

Long-Term Stewardship:

Ensuring Environmental Site Cleanups Remain Protective Over Time



Introduction

The One Cleanup Program (OCP), an initiative promoting cross-program coordination in EPA's Land Revitalization Office, is generating momentum to return contaminated land to safe and beneficial uses. In September 2005, the Long-Term Stewardship (LTS) Task Force, one of three created under the OCP, completed its report and recommendations, *Long-Term Stewardship: Ensuring Environmental Site Cleanups Remain Protective Over Time* (available at www.epa.gov/landrevitalization/publications.htm). The Task Force examined the wide spectrum of LTS issues and recommended potential activities for EPA to consider in its planning to ensure long-term protectiveness after revitalization. The Task Force recommendations will serve as a starting point for developing long-term safety policy mechanisms for all cleanup sites.

LTS activities typically include physical and legal controls to prevent inappropriate exposure to contamination left in place at a site. The function of institutional controls, engineering controls and other tools is to protect human health and the environment and to preserve the integrity of the selected remedy.

Engineering Controls

Physical or "engineered" controls are the engineered physical barriers or structures designed to monitor and prevent exposure to the contamination. Certain engineered cleanups will involve ongoing operation and maintenance (O&M), monitoring, evaluation, periodic repairs, and sometimes replacement of remedy components.

Examples of Engineering Controls

- Landfill soil caps
- Impermeable liners
- Other containment covers
- Underground slurry walls
- Fences
- Bioremediation
- Ground water pump-and-treat and monitoring systems

Institutional Controls

Legal or "institutional" controls are administrative and legal controls such as orders or permits intended to minimize the potential for human exposure to contamination by limiting land or resource use. Institutional controls may be used to supplement engineering controls and also must be operated, monitored, and evaluated for as long as the risks at a site are present. Informational devices such as signs, state registries and deed notices are commonly used informational, non-enforceable tools.

Examples of Institutional Controls

- Zoning
- Notices and warnings
- Easements
- Restrictive covenants
- Other land or resource use restrictions



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What is Long-Term Stewardship?

Many sites cleaned up under Federal and State programs have contamination remaining on the site that restricts or limits their use. Long-term stewardship (LTS) applies to sites and properties where long-term management of contaminated environmental media is necessary to protect human health and the environment. The EPA and its regulatory partners rely on LTS at these sites to ensure that current and future site users are protected long after the construction phase of response actions have been completed. LTS must operate effectively for the life of the remedy, which can be years, decades, or even longer.

Who is Responsible for LTS?

Long-term cleanup requirements and any subsequent restrictions at these sites must be monitored, maintained and enforced to ensure the integrity of the remedy and protection of people and the environment. LTS typically involves numerous public and private stakeholders responsible for implementing, monitoring, and enforcing the engineering and institutional controls.

These stakeholders may include government agencies at the Federal, State, Tribal, and local levels; private parties who either own the land or otherwise have an interest in the property; communities and local groups living near or affected by the site; and/or other parties such as land developers, financial institutions, insurance companies, and other third party trusts. Each stakeholder involved at a site has a particular role and certain responsibilities for carrying out stewardship activities.

LTS at Work

Riverside Park, Oshkosh, WI

Long-Term Stewardship principles played a key role in helping transform the seven-acre former Wisconsin Public Service (WPS) Manufacturing Gas Plant property in Oshkosh, Wisconsin, into Riverside Park, a waterfront park with a public amphitheater. WPS cleaned up a significant portion of the property in 2002 using thermal treatment and capping, an engineered control. The City of Oshkosh later purchased the property in December 2003. With assistance from an EPA Brownfields Cleanup Grant, the City was able to continue the remedial action by re-grading the property, reconstructing the environmental cap, and paving the parking lot as an engineered control. WPS retains responsibility for implementing long-term stewardship of the remedial systems and further cleanup of the site.



Old Works Golf Course:

Long-Term Stewardship activities were also central to the redevelopment and reuse of the Old Works Golf Course. Beginning in 1884, the Old Works smelter began production to treat tons of ore daily from the Butte mine. Later the higher capacity Washoe Smelter was constructed resulting in the dismantling and closure of the Old Works. The location lay idle until 1983 when it became a Superfund site. In 1989, the site was identified as the future location of the Old Works Golf Course. Construction of the golf course began in June 1994. The construction of the golf course uses both institutional and engineering controls to achieve four remedial action objectives: waste materials management, storm water management, site management, and historic preservation.

The waste materials management guidelines provided safe soil concentrations of undesirable wastes that existed on the site, thereby minimizing any potential recreational or occupational exposure. Storm water management goals focused on protecting Warm Springs Creek by way of controlling runoff from the golf course and surrounding areas. Site management objectives used institutional controls for the operation of the golf course, long term monitoring guidelines and appropriate planning and management of future development. The final objective of the remedial action was to preserve, to the extent practicable, historic features in the Old Works Historic District. The golf course opened in Spring 1997.

Long-Term Stewardship Task Force

EPA formed the Long-Term Stewardship Task Force in 2004 to evaluate the current state of long-term stewardship across its various waste cleanup programs. The Task Force includes representatives from each of EPA's cleanup programs, including the Superfund, Resource Conservation and Recovery Act, Underground Storage Tanks, Brownfields, Federal facilities, and enforcement programs, and from several State cleanup programs.

