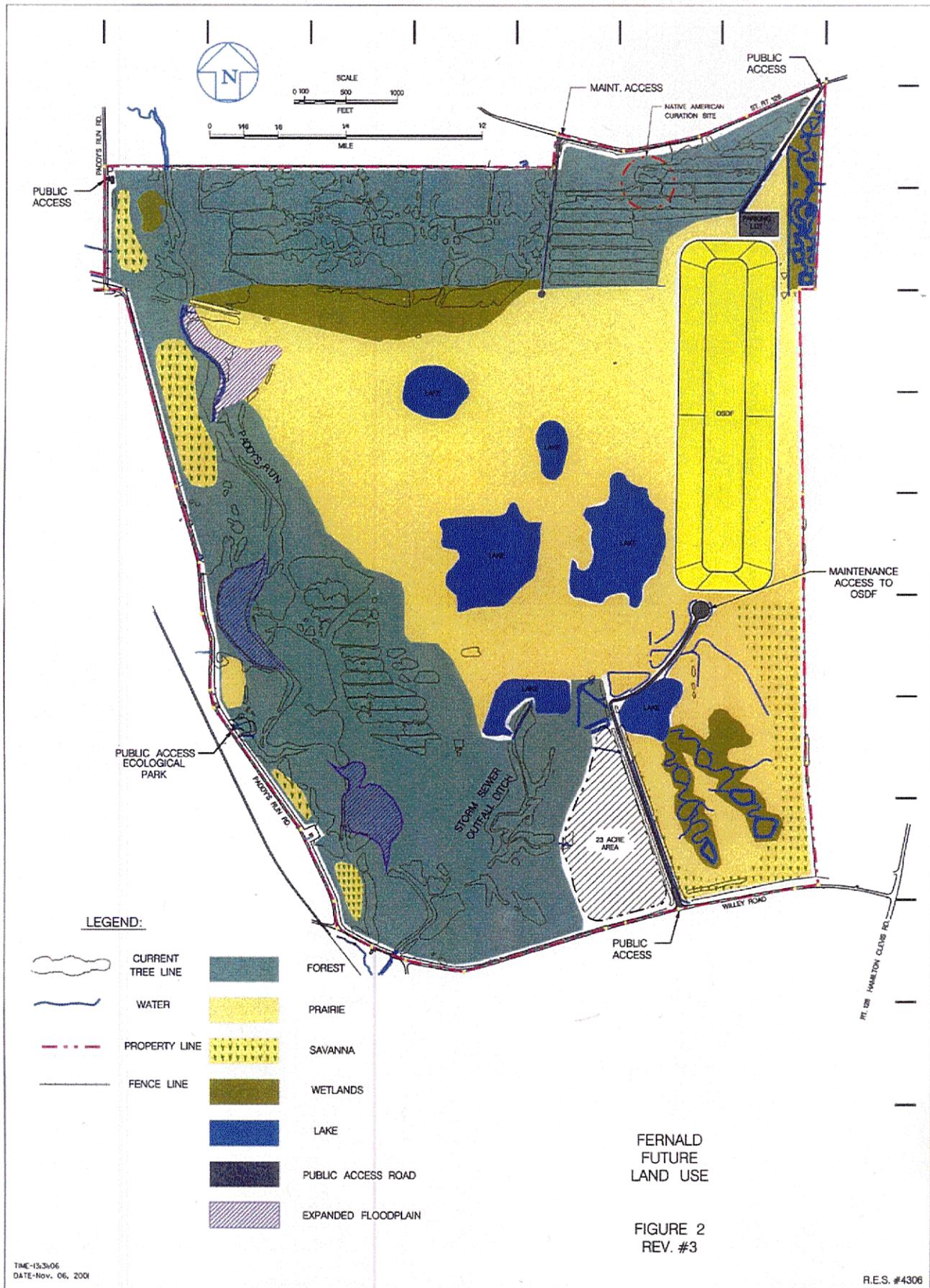
The goal for restoration of the FCP is to enhance, restore, and construct as feasible, given post excavation landforms and soils, the early stages of vegetative communities native to pre-settlement southwestern Ohio. Figure 2 illustrates the conceptual ecological restoration of the FCP. Restoration of the FCP involves four major components:

1. Expansion/enhancement of the riparian corridor along Paddys Run.
2. Expansion/enhancement of the wooded areas in the northern portion of the FCP.
3. Restoring a contiguous prairie in the central and eastern portions of the FCP (including the OSDF).
4. Creating open water areas and wetlands throughout the site as topography and hydrology allow.

### 2.3.2 Schedule for Completion of Site Remediation

In January 2003, the site's name was changed to the Fernald Closure Project. DOE's closure contract with Fluor Fernald outlines the remediation activities that must be completed by December 2006. Fluor Fernald has also developed baseline plans and estimates for remedial activities based on the current contract. The initiation of stewardship is

independent of any political or contractual definition of site closure or site completion.



**LEGEND:**

- |  |                   |  |                     |
|--|-------------------|--|---------------------|
|  | CURRENT TREE LINE |  | FOREST              |
|  | WATER             |  | PRAIRIE             |
|  | PROPERTY LINE     |  | SAVANNA             |
|  | FENCE LINE        |  | WETLANDS            |
|  |                   |  | LAKE                |
|  |                   |  | PUBLIC ACCESS ROAD  |
|  |                   |  | EXPANDED FLOODPLAIN |

**FERNALD  
FUTURE  
LAND USE**

**FIGURE 2  
REV. #3**

## 2.4 Site Conditions after Remediation

The following provides an overview of the site conditions after remediation as currently anticipated. It is clear that some remediation will be ongoing as stewardship is initiated. A more definitive description on site conditions at closure and completion will be included in later versions of this plan.

### 2.4.1 On-Site Disposal Facility

Based on a Predesign Investigation, the most suitable location for the OSDF was determined to be on the eastern side of the FCP (Figure 2). The details of the investigation are in the *Predesign Investigation and Site Selection Report for the On-site Disposal Facility* (DOE, 1995a). This location was considered the best because of the thickness of the gray clay layer that overlies the GMA.

Construction on Cell 1 of the OSDF was initiated in December 1997 and the permanent cap for Cell 1 was complete in late 2001. When completed, the OSDF will consist of up to eight individual cells covered by a continuous permanent cap. The final dimensions will be approximately 800 feet east to west, 4300 feet north to south, with a maximum height of 65 feet. Later versions of this plan will include design drawings of the OSDF. An anticipated 2.5 million cubic yards of impacted materials will be placed in the facility. It is expected that approximately 80 percent of the material will be impacted soil and the remaining 20 percent will consist of building demolition rubble, fly ash, lime sludge, and small amounts of miscellaneous materials. The PCCIP provides a summary of the materials permitted to be placed in the OSDF. The volumes mentioned above are subject to change during the actual remediation process.

The design approach for the OSDF can be found in both the OU2 ROD DOE 1995b) and the *Final Design Calculation Package, On-site Disposal Facility* (Geo-Syntec1997). The design includes a liner system, impacted material placement, final cover system, leachate management system, surface water management system, and other ancillary features.

A buffer area and perimeter fence will be established around the disposal facility (total area of approximately 123 acres). Institutional controls are outlined in the PCCIP, OU2 ROD and OU5 ROD and are described in further detail in Section 4.2 of this Plan.

### 2.4.2 Restored Areas

Approximately 904 acres of the FCP property will be ecologically restored. Restored areas are those areas of the site that have been graded, following remedial excavation, amended, planted and/or enhanced to create the early stages of ecosystems comparable to native pre-settlement southwestern Ohio. The specific habitats to be restored include upland forest, riparian forest, tallgrass prairie/savanna, and wetlands/open water (Figure 2). In addition, existing habitats (such as the pine plantations) will undergo enhancements. Following are brief

summaries of the planned habitat restorations. Details of the actual projects to be completed are described in the NRRP (DOE 2001c). Further detail on the restored areas will be found in the final version of the NRRP.

**Upland Forest:** Upland forest areas exist in a northern portion, a southern portion and the western perimeter of the site. Restoration activities will be conducted to expand these forested areas. The *Sitewide Characterization Report* (DOE 1993) describes the FCP as existing in a transition zone between the Oak-Hickory and Beech-Maple sections of the Eastern Deciduous Forest province. That is, a mosaic of both Oak-Hickory and Beech-Maple forest types can be found in southwest Ohio. Forest communities at the FCP would gradually move toward one of these forest types, depending on site-specific factors such as topography and hydrology. Therefore, restoration of upland forests at the FCP will focus on the establishment of this Beech-Maple, Oak-Hickory transition zone. The trees that will be used are native to southwestern Ohio and are listed in the NRRP, Table 3-1.

**Riparian Forest:** Riparian corridors exist along Paddys Run and the SSOD. Restoration activities will be conducted to expand these corridors through revegetation. The trees species selected are those that can withstand periodic inundation and are listed in the NRRP. The Paddys Run floodplain will be expanded as part of the long-term management plan for Paddys Run.

**Tallgrass Prairie/Savanna:** The current waste-pit, production, OSDF, and borrow (east field) areas will become a contiguous prairie. Some prairie/savanna will be established along the western perimeter of the site but concentration will be primarily in formerly disturbed areas. Prairie restoration will involve amending soil, if necessary, seeding of grasses and forbs ("wildflowers"). All grasses and forbs will be native to the area.

Savannas will be established by planting a sparse mix of trees and shrubs, and seeding the area with native grasses.

**Wetlands/Open water:** Wetlands and open water areas will be established throughout the site where topography permits. The former production area will have open water areas as a result of deep excavations, and wetlands will be established throughout the site. DOE is responsible for providing 16.5 acres of mitigated wetlands under Section 404 of the *Clean Water Act*. In addition to mitigating wetlands, upland and riparian forest re-vegetation in various areas could be designed to restore wet woods. Details and drivers for wetland mitigation are described in the NRRP.

### 2.4.3 Groundwater

Operation of some portions of the groundwater extraction system will continue into long term stewardship. Groundwater remediation and monitoring will continue until the FRL of 30 ppb for uranium has been

achieved. Groundwater monitoring will be required following completion of remediation to ensure continued protectiveness of the remedy and to support the CERCLA five-year reviews. The exact frequency and approach to monitoring to support the five-year reviews has not been determined at this time, but will be provided in later versions of this plan. Long term monitoring of groundwater will be required around the OSDF. The exact approach to groundwater monitoring will be defined with input from stakeholders and the regulators and will be incorporated into later revisions of this Plan prior to the implementation of stewardship.

#### 2.4.4 Existing Infrastructure and Facilities

A few facilities may remain on site following remediation. These include the Advanced Wastewater Treatment (AWWT) facility and supporting infrastructure (i.e., Bio-Surge Lagoon, Storm Water Retention Basins, pipelines, etc.), the silos waste treatment facility, a power station and a few office trailers. It is currently planned that the AWWT will remain in place until a time when DOE is certain that groundwater treatment is no longer necessary (approximately 2010 to 2015). Some site infrastructure (e.g., rail lines, office trailers) will be left after the completion of remediation and will be removed and dispositioned during the initial months of stewardship.

Twenty-three acres of the DOE property has been identified for potential future development. The area has been certified; however, no additional ecological restoration in this area will be completed until a decision is made on development. Suggestions for use have included an environmental education facility for the public's use, part of which would meet a requirement of the settlement with the State of Ohio's claim for impacts to the natural resources. This facility could also house copies of records determined to be vital for stewardship. Original records will be dispositioned per DOE procedures and policies (See Section 7.0). A decision on development of the 23-acre tract is expected in the future. A later revision of this Plan will provide more definitive information on development plans of the 23 acres, as necessary.

### 3.0 SCOPE OF STEWARDSHIP AT THE FCP

Stewardship activities will support the remedy including monitoring and maintaining the FCP property, facilities, and structures that remain following completion of site remediation. Stewardship planning activities have already been initiated at the FCP, and various time frames have been discussed for stewardship activities (e.g., 70 years in the Report to Congress). DOE has committed to the goal of ensuring stewardship of the FCP site. The DOE-Grand Junction Office (GJO) will be the long-term steward of the FCP.

The commitments in the RODs relevant to stewardship include the following:

- DOE will achieve the final remediation levels (FRLs) for all contamination attributed to the FCP. Site-wide cleanup levels for soil are documented in the OU2 ROD, and in the OU5 ROD based on a recreational use and the Undeveloped Park Scenario. The FRLs, once achieved, will not allow unrestricted use of the FCP and institutional controls will be required.
- Per the OU2 ROD, the FCP will remain under federal ownership. Therefore, any final land use alternative and stewardship planning has to contemplate DOE's commitment to continual federal ownership.
- Commitments for other environmental monitoring will be carried out for as long as appropriate per the existing RODs.

Maintaining institutional controls at the FCP will be a fundamental component of stewardship and will include ensuring no residential or agricultural uses occur on the property. The intent of this Plan is to provide an overview of institutional controls required for the FCP to support stewardship. A separate Institutional Control Plan will be required for the FCP per the DOE's commitment to U.S. EPA in the OU 5 ROD. This Plan provides an initial attempt to define institutional controls for the FCP and will be updated as needed to remain consistent with the Institutional Control Plan as it is developed. DOE and USEPA guidance have been used to identify planned institutional controls at the FCP. Required institutional controls will continue to be updated as needed based on changing site conditions and input from stakeholders and regulators. Section 6.2 discusses the five-year review process and how it relates to long term stewardship including institutional controls.

Posted signs along the perimeter of the FCP will indicate the restrictions on activities on the FCP property, who to call for information, and will delineate the OSDF restricted area. Some stewardship activities will consist of enforcing the land uses, maintaining fences (as needed), and periodically replacing signs. The necessary records of the history and remediation of the site will be maintained at a central federal government location and at the GJO. It is anticipated that copies of key documents will also be maintained at a location at or near the Fernald site.

The scope of stewardship activities at the FCP fall into two categories: 1) maintenance of the remedy and 2) stewardship in restored areas. Stewardship activities related to the maintenance of the remedies will include monitoring and maintenance of the OSDF, ensuring that remedy-driven restrictions on access and use of the FCP are enforced, and records management. During remediation, there will be limited monitoring required for the OSDF, but this monitoring will be within the scope of remediation until

remediation is completed. Following remediation, OSDF monitoring becomes a stewardship responsibility.

Stewardship in restored areas will include ensuring that natural and cultural resources will be protected in accordance with applicable laws and regulations. Construction of any public use amenities, such as trails, overlooks, etc., will only be completed as part of the Natural Resource Injury Settlement. The cleanup levels established for the FCP will ensure the site is remediated to a level consistent with recreational use. If constructed, monitoring and maintenance of those amenities would be necessary to ensure they remain safe for use. Stewardship of public use amenities is not within DOE's responsibilities and has not been determined. A similar scenario applies to the potential multi-use educational facility. The construction of such a facility is not a long term stewardship responsibility, and if such a facility is constructed, funding for the management and maintenance of the facility would have to be identified.

The planning and actual reburial of Native American remains is another on-going initiative that is currently outside the scope of this Plan. DOE has agreed to make land available for the re-interment of Native American remains. Responsibility for managing the re-interment process and ongoing care and maintenance of areas dedicated for this use will not fall under DOE stewardship requirements. Monitoring and management of the reinterment areas will be addressed in future versions of this Plan.

### **3.1 Stewardship of the OSDF**

The OU 2 ROD states that the FCP will remain under federal ownership. DOE has committed to the goal of ensuring stewardship activities of the OSDF in perpetuity. The PCCIP for the OSDF outlines the routine stewardship activities for the initial 30-year period. The activities include routine inspections and on-going monitoring of the leachate collection system, leak detection system, and groundwater in the vicinity of the OSDF. DOE will conduct CERCLA reviews every five years and will issue a report summarizing the results of the review to the appropriate regulatory agencies. Periodic monitoring and maintenance of the leachate collection system and vegetative cap of the OSDF will be necessary, as well as occasional maintenance of signs, fencing, and the buffer zone around the OSDF.

Remote monitoring of the OSDF has been initiated on Cell 1 of the OSDF. The remote systems installed on Cell 1 include sensor technology to monitor groundwater and rainwater intrusion and subsidence, integrity of the leachate collection system and the cap, and real-time characterization and tracking of leachate and groundwater flow. Inspection of the automated monitoring and remote sensing technologies will occur on a semi-annual basis (Table 4-1). A final decision on whether to install the remote monitoring devices on the remainder of the OSDF has not been made to date. Information collected from the sensors on Cell 1 (and the remainder of the OSDF if installed) will be managed with other data required for stewardship. A web site is currently being developed to provide background information regarding the OSDF design, monitoring technologies, and various data being collected. The web site when completed will be integrated with any comprehensive web based information management system to be developed for stewardship at the FCP.

The extent of stewardship activities will be defined based on regulatory requirements, stakeholder and regulatory input, and agreements between DOE and the Ohio and U.S. EPA's. Details of the maintenance and monitoring requirements for the leachate system, the capping/cover system and the support systems for the OSDF are included in Section 4.0 of this plan.

### **3.2 Stewardship of the Restored Areas**

Per the OU5 ROD, DOE will protect the existing natural resources at the FCP. Monitoring will focus on ensuring the natural resources are protected in conjunction with appropriate laws and regulations. Wetlands and threatened and endangered species are examples of natural resources that will be monitored. Existing cultural resource areas will also have to be inspected to ensure the integrity of these areas is not threatened.

Depending on the outcome of the Natural Resource Injury Settlement at Fernald, amenities may be constructed to support public use of the FCP. Funding sources for the stewardship of the public use amenities would need to be identified. Stewardship activities would be necessary to maintain roads, parking lots and trails in a safe configuration. Signs/displays/markers will require maintenance to ensure their integrity and legibility.

## 4.0 STEWARDSHIP OF THE ON-SITE DISPOSAL FACILITY

### 4.1 Proposed Steward(s) for the On-Site Disposal Facility

Per the OU2 ROD, the FCP property will remain under federal ownership. Following the completion of remediation activities, stewardship of the OSDF will be transferred to the DOE-GJO, including the responsibilities of the Nuclear Materials Representative. As discussed in Section 1.4, DOE-GJO will be responsible for the Long Term Surveillance and Maintenance program.

### 4.2 Institutional Controls for the On-Site Disposal Facility

The primary institutional and engineered controls for the OSDF include continued federal ownership, signage and engineered barriers to prevent access, such as fences. As stated in the OU2 and OU5 RODs, the federal government will maintain property ownership of the area comprising the OSDF and associated buffer areas. In the event that DOE transfers management of the OSDF to another entity, the appropriate restrictions and limitations will be communicated and implemented (e.g. deed restrictions). A description of the various types of institutional controls pertaining to ownership and/or transfer of DOE land is included in *Selecting and Implementing Institutional Controls in RCRA and CERCLA Response Actions at Department of Energy Facilities*.

Physical barriers to access will include exclusion fencing and signs, which will be maintained to restrict access to the OSDF and its surrounding buffer area. In addition, another institutional control involves providing primary and secondary points of contact to ensure authorized and emergency access. Points of contact are listed in Table 4-2 of the PCCIP, which will be updated as necessary.

### 4.3 Maintenance/Monitoring of the On-Site Disposal Facility

The PCCIP describes the maintenance and monitoring requirements for the OSDF. Tables 4-1, 4-2, and 4-3 in this Plan summarize those requirements. A draft checklist for OSDF inspections and monitoring is included in Appendix B. The information below reflects DOE's initial level of planning related to stewardship of the OSDF. This plan will continue to be refined as the stewardship planning process continues and input is received from stakeholders and regulators.

#### 4.3.1 Leak Detection/Leachate Monitoring

Routine OSDF leak detection and leachate monitoring is currently governed by the G/LD&LMP. This plan specifies the frequencies and parameters being monitored in four horizons for each cell of the facility. These horizons are the leachate collection system (LCS), the leak detection system (LDS), perched water in the glacial overburden, and the GMA (both up- and down-gradient of each cell). Cell-specific data from these four horizons are evaluated holistically in order to verify the integrity of the cells. To date the data from this comprehensive leak detection program indicate that the liner systems for the existing cells (Cells 1, 2, and 3) are performing within the specifications established in the OSDF design documentation. The G/LD&LMP is a "living document," that is, it will be modified over time as the OSDF matures and the individual cells are capped. These modifications will be based on the data collected prior

to and just after capping. It is also anticipated that the future modifications of the G/LD&LMP will govern the post closure leak detection and leachate monitoring program for the OSDF. Further details are included in Table 4-1 and in the PCCIP.

Also involved in the maintenance and monitoring of the leachate system is leachate management. It is envisioned that leachate will continue to be treated on-site. Leachate will be treated in the AWWT as long as it is operational. Once the AWWT is dismantled, leachate may be treated off-site. The quantity of leachate collected, treated and discharged will continue to be documented. Leachate will be sampled and analyzed for a set of parameters specified in the OSDF G/LD&LMP.

#### 4.3.2 Capping/cover system

Maintenance and monitoring of the cap and cover system includes quarterly site inspections, custodial and preventative maintenance, and unscheduled inspections. Table 4-2 of this Plan provides current detail on the required monitoring and maintenance.

The routine inspections include monitoring the health of the vegetative cover; the existence of burrowing animals; the extent of surface erosion or cracking; subsidence, if any; extent of any leachate seeps; integrity of run-off controls; and integrity of benchmarks. Routine custodial maintenance includes upkeep of vegetative cover; general mowing; clearing of debris and woody plants, and reseeding.

The unscheduled inspections will be conducted when there is a report that the integrity of the facility may be compromised, especially after significant natural events such as earthquakes. The inspections will be performed to follow up and quantify specific problems encountered during a routine inspection, a special study, or other DOE or regulatory agency inspection or activity. Based on the results and determinations made from the inspections, appropriate actions will be taken to address any identified problems.

#### 4.3.3 Support systems

Maintenance and monitoring of the general support systems will include ensuring physical access controls and restrictions are maintained, routine inspections of the OSDF and surrounding area, routine maintenance activities, and environmental monitoring. Table 4-3 of this Plan provides additional detail on the required monitoring and maintenance.

The federal government will remain the property owner and access to the OSDF and associated buffer area will continue to be restricted in perpetuity by means of fences, gates, locks, and warning signs. Access is anticipated to be limited to personnel conducting inspections, custodial maintenance, and corrective action, and will be authorized by the federal government only.

Routine inspections will include evaluating the condition of physical access controls (fences, gates, locks, and signs); observing adjacent properties for evidence of land use changes; evaluating natural drainage courses in the immediate vicinity; and inspecting the general area for erosion, excess sediment, seepage and signs of human or animal intrusion. Unscheduled inspections, as described in 4.3.2, will be conducted when there is a report that the integrity of the facility may have been compromised. The inspection will be conducted to follow up on a particular concern raised during an inspection or after a significant natural event. Based on the results and determinations made from the unscheduled inspection, appropriate actions will be taken to address any identified problem.

**TABLE 4-1  
OSDF LEACHATE SYSTEM MONITORING/MAINTENANCE REQUIREMENTS**

ACTION	REFERENCE	REQUIREMENT	FREQUENCY	SCOPE
Routine inspection and maintenance of pipe networks	PCCIP p.6-5	OAC 3745-27-19(k)(3)	Semi-annual – To be re-evaluated following closure of the facility. Note: monitoring is anticipated to remain in effect until leachate is no longer detected or until it is demonstrated that leachate no longer poses a threat to human health or the environment [per 40 CFR Part 264.310(b)(2)]. Temporary suspension of leachate requirements may also be considered [per OAC 3745-66-18(G)].	Inspect LDS and LCS pipe networks, and the leachate transmission system pipe: <ul style="list-style-type: none"> <li>• Ensure that clogging or leaking has not occurred</li> <li>• Implement remedy per the PCCI if pipe is clogged or leaking</li> <li>• Inspect valve houses, lift station, and all associated utilities</li> </ul>
Routine inspection and maintenance of the LDS system	PCCIP p.6-6		Semi-annual – To be re-evaluated following closure of the facility and included in a revision to the OSDF Systems Plan.	<ul style="list-style-type: none"> <li>• Inspect the primary containment vessel for leakage</li> <li>• Check for liquid in the LDS containment pipes</li> <li>• Maintain, operate, and service all mechanical and electrical equipment in accordance with the manufacturer's instructions</li> <li>• Implement remedies per the PCCI as needed</li> </ul>

**TABLE 4-1 (CONTINUED)**

<p>Routine inspection and maintenance of the LCS system</p>	<p>PCCIP p.6-6</p>		<p>Semi-annual - To be re-evaluated following closure of the facility and included in a revision to the OSDF Systems Plan.</p>	<ul style="list-style-type: none"> <li>• Inspect the condition and operation of the shutoff valve</li> <li>• Maintain, operate, and service all mechanical and electrical equipment in accordance with the manufacturer's instructions</li> <li>• Check for liquid in the LCS containment pipe</li> <li>• Check for liquid in the redundant LCS carrier pipe</li> <li>• Implement remedies per the PCCI as needed</li> </ul>
<p>Routine inspection and maintenance of leachate transmission system valve houses</p>	<p>PCCIP p.6-9 (See NOTE in SCOPE Column)</p>		<p>Semi-annual - To be re-evaluated following closure of the facility and included in a revision to the OSDF Systems Plan.</p>	<ul style="list-style-type: none"> <li>• Inspect signage</li> <li>• Inspect the structural condition of the valve house</li> <li>• Check for odors and/or bacterial growth within the containment vessels</li> <li>• Implement remedies per the PCCI as needed</li> <li>• Inspect all associated utilities</li> </ul> <p><b>Note:</b> The PCCIP refers to inspection and maintenance of the LCS and LDS manholes. The updated design for the leachate transmission system eliminated the use of manholes and placed all LCS and LDS apparatus into valve houses for each cell.</p>
<p>Routine inspection and maintenance of leachate transmission system gravity line</p>	<p>PCCIP p.6-9</p>		<p>Semi-annual - To be re-evaluated following closure of the facility and included in a revision to the OSDF Systems Plan.</p>	<ul style="list-style-type: none"> <li>• Check for liquid in the leachate transmission system gravity line containment pipe</li> <li>• Implement remedies per the PCCI as needed</li> <li>• Maintain, operate, and service all mechanical and electrical equipment in accordance with the manufacturer's instructions</li> </ul>
<p>Leachate management (post AWWT)</p>	<p>PCCIP p.6-8</p>	<p>OAC 3745-27-19(K)(5)</p>	<p>To be evaluated following closure of the facility and included in a revision to the PCCIP.</p>	<p>Leachate with concentrations above discharge limits will be treated on-site or off-site and disposed off-site, until such time it is demonstrated that it no longer poses a threat to human health or the environment. Leachate will be treated in the AWWT as long as it is operational.</p>

TABLE 4-1 (CONTINUED)

Leachate management monitoring	OSDF G/LD&LMP Section 5	OAC 3745-27-19(M)(4) and (5)	To be evaluated following closure of the facility and included in a revision to the OSDF G/LD&LMP.	The quantity of leachate collected, treated, and discharged must be documented until leachate is shown to no longer pose a threat to human health or the environment. Leachate must be sampled and analyzed for a set of parameters and frequency specified in the OSDF G/LD&LMP.
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**TABLE 4-2  
OSDF CAP/COVER SYSTEM MONITORING/MAINTENANCE REQUIREMENTS**

ACTION	REFERENCE	REQUIREMENT	FREQUENCY	SCOPE
Routine site inspection	PCCIP p.7-1	OAC 3745-66-18(A) & (C) 40 CFR Sec. 264.118(b)(2) 40 CFR Sec. 265.118(c)(2)	Quarterly  Note that the monitoring schedule may be revised through the CERCLA five year review process	<p>Detect and record any change of the following:</p> <ul style="list-style-type: none"> <li>• General health, density and variety of vegetative cover</li> <li>• Evidence of burrowing animals on the cover</li> <li>• Presence, depth, and extent of erosion or surface cracking, indicating possible cap deterioration</li> <li>• Visibly noticeable subsidence, either locally or over a large area</li> <li>• Presence and extent of visible settlement, including a determination of whether observed settlement is sufficient to pond water</li> <li>• Presence and extent of any leachate seeps</li> <li>• Integrity of run-on and run-off control features</li> <li>• Integrity of benchmarks</li> </ul>
Routine inspection of monitoring equipment			Semi-annual	Inspect the automated monitoring and remote sensing equipment to ensure that it is functioning properly and collecting, processing and transmitting data appropriately.
Unscheduled inspection	PCCIP p.8-1		As needed	Investigate reports that site integrity may be compromised after significant natural events. Follow-up or contingency inspections will be conducted to investigate and quantify specific problems encountered during a routine scheduled inspection, special study, or other DOE/regulatory agency activity. Follow-up inspections determine whether the cover/cap stability is threatened, and evaluate the need for maintenance/repair/corrective action. Contingency inspections are situation-unique inspections ordered by DOE or regulatory agencies when it receives information indicating that site integrity has been or may be threatened.
Routine custodial and preventative maintenance	PCCIP p.9-2	OAC 3745-66-18(A) & (C) 40 CFR Sec. 264.118(b)(2) 40 CFR Sec. 265.118(c)(2)	As needed (mowing will occur at least once annually in late fall)	Routine custodial and preventative maintenance consists of the following: upkeep of the vegetative cover, general mowing, clearing of debris, removal of woody weeds and seedlings, reseeding

**TABLE 4-3  
OSDF SUPPORT SYSTEMS AND INSTITUTIONAL CONTROLS MONITORING**

<b>ACTION</b>	<b>REFERENCE</b>	<b>REQUIREMENT</b>	<b>FREQUENCY</b>	<b>SCOPE</b>
Establish points of contact	PCCIP p.4-2	OAC 3745-27-11(B)(3) OAC 3745-66-18(c)(3) OAC 3745-68-10 40 CFR Sec. 258.61(c)(2) 40 CFR Sec. 265.118(c)(3) 40 CFR Sec. 264.118(b)(3)	Initially and when updates are needed	Provide primary and backup points of contact to ensure authorized and emergency access. Points of contact are provided in Table 4-2 of the PCCIP. Updates will be provided as needed.
Ownership	PCCIP p.4-1	OU2 ROD OU5 ROD	NA	The federal government will maintain property ownership of the area comprising the OSDF and associated buffer areas.
Deed restrictions	PCCIP p.4-1	OU2 ROD OU5 ROD	NA	Verify on an annual basis deed restrictions are still in place. If oversight of portions of the FCP property (outside the disposal facility area) is transferred at any time, restrictions will be provided in the deed, and proper notifications will be provided as required.
Access controls/ Restrictions	PCCIP p.4-3	OU2 ROD	NA	The federal government will maintain property ownership and access to the OSDF will be restricted by means of fences, gates, and warning signs. Access will be controlled by proper authorization, and is anticipated to be limited to personnel for inspection, custodial maintenance, or corrective action.

TABLE 4-3 (CONTINUED)

<p>Routine site inspection</p>	<p>PCCIP p.7-3</p>	<p>OAC 3745-66-18(A) &amp; (C) 40 CFR Sec. 264.118(b)(2) 40 CFR Sec. 265.118(c)(2)</p>	<p>Quarterly Note that the monitoring schedule may be revised through the CERCLA five year review process</p>	<ul style="list-style-type: none"> <li>• Inspect and record the security of fences, gates, and locks, as well as the condition of applicable warning signs.</li> <li>• Inspect the adjacent area within approximately 0.25 miles of the OSDF buffer area. Describe evidence of land use changes.</li> <li>• Evaluate natural drainage courses in the immediate vicinity of the OSDF to determine whether there is a threat to the OSDF integrity. Walk approximately 1,000 feet of adjacent natural drainage courses and note unusual or changed sediment deposits, large debris accumulations, man-made or natural constrictions, and recent or potential channel changes.</li> <li>• Evaluate and record the development of gullies.</li> <li>• Evaluate growth of vegetation in channels.</li> <li>• Determine the condition and required maintenance of on-property roads.</li> <li>• Inspect and record the area adjacent to the OSDF for erosion channels, accumulations of sediment, evidence of seepage, and signs of animal or human intrusion.</li> </ul>
<p>Unscheduled inspection</p>	<p>PCCIP p.8-1</p>		<p>As needed</p>	<p>Investigate reports that site integrity may be compromised. Follow-up or contingency inspections will be conducted to investigate and quantify specific problems encountered during a routine scheduled inspection, special study, or other DOE/regulatory agency activity. Determine whether the support systems are threatened, and evaluate the need for maintenance/repair/corrective action. Contingency inspections are situation-unique inspections ordered by DOE when it receives information indicating that site integrity has been or may be threatened.</p>

TABLE 4-3 (CONTINUED)

Routine custodial and preventative maintenance	PCCIP p.9-2	OAC 3745-66-18(A) & (C) 40 CFR Sec. 264.118(b)(2) 40 CFR Sec. 265.118(c)(2)	As needed (mowing will occur at least once annually in late fall)	<ul style="list-style-type: none"> <li>• Repair/replace fencing, gates, locks, and signs due to normal wear, severe weather conditions, or vandalism.</li> <li>• Mow/clear undesired woody vegetation, reshape, reseed, repair banks, unplug culverts, and clean out channels of run-on/run-off diversion channels.</li> </ul>
Groundwater/leachate monitoring	PCCIP p.5-1 OSDF Groundwater/ Leak Detection and Leachate Monitoring Plan (G/LD&LMP)	OAC 3745-27-10 OAC 3745-54-90 through 99	To be evaluated following closure of the facility and included in a revision to the OSDF G/LD&LMP.	A routine monitoring program will be maintained for four zones within and beneath the OSDF. These zones include the LCS, the LDS, perched water within the glacial overburden, and the Great Miami Aquifer (OSDF G/LD&LMP Section 3.2.1). Samples from the four zones will be collected and analyzed pursuant to requirements set forth in a future revision to the OSDF G/LD&LMP.
Other environmental monitoring	PCCIP p.2-9 PCCIP p.5-1,2	DOE 5820.2A, Chapter III(3)(k)	To be evaluated following closure of the facility and included in a revision to the IEMP.	A sitewide monitoring program may be required for at least a portion of the initial (30-year) post closure period. The specific parameters and frequencies will be presented in a future version of the IEMP.

## 5.0 STEWARDSHIP OF RESTORED AREAS

The proposed final land use plan includes ecological restoration of approximately 904 acres of the FCP and potential development of 23 acres. Additional information on the proposed action for restoration is included in the *Finding of No Significant Impact for the Fernald Environmental Management Project Proposed Final Land Use Environmental Assessment* (DOE 1999c). Public access to the site for educational purposes may occur in the restored site as outlined in the *Master Plan for Public Use of the Fernald Environmental Management Project* (DOE, 2002a) depending on the outcome of the Natural Resource Injury Settlement. After formal public input in the spring of 2002, the Master Plan was issued in final form in June 2002 and outlines the proposed public use of the FCP. Stewardship in Restored Areas will focus on ensuring applicable laws and regulations are followed. Additional stewardship requirements in Restored Areas may be required based on the outcome of the Fernald Natural Resource Injury Settlement and will be defined in later versions of this plan as appropriate.

### 5.1 Proposed Steward(s) for the Restored Areas

Per the OU2 ROD, all FCP property will remain under ownership of the federal government. The DOE-GJO will have primary responsibility as the Steward of the FCP. An entity other than DOE-GJO may work in cooperation with DOE on stewardship activities in the restored areas of the site. Any developments regarding the identification of parties to work with DOE-GJO will be conveyed to the public through briefings to local elected officials, Fernald Residents for Environmental Safety and Health (FRESH), Fernald Citizens Advisory Board (FCAB), and other stakeholder groups.

### 5.2 Institutional Controls for the Restored Areas

The primary institutional controls for the restored areas include establishing points of contact, ownership of the property, deed restrictions, and access controls. The institutional controls are summarized in Table 5-1. Primary and secondary points of contact will be established to ensure authorized and emergency access.

As stated in the OU2 ROD, the federal government will maintain property ownership. In the event that DOE transfers management of or leases the property to another entity, the appropriate restrictions and limitations will be communicated and implemented (e.g. deed restrictions). A description of the various types of institutional controls pertaining to ownership and/or transfer of DOE land is included in *Selecting and Implementing Institutional Controls in RCRA and CERCLA Response Actions at Department of Energy Facilities*. Per the OU2 and OU5 RODs, if deed restrictions are implemented, they will be reviewed on an annual basis by the designated steward to ensure they are still in effect with the local authorities. A review of deed restrictions and other institutional controls will also be part of the CERCLA 5-year review process.

In order to maintain the integrity of certain ecologically restored and existing cultural resource areas, access to those areas may need to be limited. Steps will be taken to restrict access in wetland areas and designated cultural resource (i.e., archaeological sites). If the need is identified during regular inspections, a protocol for contacting the appropriate emergency services and law enforcement

authorities will be developed with input from stakeholders and included in later versions of this plan.

### **5.3 Monitoring and Maintenance of the Restored Areas**

Monitoring and maintenance of restored areas will be required to ensure that applicable laws and regulations are followed, such as the Clean Water Act and the Endangered Species Act. Monitoring and maintenance requirements for the restored areas, which include cultural resource areas, are listed in Tables 5-2 and 5-3. The following sections are a summary of that information.

Restored areas will be inspected to ensure that protected natural resources (e.g., wetland, threatened and endangered species) are maintained in conjunction with applicable laws and regulations. Physical disturbance of restored areas will not be permitted unless authorized by the site steward. Soil and vegetation will not be removed from the FCP unless authorized by the steward. Inspections of restored areas will also occur in the spring and late summer for the presence of any species classified as noxious weeds in Ohio as defined by Ohio Administrative Code.

Excessive erosion problems along Paddys Run or other site drainage channels that pose a threat to site infrastructure will be corrected. Table 5-3 provides further details.

Existing cultural resource areas will be a part of the undeveloped park and will require inspections to ensure their preservation, and to determine if there are any impacts to the resources caused by natural forces, vandalism, or looting. Actions will be implemented if there is evidence that the integrity of a site is threatened due to natural or human forces. Although DOE has agreed to make land available for the re-interment of Native American remains, thus creating a cultural resource area, the maintenance of that area would not fall under DOE stewardship requirements. Table 5-2 provides further details.

### **5.4 Monitoring and Maintenance of Public Use Amenities**

The FCP, once remediation is completed, will be an undeveloped park. Amenities such as trails and overlooks will only be constructed if required by the outcome of the Natural Resource Injury Settlement. Any public use amenities established on the property will require routine inspection and maintenance to ensure the safety of anyone accessing and using the site. Funding for the monitoring and maintenance of public use amenities is not within the scope of DOE's stewardship requirements for the FCP. A funding source for monitoring and maintaining public use amenities, if constructed, has not been identified and will be discussed in a future revision to this Plan. Public access points, pathways, and overlooks will need to be cleared of overgrowth and debris. Wooden overlooks, bridges and boardwalks (if constructed) will require maintenance, repair or replacement. The integrity and legibility of signs/displays/markers will need to be maintained. Regular mowing in perimeter areas and access points will be required. Trash pick up will be required. Table 5-4 provides further details.

Cultural resource areas will be a part of the undeveloped park. The cultural resource sites and areas will require inspections to ensure their preservation and to determine if there are any impacts to the resources caused by natural forces, vandalism, or looting. Actions will be implemented if there is evidence that the integrity of a site is threatened due to natural or human forces. Table 5-2 provides further details.

**TABLE 5-1  
RESTORED AREAS INSTITUTIONAL CONTROLS MONITORING**

ACTION	FREQUENCY	SCOPE
Establish point of contact	On-going	Provide primary and backup points of contact for emergencies. Points of contact will be updated in the Comprehensive Stewardship Plan as needed for Restored Areas.
Ownership	On-going	Federal government will maintain ownership of site property.
Deed restrictions	On-going	If oversight of portions of the FCP property (outside of the disposal facility area) is transferred at any time, restrictions will be provided in the deed, and proper notifications will be provided as required.
Access controls	On-going	In order to maintain the integrity of some of the ecologically restored areas and cultural resource areas, access to those areas may need to be restricted. Signs indicating restricted access will require monitoring and maintenance to ensure their integrity.

**TABLE 5-2  
CULTURAL RESOURCE AREAS MONITORING/MAINTENANCE REQUIREMENTS**

ACTION	FREQUENCY	SCOPE
Cultural resource site/area preservation inspection	Semi-annual	Inspect existing cultural resource sites/locations for impacts caused by natural forces, vandalism, or looting. The severity and rate of loss, if any, must be monitored.
Cultural resource site/area preservation maintenance	As needed pursuant to annual inspection	Actions will be implemented if there is evidence that the integrity of a site is threatened due to natural or human forces.

**TABLE 5-3  
RESTORED AREAS MONITORING/MAINTENANCE REQUIREMENTS**

<b>ACTION</b>	<b>FREQUENCY</b>	<b>SCOPE</b>
Restored areas routine inspection	Semi-annual	Inspect restored areas for any physical impacts on wetlands, floodplain and threatened and endangered species habitat. Ensure that natural resources are being monitored and maintained in accordance with applicable laws and regulations.
Mowing of perimeter areas and access points	Monthly during growing season	Keep perimeter areas and buffer strips mowed to ensure visibility along perimeter roadways and access points.
Removal/herbicide of Noxious Weeds per Ohio Administrative Code.	As needed pursuant to spring and late summer inspection during growing season	Remove and/or herbicide Noxious Weeds as listed by State of Ohio Law. Removal can occur by mechanical means or target areas can be sprayed with herbicide as needed.
Maintenance of Paddys Run/SSOD/other onsite drainage	As needed pursuant to annual inspection	As required pursuant to annual inspection.

**TABLE 5-4  
RESTORED AREAS PUBLIC USE AMENITIES MONITORING/MAINTENANCE REQUIREMENTS**

ACTION	FREQUENCY	SCOPE
Public use amenities routine inspection (if constructed)	Quarterly	Ensure access points, pathways, and overlooks are clear of debris, tripping hazards, overhanging limbs, and excessive weed growth. Ensure there is adequate mulch coverage on pathways. Inspect wooden overlooks, bridges, boardwalks, steps, rails, etc., to ensure railings are securely fastened and planks are not loose. Inspect drainage and erosion control features (culverts, ditches, etc.) to ensure there are not excessive erosion problems threatening public use amenities. Ensure legibility and integrity of signs/displays/markers.
Public use amenities custodial and preventative maintenance (if constructed)	As needed pursuant to quarterly inspection, except for trash pickup and mowing which will occur at least every other week	Clear debris, tripping hazards, overhanging limbs, and excessive weed growth. Replace mulch on pathways. Repair wooden overlooks, bridges, boardwalks, steps, rails, etc. Repair signs/displays in restored and cultural resource areas. Access points to the property and to trail heads will require grounds-keeping, mowing, weeding, etc. Trash pickup will need to be conducted throughout the property.

## **6.0 PUBLIC PARTICIPATION**

The public has played a very important role in the remediation process at the FCP and stakeholders remain very involved in the remediation and planning for long-term stewardship. Various stakeholder groups meet on a regular basis with FCP employees to be updated on the latest activities at the site. DOE also holds regularly scheduled meetings with these groups and the general public to share current site information (progress updates). During the next several years, key decisions will be made with regard to stewardship planning at the FCP. The public and other key stakeholders will remain fully involved in stewardship planning activities and will continue to play a very active role in helping DOE make critical stewardship decisions.

### **6.1 Public Involvement via Groups and Organizations**

The primary groups that follow the remediation and cleanup process at the FCP are the FCAB and FRESH. The FCAB was formed to formulate cleanup policy and to help guide the cleanup activities at the site. Representatives of constituencies affected by the cleanup decisions, including local residents, governments, businesses, universities, and labor organizations, comprise the advisory board membership. In 1995, the FCAB issued recommendations to DOE on remedial action priorities, cleanup levels, waste disposition alternatives, and future uses for the FCP property. The FCAB continues to be actively involved in the remediation and restoration activities for the FCP with monthly full board meetings and monthly meetings of the FCAB Stewardship Committee.

To date, the FCAB co-sponsored, along with FRESH, the Community Reuse Organization and the Fernald Living History Project, four "Future of Fernald" workshops. The workshops were open to the general public and gave stakeholders the opportunity to provide input on the final public use decisions as described in the Master Plan for Public Use of the FCP. The later workshops led to the recommendation of a Multi-Use Education Facility at the site, as discussed in Section 6.2.

The FCAB has also begun working closely with the Natural Resource Trustees and DOE to assist in the development of the Comprehensive Stewardship Plan. As mentioned in previous sections, the future use and amenities at the site are directly tied to the degree of stewardship that will be necessary. DOE will work closely with the FCAB to promote discussion with the general public regarding future use and stewardship of the FCP.

FRESH was formed by local residents in 1984 and has played a lead role in providing community input on the characterization and remediation of the Fernald site. FRESH continues to play a lead role in decisions regarding public use of the facility following closure of the site.

A list of other stakeholders considered to be critical for long term stewardship planning at the FCP is given below. Additional stakeholders may be identified in the future.

- Local government and enforcement agencies
- Local volunteer organizations

- Local residents
- Universities
- Local school groups
- Environmental organizations
- Native American organizations
- NRTs – Natural Resource Trustees
- Regulatory Agencies
- Fernald Living History, Inc.
- Crosby Township Historical Society
- Local businesses

## 6.2 Stewardship Planning Decisions and Public Reviews

Several key decisions have been and will be required by DOE to facilitate successful stewardship planning at the FCP. A summary of those decisions and anticipated timing of public input are:

- A Comprehensive Stewardship Plan to provide a framework for stewardship planning at the FCP. The plan was made available for stakeholder review in December of 2002.

The following key decisions will receive on-going consideration during the long-term stewardship planning process as appropriate.

- Decisions on future stewards, as appropriate, to work with the DOE-GJO for the restored/public use portions of the FCP. A team approach to stewardship of restored areas may be appropriate. Any discussion of additional stewards for the FCP beyond the DOE-GJO will be shared with the public before any final decision is made. At that time a local point of contact for the Fernald site will be established.
- A compilation of a list of records and associated electronic data determined critical for stewardship purposes. It is anticipated that the public will have the opportunity to review both of these documents in 2003. All OSDF documents, when finalized, will be available for public review upon closure of the OSDF.
- Establishment of guidance policies for electronic records as well as requirements for integration with any planned or proposed centralized electronic data and/or records repositories.
- A decision on the regulatory requirements that will drive stewardship activities at the FCP. The database developed by Florida International University (FIU 2002) is a starting point in the identification of applicable requirements, but considerable review and decision-making is still required.
- A final decision on the location for and the establishment of procedures for the reinterment of Native American remains.
- A decision on the extent of, if any, public use amenities to be constructed on site.
- A decision on the location of a local records repository.
- Decisions on recommended actions by the FCAB through the Future of Fernald process including development of a public information system that

meets stakeholder needs and the feasibility of a Multi-Use Educational Facility at the FCP (FCAB 2002).

Input on future stewardship planning decisions will occur through formal document reviews, community meetings, roundtables, workshops, and other forums. Currently, DOE holds bi-monthly cleanup progress briefings for interested stakeholders. DOE anticipates continuing these updates throughout remediation and stewardship planning, if the public continues to show an active interest in the briefings.

Another process involving the public is the CERCLA Five-Year review. Under CERCLA, a review of the remedy at the FCP is required every five years. The CERCLA five-year reviews will focus on the protectiveness of the remedies associated with each of the five OUs. Following the review, a report will be submitted to the Environmental Protection Agency. The report will present the data collected and descriptions of activities performed at the site during a five-year period. To ensure the information is readily available, all data and documentation will need to be maintained at the site.

Integration between stewardship and five-year review activities will occur on two fronts:

- Five-year review will include a review of stewardship activities (e.g., institutional controls, monitoring results);
- Information and records compiled and summarized for long term stewardship purposes will be available and used to support the five-year reviews; and
- All information developed for five-year reviews will be incorporated into the information and records maintained for long term stewardship purposes.

## 7.0 RECORDS MANAGEMENT

The retention of records and dissemination of information over the long-term is another critical aspect of long-term stewardship. Records that are needed for long-term stewardship will be managed by DOE-GJO as the Steward of the FCP (DOE, 2002b). Any centralized system to provide stakeholders with access to records or copies of records will be managed by DOE-GJO. Copies of selected records documenting past remedial activities (e.g., soil certification) and the design and contents of the OSDF will be retained on or near the site and by DOE-GJO for stewardship purposes. In addition, newly acquired records related to remedy performance must be readily available to stakeholders. Original records will be dispositioned in accordance with DOE requirements at the National Records Archive (NARA) or a Federal Records Center for their required retention period or destroyed once they have reached the required retention.

As a fundamental component of stewardship, a system will be established to provide stakeholders with access to information needed during stewardship. A Records Summary Narrative will be developed by DOE prior to the implementation of stewardship at the FCP that outlines the categories of data determined critical for stewardship purposes. The Records Summary Narrative will be clearly written in language that will allow future generations, unfamiliar with the site, to identify the type of information desired. A clearly written summary narrative is anticipated to be a better tool for future access of records than a comprehensive index. Included with the description of each category would be references to the specific documents that fall into the desired category, summaries of the documents, and instructions on how those documents (or copies of the documents) can be accessed. It is envisioned that the narrative will be made available to stakeholders in both hard copy and in electronic form.

Stewards and stakeholders, whether located in the surrounding community or in remote locations, will require easy access to copies of records, data, and to a lesser extent, digital images collected as part of the long term monitoring process as well as to the identified historical data and records. The Stewardship Committee of the Fernald Citizens Advisory Board conducted research, interfaced with stakeholders and provided formal recommendations to DOE (FCAB, 2002) explaining why public access to information is critical at sites like Fernald. The report presents the specific information needs of the Fernald community and offers suggestions on how DOE can meet those needs.

One way DOE will accommodate the public is to develop a centralized, long-term data/image repository with associated data acquisition and retrieval systems. It is anticipated that this repository will be developed by the time stewardship is implemented at the FCP and will address the following:

- Data acquisition standards and protocols for newly collected data as well as for historical data and images to be migrated to the repository.
- On-site data transmission, telecommunications and computing resources requirements.
- Analysis tools, integration with other data sources and notification services to assist remotely located stewards.
- Electronic data storage requirements.

- Data management and validation practices sufficient to ensure defensible information.
- Plans for periodic storage infrastructure reviews and upgrades to ensure electronic information is continually available as technology advances.
- Integration with any DOE or federally mandated central repository for electronic records or data, as appropriate.
- Web based retrieval, search and reporting capabilities.

Examples of electronic data include environmental sampling and monitoring data, OSDF monitoring data, and soil certification data as well as electronic images, design drawings, and electronic records. This information is required for the purposes of generating required reports, including the CERCLA five-year review, for efficient management of the data collection process, and for public use.

It is envisioned that the data repository and associated support personnel could be located off-site, at a DOE (or vendor) location. It is anticipated that an on-site location could house computing facilities for acquisition and access. Final decisions regarding the structure and content of the data repository will be made by DOE with input from the stakeholders.

#### **7.1 Types of Records Required for Stewardship Purposes**

Data determined critical for long term stewardship purposes have been divided into four categories: historical data, RI/FS process and results, remediation data, and post site completion data. Table 7-1 presents the types of information that fall into each category.

Based on the four categories and the information provided in Table 7-1, DOE-FCP and Fluor Fernald have initiated the process of working with stakeholders to identify any records considered critical for stewardship. Interface with stakeholder groups was initiated in the fall of 2002 and will continue through 2003 to ensure that the appropriate types of information and records are being retained to support stewardship. Formal recommendations from the FCAB (FCAB 2002) and ongoing interface with stakeholders will allow DOE to retain the appropriate information to support future stewardship needs.

#### **7.2 Stewardship Records Custodian**

Site records that fall under the DOE retention schedule will remain in the custody of the DOE for the required, pre-established retention period. The DOE-GJO is the field lead and records custodian responsible for records management at closed sites, including Fernald (DOE 2002b). Once the retention period for a document has expired, that document is to be destroyed. However, under 36 CFR Part 1228 Subpart D, Temporary Extension of Retention Periods, a request may be submitted by DOE to delay the destruction of a document that has reached the end of its retention period. This request will be submitted for a document only if it is determined that the original document is critical for stewardship purposes and must be retained. Custody of the proposed summary narrative will also become the responsibility of the post-site completion steward. The narrative will also be located on or near the site.

Efforts are underway to identify data systems currently in use, which hold information that may be critical to the stewardship process. Once the appropriate data set is identified, plans to migrate data to an appropriate repository for use during long term stewardship will be identified in later versions of this Plan. Only electronic data identified as needed for stewardship will be migrated and made available. Current closure plans for electronic data system decommissioning do not guarantee future accessibility to all electronic data.

### **7.3 Records Storage Location**

DOE will maintain necessary historic and remediation records. As stated above, copies of these records will be housed on or near the site. The stakeholders strongly recommend that records be maintained on site and have suggested that a facility for groundwater and environmental education purposes be constructed on site as part of a settlement with the State of Ohio; however, other options will be considered. At a minimum, a utilitarian type structure can be located on the FCP to house records needed during stewardship. The records summary narrative will also be housed with the copies of these historic records.

From the comprehensive list of records determined critical for stewardship, a second list of records will be developed. The records in this second list will be copies of records, which will be stored on or near the site under the responsibility of the site steward. While the electronic data repository will be physically located in a remote computing location, local access to the data via a proposed web page is being considered.

The DOE-GJO will also manage copies of records that are necessary to perform environmental stewardship activities and functions. Federal Records Centers will be used for the storage of post-closure records. Fernald records will more than likely be housed at the Federal Records Center in Dayton, Ohio where some site records are currently housed.

### **7.4 Public Access Requirements**

Documents will be made available to the public. Copies of some documents, especially those generated after site completion (e.g., monitoring and maintenance records) will be easily accessible as a result of their proximity on or near the site. For other documents, a formal request process will be required in order to obtain a copy

**TABLE 7-1  
TYPES OF DATA NEEDED TO SUPPORT FUTURE STEWARDSHIP ACTIVITIES**

<b>DATA CATEGORY</b>	<b>SUMMARY OF INFORMATION REQUIRED</b>
Historical Data	<ul style="list-style-type: none"> <li>• Real estate records</li> <li>• Information pertaining to acquisition of property</li> <li>• Process documents/reports (summary level)</li> <li>• Cultural Resource records</li> <li>• Photographs (significant for stewardship purposes)</li> </ul>
RI/FS Process and Results	<ul style="list-style-type: none"> <li>• Risk assessments</li> <li>• Public comments</li> <li>• RI/FS reports for each OU</li> <li>• Records of Decision for each OU</li> </ul>
Remediation Data	<p><b>For soil:</b></p> <ul style="list-style-type: none"> <li>• Design and excavation plans</li> <li>• Documentation of certification process for each area/phase</li> <li>• Certification reports*</li> </ul> <p><b>For groundwater:</b></p> <ul style="list-style-type: none"> <li>• Pump and treat system design documents</li> <li>• Groundwater monitoring data</li> </ul> <p><b>For Integrated Environmental Management Plan:</b></p> <ul style="list-style-type: none"> <li>• IEMP reports*</li> <li>• Quarterly updates*</li> </ul> <p><b>For buildings and structures:</b></p> <ul style="list-style-type: none"> <li>• Plans for decommissioning and dismantling buildings and structures</li> </ul> <p><b>For OSDF:</b></p> <ul style="list-style-type: none"> <li>• Design, construction, material placement and closure documentation</li> <li>• Leak detection/leachate monitoring data</li> <li>• Cover/cap monitoring data</li> </ul> <p><b>For Restoration:</b></p> <ul style="list-style-type: none"> <li>• Design plans</li> <li>• Implementation documentation</li> <li>• Monitoring data*</li> </ul>
Post Closure Data	<ul style="list-style-type: none"> <li>• Decision documents on land use</li> <li>• Documents on public use decision</li> <li>• All monitoring and maintenance data for the OSDF</li> <li>• All monitoring and maintenance data for the restored areas*</li> <li>• All institutional control data</li> </ul>

\* Will require retention of electronic data

## 8.0 FUNDING

A preliminary estimate of stewardship costs has been developed and is provided in Appendix B. The estimate assumes DOE-GJO is the site steward and will contract and oversee the maintenance and monitoring work that is required at Fernald. These cost estimates will continue to be refined as stewardship plans are finalized. The attached cost estimate provides total long term stewardship costs over a 30-year period and will be used as the basis for future budget planning for long-term stewardship at the FCP.

In general, the current cost estimate for stewardship activities covers the technical support, monitoring, and maintenance of the Fernald site to ensure compliance with all applicable federal and state requirements for the next 30 years. The current cost estimate does not include the cost of Federal employees at DOE-GJO or other government offices required for managing stewardship of the FCP. The estimate does include costs for all support activities, including overall project management, accounting, legal, contracts management, health and safety, security, records management and quality assurance. Specifically, the stewardship costs include:

- Monitoring, sampling and analysis, and reporting (as required per regulations, RODS, or other agreements for the FCP) on the leachate removal process, the OSDF, and the balance of the FCP remediated site;
- Leachate removal/treatment, including all work involved in collecting, removing, and treating OSDF leachate;
- OSDF and "greenfield" maintenance costs, including all personnel, equipment, space, and subcontracts required to maintain the integrity of the OSDF and natural aesthetics of the site;
- Record keeping and development and operation of a data repository; and
- Contractor support costs, leases and utilities.

Funding for stewardship will need to be secured by DOE in future budget requests for the years after site closure. Figure 3 illustrates the Probable Funding Sources for Future Site Activities at the FCP from now through post-site remediation. Also illustrated are the distinctions in funding sources for each of the activities. Currently, it is anticipated that long term stewardship posts will be available for OSDF monitoring, maintenance and leachate management post-site remediation, and for ensuring that applicable laws and regulations are adhered to in restored areas post-site remediation. Other activities such as installation of public use amenities and the multi-use educational facility require funding separate from remediation and long term stewardship funding. The figure also distinguishes between activities covered by remediation funds and other funding sources. DOE will keep the public informed of the Department's plans to fund stewardship as new information becomes available.

Currently, long-term stewardship activities at the various DOE facilities are funded through the annual appropriations process. Funding for sites in the long-term surveillance and maintenance program is maintained in a separate line item in the DOE-GJO budget. For the time being, this process for funding long term stewardship will continue; however the DOE will continue to investigate other funding and management options.

# PROBABLE FUNDING SOURCES FOR FUTURE SITE ACTIVITIES

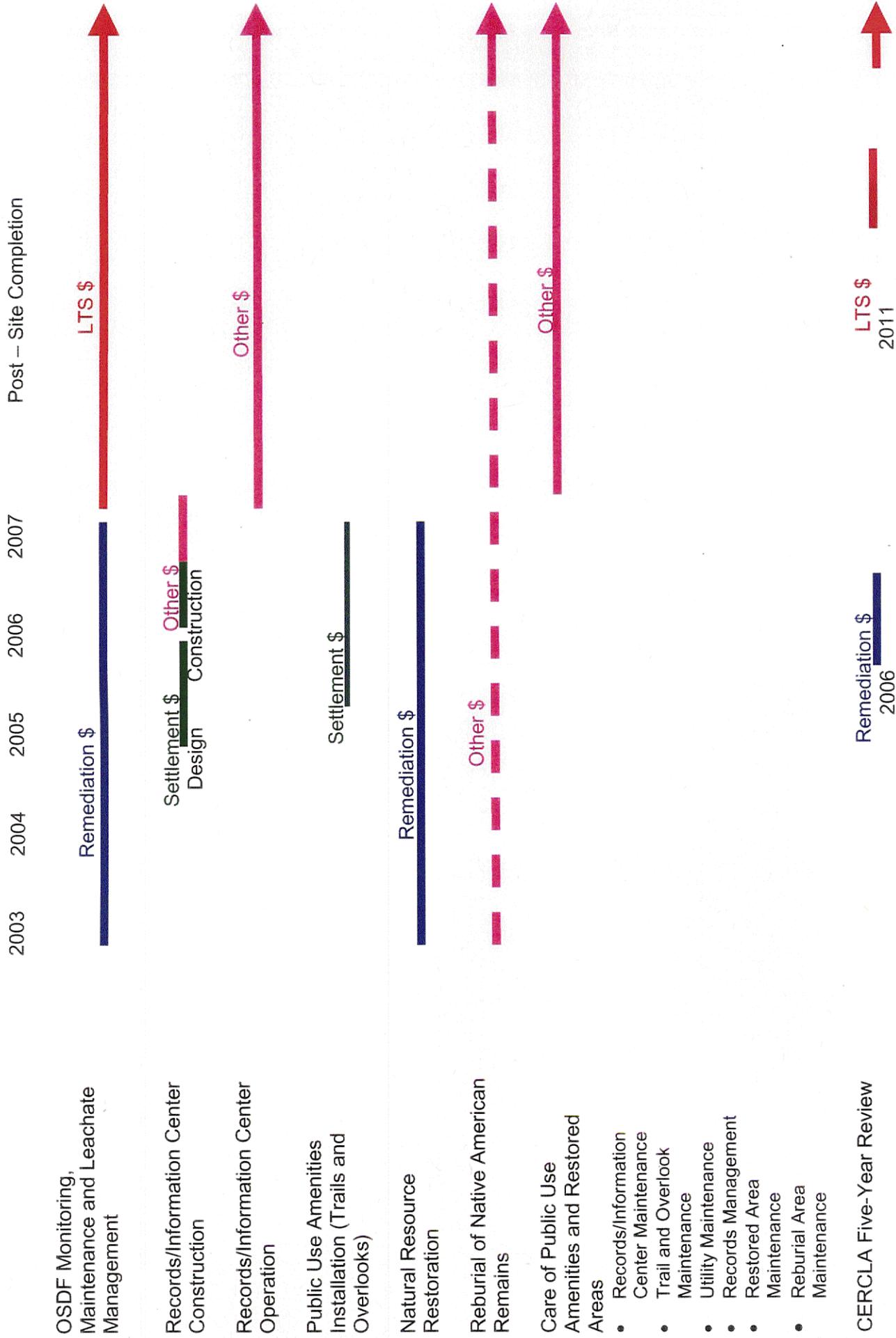


FIGURE 3

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**APPENDIX A**

**OSDF Cell 1 Post Closure Inspection Checklist**

# OSDF Cell 1 Post Closure Inspection Checklist

of Inspection: \_\_\_\_\_  
 of Inspection: \_\_\_\_\_  
 Temperature: \_\_\_\_\_ °F Wind Speed (Miles per hour) and Direction: \_\_\_\_\_  
 Transect Direction\*\* \_\_\_\_\_ Other observations \_\_\_\_\_

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed/Schedule	Reference Source
<b>1. Entrance Road/Monitoring Access Road</b>				
1A. Verify entrance gate, lock and signage are intact and in good working order.				PCC&IP 20100-PL-010 Rev. 1 July 97
1B. Verify that access gates are locked to prevent unauthorized entry.				"
1C. Visually observe condition of access road for signs of erosion, ruts, standing water, proper drainage and excess vegetation.				"
1D. Verify that access road surfacing, cross slope, reflectors, and signage are intact and in good condition.				"
<b>2. Chain Link Fence and Signage</b>				
2A. Walk length of fence and ensure fence, posts, etc. are intact and in good condition. Ensure that gates are closed/locked to prevent unauthorized entry.				PCC&IP & OSDF Tech Spec #02831
2B. Verify that the proper signage is intact and in good condition at the following locations: Restricted Access; Certified Area; and Restored Area. (Some signs not installed at this time).				"
2C. Check for vegetation growing over fences, barricades, signs and any noxious vegetation per State of Ohio Regulations (attached) and invasive plants growing on or around OSDF perimeter.				"
<b>3. Surface Water Management</b>				
3A. Check integrity of drainage channels around OSDF for erosion or debris restricting water flow (see attached map). Build up of debris/sedimentation in drainage ditch is not to exceed 6 inches.				OSDF Tech. Spec. #02270; PCC&IP
3B. Visually check the integrity of Rip-Rap in drainage channels for signs of deterioration or removal of rock.				See above & OSDF Tech. Spec. #02271
3C. Visually check for the presence of woody vegetation growing in drainage channels and in Rip-Rap				"
3D. Visually check the integrity of run-on and run-off control features including: Ditch checks, Gravity Inlet structures, and Culverts.				See above & Construction Drawing # 90X- 6000-G-00073

\*Satisfactory \*U = Unsatisfactory (comments required)  
 transect Direction should alternate each inspection (North to South & East to West)  
 Page 1 of 4

# OSDF Cell 1 Post Closure Inspection Checklist

of Inspection: \_\_\_\_\_  
 Date of Inspection: \_\_\_\_\_  
 Action By: \_\_\_\_\_

Weather Conditions: Sunny/PtSunny/Cloudy/PtCloudy/Rain/Snow  
 Temperature: \_\_\_\_\_ °F Wind Speed (Miles per hour) and Direction: \_\_\_\_\_  
 Transect Direction\*\* \_\_\_\_\_ Other observations \_\_\_\_\_

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed	Reference Source
<b>4. (A) Final Cover</b>				
4A. Walk cover and side slopes in 25-ft (+/- 5-ft) transects and visually inspect for the following items:**				PCC&IP
4A1. Inspect erosion rills/channels. Flag any observable rills/channels greater than 3 inches wide and 6 inches deep or excessive erosion.				"
4A2. Any observable depressions, settlement/subsidence, slumping or desiccation cracks. Flag any observable depressions, slumps, settlement/subsidence or desiccation cracks.				"
4A3. Any ponding or standing water. Flag any standing water.				"
4A4. Evidence of burrowing animals or other bio-intrusion. Flag any observable evidence of bio-intrusion.				"
4A5. Evidence of vehicle traffic on the OSDF cap.				"
4B. Walk toe of slope and visually inspect for the following:				PCC&IP & Phase III Drawgs #90X-6000-G- 00302 & 90X-6000-G- 00310
4B1. Evidence of settlement/subsidence, erosion, and seepage. Flag any observable evidence of settlement/subsidence, erosion, or seepage.				"
4B2. A 20-ft corridor at the toe for the presence of woody vegetation, siltation, and/or biointrusion. Flag any woody vegetation, siltation, and/or biointrusion.				"
4B3. Condition of rip-rap. Flag any observable abnormalities.				"
4C. Inspect toe at final cover for evidence of freezing or siltation. Flag any observable abnormalities.				"

\*Satisfactory \*U = Unsatisfactory (comments required)  
 \*\*Transect Direction should alternate each inspection (North to South & East to West)

# OSDF Cell 1 Post Closure Inspection Checklist

of Inspection: \_\_\_\_\_  
 Weather Conditions: Sunny/PtSunny/Cloudy/PtCloudy/Rain/Snow  
 : of Inspection: \_\_\_\_\_ °F Wind Speed (Miles per hour) and Direction: \_\_\_\_\_  
 Temperature: \_\_\_\_\_  
 action By: \_\_\_\_\_ Transect Direction\*\* \_\_\_\_\_ Other observations \_\_\_\_\_

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed	Reference Source
<b>4. (B) Final Cover -- Vegetation</b>				
4D. Walk cover and side slopes in 25-ft (+/- 5-ft) transects and visually check vegetative cover for the following:				OSDF Tech. Spec. #02930
4D1. General health of grass cover and signs of stressed or dead grass should be noted.				"
4D2. Adequate grass coverage/density with no bare spots greater than 3-ft in diameter. Flag any bare spots greater than 3-ft in diameter. Any areas with questionable vegetative coverage will be sampled for percent cover and type of vegetation using meter-square quadrats.				"
4D3. Inspect the cover for the presence of woody vegetation (i.e., trees or shrubs) or noxious/invasive plants growing. Flag any woody and/or noxious/invasive vegetation for removal/herbicide.				"
<b>5. Cover Monitoring System</b>				
5A. Visually inspect the integrity of the cover monitoring system: check Junction boxes, manholes, pressure transducer risers, soil water status nest headers, and settlement plates of the remote monitoring system for evidence of damage (see attached map). Check that lids and caps on enclosures are intact and in good working order.				OSDF Dwg. # 90X-5500-E-00581 & 90X-5500-G-00577
5B. Visually inspect monitoring system manholes and junction boxes for the presence of animals, insects, rodents or misc. biota. Note the presence or evidence of any biota.				"
5C. Visually inspect manholes and junction boxes and their immediate vicinity for the presence of standing water. Flag all standing water.				"
<b>6. Groundwater Monitoring Wells</b>				
6A. Visually inspect all groundwater wells for damage and integrity of well infrastructure.				PPC&IP
6A1. Groundwater Monitoring Wells				"
6A2. Horizontal Monitoring Wells				"

: Satisfactory \*U = Unsatisfactory (comments required)

# OSDF Cell 1 Post Closure Inspection Checklist

Date of Inspection: \_\_\_\_\_  
 Location of Inspection: \_\_\_\_\_  
 Inspector: \_\_\_\_\_  
 Weather Conditions: Sunny/PI/Sunny/Cloudy/PI/Cloudy/Rain/Snow  
 Temperature: \_\_\_\_\_ °F Wind Speed (Miles per hour) and Direction: \_\_\_\_\_  
 Transect Direction\*\* \_\_\_\_\_ Other observations \_\_\_\_\_

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed	Reference Source
<b>7. Miscellaneous</b>				
7A. Visually inspect the integrity of survey benchmarks. Flag/note any abnormalities.				PPC&IP
7B. Visually inspect the integrity of the perched water interceptor trench (once installed). Note any abnormalities.				"
7C. Visually observe/inspect the corridor 50-ft outside of OSDF for signs/evidence of land use changes, settlement/subsidence, erosion, standing water, encroachment, livestock grazing or noxious vegetation. Note any changes/abnormalities.				"
7D. Visually inspect all infrastructure for any act of vandalism.				"
7E. List any other observations not noted in the categories above.				"

\*Satisfactory \*U = Unsatisfactory (comments required)

**APPENDIX B**

**Long Term Stewardship Cost Estimates**

**ESTIMATE SUMMARY SHEET**

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO: 2002-49.0  
 CLIENT: DOE  
 WBS NO: 1.1.N.D

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lumbert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

**Fluor Fernald, Inc.**

ITEM DESCRIPTION	M/H	RATE	LABOR \$	S/C \$	MAT'L \$	EQUIP. \$	TOTAL \$
I.A.1 - Leachate Sys Maintenance	16,800		\$544,000		\$1,350,000	\$2,205,000	\$4,099,000
I.A.2 - Cap/Cover Monitoring	7,020		\$199,200		\$317,600	\$62,700	\$579,500
I.A.3 - Support & Institutional Control	5,634		\$159,800		\$12,400	\$42,200	\$214,400
I.A.4 - Tech & Monitoring Maintenance	2,400		\$149,700		\$90,000		\$239,700
I.B.1 - Leachate Sys Monitoring	11,400		\$711,000	\$750,000	\$186,000		\$1,647,000
I.B.2 - Cap/Cover Sys Monitoring	800		\$49,900				\$49,900
I.B.3 - Support Sys & Institutional Cont.							
I.B.4 - Miscellaneous	86,400		\$4,782,200				\$4,782,200
I.C.1 - Institutional Controls Monitoring	6,000		\$374,200		\$159,000	\$441,000	\$974,200
<b>DRAFT</b>							
<b>DIRECT FIELD COSTS TOTAL</b>	<b>136,454</b>	<b>\$51.08</b>	<b>\$6,970,000</b>	<b>\$750,000</b>	<b>\$2,115,000</b>	<b>\$2,750,900</b>	<b>\$12,585,900</b>
CONTRACTOR PROJECT STAFFING	-		-				
SMALL TOOLS & CONSUMABLES	-		-				
MISC. EQUIP. RENTAL	-		-				
TEMPORARY FACILITIES							
TEMPORARY UTILITY HOOK-UP							
JOB CLEAN-UP							
PER DIEM / SUBSISTANCE	-		-				
HEALTH PHYSICS S/C							
GET / SITE WORKER / RAD - TRAINING							
JOB SPECIFIC TRAINING							
PAYROLL BURDENS & BENEFITS	-		-				
OVERHEAD & PROFIT	-		-	\$2,517,200			\$2,517,200
BOND	-		-	\$196,300			\$196,300
SALES TAX	-		-		\$126,900	\$165,050	\$291,950
<b>INDIRECT FIELD COSTS TOTAL</b>				<b>\$2,713,500</b>	<b>\$126,900</b>	<b>\$165,050</b>	<b>\$3,005,450</b>
<b>DIRECT &amp; INDIRECT FIELD COSTS TOTAL</b>	<b>136,454</b>	<b>\$51.08</b>	<b>\$6,970,000</b>	<b>\$3,463,500</b>	<b>\$2,241,900</b>	<b>\$2,915,950</b>	<b>\$15,591,350</b>
<b>TARGET ESTIMATE</b>	<b>(FY 03 DOLLARS)</b>						<b>\$15,591,350</b>

## ESTIMATE SUMMARY SHEET

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO.: 2002-49.0  
 CLIENT: DOE  
 WBS NO.: 1.1.N.D

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lambert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

### FACTORS

FIXED PRICE \$	LABOR \$	S/C \$	MAT'L \$	EQUIP. \$	PPE \$	TOTAL \$
DFC DOLLARS	\$6,970,000	\$750,000	\$2,115,000	\$2,750,900		\$12,585,900
IFC COST FACTOR	1.0000	--	1.0000	1.0000	--	
BOND + OVERHEAD & PROFIT COST FACTOR	1.2107	1.2107	1.2107	1.2107	1.2107	
SALES TAX	-	-	1.0600	1.0600	1.0600	
<b>DIRECT FIELD COST FACTOR =</b>	<b>1.2107</b>	<b>1.2107</b>	<b>1.2834</b>	<b>1.2834</b>	<b>1.2834</b>	
BASE ESTIMATE \$'s	\$8,438,650	\$908,030	\$2,714,290	\$3,530,380		\$15,591,350
BASE FACTOR	1.0000	1.0000	1.0000	1.0000	1.0000	
<b>TARGET ESTIMATE FACTOR</b>	<b>1.2107</b>	<b>1.2107</b>	<b>1.2834</b>	<b>1.2834</b>	<b>1.2834</b>	
FPS TARGET ESTIMATE (FY02 \$)	\$8,438,650	\$908,030	\$2,714,290	\$3,530,380		\$15,591,350

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**NOTE:**

If there are no DFC Equip. \$, enter the IFC Equip. \$'s into the Direct Field Cost Total and delete IFC Factor in G62.

## ESTIMATE SUMMARY SHEET

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO.: 2002-49.0  
 CLIENT: DOE  
 WBS NO.: 1.1.N.D

### Direct Field Cost w / FACTORS

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lumbert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

PAY ITEM NO.	DESCRIPTION	LABOR \$	S/C \$	MAT'L. \$	EQUIP. \$	PPE \$	TOTAL \$
		(ASSIGN OR PRORATE PPE MAT'L.\$'s)-->>					
	1.A.1 - Leachate Sys Maintenance	544000 \$658,630		1350000 \$1,732,530	2205000 \$2,829,790		\$5,220,950
	1.A.2 - Cap/Cover Monitoring	199200 \$241,170		317600 \$407,590	62700 \$80,470		\$729,230
	1.A.3 - Support & Institutional Control	159800 \$193,470		12400 \$15,910	42200 \$54,160		\$263,540
	1.A.4 - Tech & Monitoring Maintenance	149700 \$181,240		90000 \$115,500			\$296,740
	1.B.1 - Leachate Sys Monitoring	711000 \$860,820	750000 \$908,030	186000 \$238,700			\$2,007,550
	1.B.2 - Cap/Cover Sys Monitoring	49900 \$60,410					\$60,410
	1.B.3 - Support Sys & Institutional Con						
	1.B.4 - Miscellaneous	4782200 \$5,789,860					\$5,789,860
	1.C.1 - Institutional Controls Monitoring	374200 \$453,050		159000 \$204,050	441000 \$565,960		\$1,223,060
<b>TOTAL DIRECT FIELD COSTS w/FACTORS (FY03 \$)</b>		<b>\$8,438,650</b>	<b>\$908,030</b>	<b>\$2,714,280</b>	<b>\$3,530,380</b>		<b>\$15,591,340</b>

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DETAIL ESTIMATE WORKSHEETS

**Fluor Fernald, Inc.**

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lumbert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO.: 2002-49 0  
 CLIENT: DOE  
 WBS NO.: 1.1.N.D

ITEM NO.	SUMMARY	QTY	UNIT	MAN-HOURS			COST / UNIT			LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C	Mat'l					
	I.A.1 - Leachate Sys Maintenance				16,800				\$544,000		\$1,350,000	\$2,205,000	\$4,099,000	
	I.A.2 - Cap/Cover Monitoring				7,020				\$199,200		\$317,600	\$62,700	\$579,500	
	I.A.3 - Support & Institutional Control				5,634				\$159,800		\$12,400	\$42,200	\$214,400	
	I.A.4 - Tech & Monitoring Maintenance				2,400				\$149,700		\$90,000		\$239,700	
	I.B.1 - Leachate Sys Monitoring				11,400				\$711,000	\$750,000	\$186,000		\$1,647,000	
	I.B.2 - Cap/Cover Sys Monitoring				800				\$49,900				\$49,900	
	I.B.3 - Support Sys & Institutional Cont.				86,400				\$4,782,200				\$4,782,200	
	I.B.4 - Miscellaneous				6,000				\$374,200		\$159,000	\$441,000	\$974,200	
	I.C.1 - Institutional Controls Monitoring													
	Total Direct Field Cost	1	LOT		136,454		\$51.08		\$6,970,000	\$750,000	\$2,115,000	\$2,750,900	\$12,585,900	

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DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lumbert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO.: 2002-49.0  
 CLIENT: DOE  
 WBS NO.: 1.1.N.D

ITEM NO.	I.A.1 - Leachate Sys Maintenance	QTY	UNIT	MAN-HOURS		Rate	COST/UNIT			LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total		Labor	S/C	Mat'l					
1.	Routine Maintenance of Pipe Networks Pipefiller, Fiscal 2007 - 2037 @ 240 hr/yr ~ Semi-Annual ~ Implement remedy per the PCCIP if pipe is clogged or leaking	30.0	fy	240.00	7,200	34.61				\$249,190		\$150,000	\$441,000	\$840,190
2.	Routine Maintenance of LDS System Electrician, Fiscal 2007 - 2037 @ 40 hr/yr Laborer, Fiscal 2007 - 2037 @ 40 hr/yr ~ Semi-Annual ~ Maintain, operate, & service all mechanical and electrical equipment in accordance with the manufacturer's instructions ~ Implement remedies per the PCCIP as needed	30.0 30.0	fy fy	40.00 40.00	1,200 1,200	34.61 28.37			\$41,530 \$34,040		\$150,000 \$150,000	\$441,000	\$632,530 \$184,040	
3.	Routine Maintenance of LCS System Electrician, Fiscal 2007 - 2037 @ 40 hr/yr Laborer, Fiscal 2007 - 2037 @ 40 hr/yr ~ Semi-Annual ~ Maintain, operate, & service all mechanical and electrical equipment in accordance with the manufacturer's instructions ~ Implement remedies per the PCCIP as needed	30.0 30.0	fy fy	40.00 40.00	1,200 1,200	34.61 28.37			\$41,530 \$34,040		\$150,000 \$150,000	\$441,000	\$632,530 \$184,040	
4.	Routine Maint of Leachate Transmission System Valve Hoises Laborer, Fiscal 2007 - 2037 @ 40 hr/yr Laborer, Fiscal 2007 - 2037 @ 40 hr/yr ~ Semi-Annual ~ Implement remedies per the PCCIP as needed	30.0 30.0	fy fy	40.00 40.00	1,200 1,200	28.37 28.37			\$34,040 \$34,040		\$150,000 \$150,000	\$441,000	\$625,040 \$184,040	
5.	Routine Maint of Leachate Transmission System Gravity Line Electrician, Fiscal 2007 - 2037 @ 40 hr/yr Laborer, Fiscal 2007 - 2037 @ 40 hr/yr ~ Semi-Annual ~ Implement remedies per the PCCIP as needed ~ Maintain, operate, & service all mechanical and electrical equipment in accordance with the manufacturer's instructions	30.0 30.0	fy fy	40.00 40.00	1,200 1,200	34.61 28.37			\$41,530 \$34,040		\$150,000 \$150,000	\$441,000	\$632,530 \$184,040	
										\$544,000	\$1,350,000	\$2,205,000	\$4,099,000	

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DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lumbert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO.: 2002-49.0  
 CLIENT: DOE  
 WBS NO.: 1.1.N.D

ITEM NO.	I.A.2 - Cap/Cover Monitoring	QTY	UNIT	MAN-HOURS			COST/UNIT			LABOR	SIC	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C	Mat'l					
	1. Custodial & Preventive Maintenance Laborer, Fiscal 2007 - 2037 Laborer, Fiscal 2007 - 2037	30.0 30.0	fy fy	117.00 117.00 234.00	3,510 3,510	28.37 28.37		5,000.00 5,000.00			\$150,000 \$150,000		\$249,580 \$249,580	
	- As needed, mowing will occur at least once annually. - Routine custodial & preventive maintenance consists of the following: Upkeep of the vegetative cover General mowing, 0.5 hr/acre @ 50 acre/yr Clearing of debris Removal of woody weeds & seedlings Reseeding Hydro seeder at 20% coverage Utility Mix \$41.00/1000 SF	50.0 0.5 0.5 10.0	acre week week acre	0.50 80.00 80.00 12.90 234	25 40 40 129							\$6,600 \$56,100	\$6,600 \$73,730	
					7,020	\$28.38					\$317,600	\$62,700	\$579,500	

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Note:  
 Hours listed above account for a yearly effort to perform listed tasks. The hourly quantity is then divided among the Laborers.

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lumbert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO.: 2002-49.0  
 CLIENT: DOE  
 WBS NO.: 11ND

ITEM NO.	I.A.3 - Support & Institutional Control	QTY	UNIT	MAN-HOURS		COST/UNIT			LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C					
1.	Custodial & Preventive Maintenance Laborer, Fiscal 2007 - 2037	30.0	fy	93.90	2,817	28.37			\$79,920				\$79,920
	Laborer, Fiscal 2007 - 2037	30.0	fy	93.90	2,817	28.37			\$79,920				\$79,920
	- As needed, mowing will occur at least once annually.	25.0	acre	0.50	13						\$230		\$230
	- Repair/replace fencing, gates, locks, & signs due to normal wear, severe weather conditions, or vandalism.	0.5	week	80.00	40			200.00		\$100			\$100
	- Mow/clear undesired woody vegetation, reshape, reseed, repair banks, unplug culverts, and clean out channels of run-on/run-off	10.0	acre	0.50	5						\$2,700		\$2,700
	Reseeding Hydo seeder at 20% coverage	0.5	week	80.00	40								
	Utility Mix \$41,000/1000 SF	7.0	acre	12.90	90			1763.00		\$12,340		\$39,300	\$51,640
					188								
	I.A.3 - Support & Institutional Control	1	LOT		5,634	\$28.36			\$159,800	\$12,400	\$42,200		\$214,400

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Note:  
 Hours listed above account for a yearly effort to perform listed tasks. The hourly quantity is then divided among the Laborers

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lumbert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO.: 2002-49 0  
 CLIENT: DOE  
 WBS NO.: 1 1.N.D

ITEM NO.	I.A.4 - Tech & Monitoring Maintenance	QTY	UNIT	MAN-HOURS		COS./UNIT			LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C					
	1. Maint Automated Monitoring Technologies Engineer, Fiscal 2007 - 2037 @ 40 hr/yr ~ Semi-Annual ~ Perform maintenance on automated devices and equipment to restore proper operation ~ Repair equipment or data recording equipment to ensure proper data transmission, collection and recording of data	30.0	fy	40.00	1,200	62.37		1,500	\$74,840		\$45,000		\$119,840
	2. Maint Remote Sensing Technologies Engineer, Fiscal 2007 - 2037 @ 40 hr/yr ~ Semi-Annual ~ Perform maintenance on equipment used for remote sensing technologies to restore proper operation ~ Repair data recording equipment to ensure proper transmission, collection and recording of data	30.0	fy	40.00	1,200	62.37		1,500	\$74,840		\$45,000		\$119,840
	I.A.4 - Tech & Monitoring Maintenance	1	LOT		2,400	\$62.4			\$149,700		\$90,000		\$239,700

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DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lumbert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO.: 2002-49 0  
 CLIENT: DOE  
 WBS NO.: 1.1.N.D

ITEM NO.	DESCRIPTION	QTY	UNIT	MAN-HOURS		COST/UNIT			LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C					
1.	Routine Inspection of Pipe Networks Engineer, Fiscal 2007 - 2037 @ 40 hr/yr ~ Semi-Annual ~ Inspect LDS & LCS pipe networks and the leachate transmission system pipe Ensure that clogging/leaking has not occurred Inspect valve houses, lift station, and all associated utilities Remote Camera	30.0	fy	40.00	1,200	62.37			\$74,840				\$74,840
2.	Inspection of the LDS System Engineer, Fiscal 2007 - 2037 @ 40 hr/yr ~ Semi-Annual ~ Inspect primary containment vessel ~ Check for liquid in the LDS containment pipes	30.0	fy	40.00	1,200	62.37			\$74,840				\$74,840
3.	Inspection of the LCS System Engineer, Fiscal 2007 - 2037 @ 40 hr/yr ~ Semi-Annual ~ Inspect condition & operation of shut off valve ~ Check for liq. LCS containment pipe/R. Camera ~ Check for liq. redundant LCS carrier pipe/R. C.	30.0	fy	40.00	1,200	62.37			\$74,840				\$74,840
4.	Inspect Leachate Transmission Valve Houses Engineer, Fiscal 2007 - 2037 @ 40 hr/yr ~ Semi-Annual ~ Inspect signage & structural condition ~ Check for ori/oribateral growth in coal vessel ~ Inspect all associated utilities	30.0	fy	40.00	1,200	62.37			\$74,840				\$74,840
5.	Inspect Leachate Transmission Gravity Line Engineer, Fiscal 2007 - 2037 @ 40 hr/yr ~ Semi-Annual ~ Check for liquid in leachate transmission system gravity line containment line	30.0	fy	40.00	1,200	62.37			\$74,840				\$74,840
6.	Leachate Management Engineer, Fiscal 2007 - 2037 @ 20 hr/yr ~ To be evaluated ~ Leachate will be treated in AWMWT	30.0	fy	20.00	600	62.37			\$37,420				\$37,420
7.	Leachate Management Monitoring Engineer, Fiscal 2007 - 2037 @ 160 hr/yr Includes per month 1 monitoring wells	30.0	fy	160.00	4,800	62.37	25,000	5,000	\$299,380	\$750,000	\$150,000		\$1,199,380
				TOTAL					\$711,000	\$750,000	\$186,000		\$1,647,000

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1.B.1. Leachate Sys Monitoring  
 Estimate No. 2002-49 0  
 Client: DOE  
 WBS No. 1.1.N.D  
 Project: Longterm Stewardship, OSDF  
 Location: Fernald  
 Task No.: NDAAK  
 Date: 24-Jan-03  
 Estimator: Ed Lumbert  
 Estimated Total: \$1,647,000  
 Labor: \$711,000  
 S/C: \$750,000  
 Mat'l: \$186,000  
 Equip: \$0  
 Total: \$1,647,000  
 Stated in FY03 Dollars

DETAIL ESTIMATE WORKSHEETS

**Fluor Fernald, Inc.**

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO.: 2002-49.0  
 CLIENT: DOE  
 WBS NO.: 1.1.N.D

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lumbert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

ITEM NO.	1.B.2 - Cap/Cover Sys Monitoring	QTY	UNIT	MAN-HOURS		COST/UNIT			LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C					
	1. Routine Site Inspection Engineer, Fiscal 2007 - 2037 @ 20 hr/yr	30.0	fy	20.00	600	62.37			\$37,420				\$37,420
	2. Unscheduled Site Inspection Engineer, Fiscal 2007 - 2037 @ 20 hr/yr Once every 3 years	10.0	fy	20.00	200	62.37			\$12,470				\$12,470
<b>DRAFT</b>													
	1.B.2 - Cap/Cover Sys Monitoring	1	LOF		800	62.38			\$49,900				\$49,900

DETAIL ESTIMATE WORKSHEETS

**Fluor Fernald, Inc.**

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lumbert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO.: 2002-49.0  
 CLIENT: DOE  
 WBS NO.: 1.1.N.D

ITEM NO.	1.B.3 - Support Sys & Institutional Cont.	QTY	UNIT	MAN-HOURS		COST/UNIT			LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C					
	1. Establish point of contact Federal oversite - Administration												
	2. Ownership Included with above item 1. (40 hours)												
	3. Deed Restrictions Included with above item 1. (40 hours)												
	4. Access controls/Restrictions Included with above item 1. (40 hours)												
	5. Routine Site Inspection Included with 1.B.2 Routine Site Inspections												
	6. Unscheduled Site Inspection Included w/ 1.B.2 Unscheduled Site Inspections												
	7. Groundwater / leachate monitoring Included with 1.B.1 Inspections												
	8. Other environmental monitoring Included with 1.B.1 Inspections												
	1.B.3 - Support Sys & Institutional Cont.	1	LOT										

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DETAIL ESTIMATE WORKSHEETS

**Fluor Fernald, Inc.**

PROJECT: Longterm Stewardship, OSDF  
 ESTIMATE NO.: 2002-49 0  
 CLIENT: DOE  
 WBS NO.: 1 1 N D

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lumbert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

ITEM NO.	1.B.4 - Miscellaneous	QTY	UNIT	MAN-HOURS		COST/UNIT			LABOR	SIC	MATL	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C					
	Engineer, Fiscal 2007 - 2037 @ 1 flr/yr	30.0	fy	1,920	57,600	62.37			\$3,592,510				\$3,592,510
	Info/Records, Fiscal 2007 - 2037 @ 1/2 flr/yr	30.0	fy	960	28,800	41.31			\$1,189,730				\$1,189,730
<b>DRAFT</b>													
	1.B.4 - Miscellaneous	1	LOT		86,400	55.35			\$4,782,200				\$4,782,200

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

PROJECT: Longhorn Stewardship, OSDF  
 ESTIMATE NO.: 2002-49.0  
 CLIENT: DOE  
 WBS NO.: 1.1.ND

DATE: 24-Jan-03  
 ESTIMATOR: Ed Lambert  
 LOCATION: Fernald  
 TASK NO.: NDAAK

ITEM NO.	DESCRIPTION	QTY	UNIT	MAN-HOURS			COST/UNIT			LABOR	MATL	EQUIP	TOTAL
				Unit	Total	Rate	Labo	S/C	Matl				
	1.C.1 - Institutional Controls Monitoring												
	1. Establish Point of Contact Engineer, Fiscal 2007 - 2037 @ 40hr - Annual ~ Provide priority & backup points of contact for emergencies. Points will be provided in the Institutional Control Plan for Restored Area.	30.0	fy	40.00	1,200	62.37						\$77,840	
	2. Ownership Engineer, Fiscal 2007 - 2037 @ 40hr - Annual - Federal government will maintain ownership of site property.	30.0	fy	40.00	1,200	62.37				\$3,000		\$77,840	
	3. Deed Restrictions Engineer, Fiscal 2007 - 2037 @ 40hr - Annual ~ If ownership of portions of the FEMP property (outside of the disposal facility area) is transferred at any time, restrictions will be provided in the deed, and proper notifications will be provided as required.	30.0	fy	40.00	1,200	62.37				\$3,000		\$77,840	
	4. Access Controls Engineer, Fiscal 2007 - 2037 @ 80hr - Annual - In order to maintain the integrity of some of the ecologically restored areas & cultural resource areas, public access to those areas may need to those areas may need to be restricted. Fencing, gates, and/or signs indicating restricted access will require monitoring & maintenance to ensure their integrity. Open & close times for the property in general will need to be clearly communicated to the public. Security patrol may be required & a means of contacting emergency services must be readily available.	30.0	fy	80.00	2,400	62.37			\$149,690	\$150,000	\$441,000	\$740,690	

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