The Task Force identified and addressed a variety of challenges facing EPA and its partners responsible for ensuring the implementation, oversight, and enforcement of LTS. These challenges generally fall into the following six categories:

- 1 Roles and responsibilities
- 2 Institutional controls
- 3 Engineering controls
- 4 LTS costs
- 5 LTS funding and resources
- 6 Information management

Within these categories, the Task Force identified recommendations to address the challenges most seriously affecting Federal, State, Tribal, and local governments at LTS sites. The results of the Task Force's effort are documented in its report *Long-Term Stewardship: Ensuring Environmental Site Cleanups Remain Protective Over Time* (available at <http://www.epa.gov/oswer/landrevitalization/publications.htm>). The information provided in the report and its respective recommendations are intended to inform EPA management and staff but do not constitute official agency policy or an agency-wide position and are not binding on EPA or any other party. While these recommendations are focused on EPA activities, many of the recommendations may be beneficial to other Federal, State, Tribal, and local program activities.

The Superfund program estimates approximately 80% of sites entering the construction completion universe will require LTS.

The BRAC program anticipates requiring LTS at an increasing number of sites; almost 400,000 acres have been transferred and put back into use by others, only 30% is estimated to be uncontaminated.

LTS Challenges and Task Force Recommendations

The following presents a summary of the LTS challenges and recommendations for consideration by EPA's cleanup programs.

Roles and Responsibilities

Challenge: Ensuring that Stakeholder Roles and Responsibilities Are Clearly Understood

Although EPA cleanup programs frequently select remedies that rely on LTS activities, the responsibility for implementation, monitoring, and enforcement is often under the jurisdiction of other levels of government and private parties. As such, there are a variety of public and private stakeholders that may be involved in selecting, implementing, monitoring, and enforcing LTS activities at a site. Each stakeholder has specific responsibilities for carrying out those activities. To be effective, each stakeholder needs to have a clear understanding of their current and future responsibilities as well as those of any other stakeholder. The roles and responsibilities need to be clearly articulated and accepted by all parties and well documented through legal and other means.

Recommendations:

- EPA should continue to review its decision documents, agreements, and other tools as appropriate, to ensure site-specific LTS roles and responsibilities are clearly delineated.
- EPA should continue to develop guidance addressing LTS implementation and assurance across its cleanup programs as appropriate.
- EPA, State, and Tribal cleanup programs and other Federal agencies should invest more time working with and building stronger relationships with local governments, and conduct more training and outreach, to help them better define and understand their potential specific LTS roles and responsibilities.
- EPA should partner with other Federal agencies and State, Tribal, and local government organizations to sponsor one or more “summits” in which representatives from Federal, State, Tribal, and local agencies can share their perspectives and insights on LTS.

Information Management

Challenge: Ensuring that LTS Information Is Managed and Shared Effectively

Without effective information management, it is difficult for stakeholders to understand and implement their LTS responsibilities effectively. Information is best managed and coordinated across different levels of government, and should be widely distributed and accessible to all stakeholders, including the public, to communicate risks and safeguards, support accountability mechanisms, and augment institutional memory.

Recommendations:

- EPA should continue to facilitate the maintenance and exchange of LTS information through existing grants and other resources, and by establishing and promoting data standards (e.g., data element registries and XML schema and tags).
- EPA should continue to support the development of mechanisms for sharing information to prevent breaches of institutional and engineering controls.

LTS Costs

Challenge: Understanding and Considering the Full, Life-cycle Costs of Long-Term Stewardship When Making Cleanup Decisions

The cost of LTS activities has long been a key factor when making clean-up decisions. Risk-based approaches relying on LTS activities often appear as less expensive alternatives with their relatively low up-front, short-term costs. However, leaving waste onsite may require long-term management for decades, centuries, or possibly in perpetuity. There may be significant costs associated with the LTS of these sites, including implementing and maintaining institutional and engineering controls, oversight and enforcement by governmental or other entities, and other monitoring and administrative activities. These costs need to be calculated and fully considered when making remedial decisions at a site. It is also important to identify LTS costs to non-governmental entities such as Potentially Responsible Parties (PRPs) and future users.

Recommendation:

- EPA should evaluate current LTS costing guidance and, if appropriate, either revise it or develop new guidance to improve the Agency's ability to produce more consistent and reliable cost estimates. As appropriate, EPA should draw on existing governmental and non-governmental studies and information for estimating LTS costs.

Institutional Controls (ICs)

Challenge: Ensuring the Effective Implementation of Institutional Controls

Effective implementation of long-term stewardship activities should:

- Ensure that the institutional controls at a site remain in effect for as long as the contamination poses a risk to human health and the environment.
- Ensure that the restrictions on the land or resources are effectively communicated to anyone who may come into contact with the site.
- Allow for re-evaluation of LTS needs to determine effectiveness and need for changes.
- Enhance the overall protectiveness of institutional controls by using them in layers and/or in series.

Recommendations:

- EPA should develop mechanisms and criteria across its cleanup programs for evaluating the effectiveness of ICs at sites.
- EPA should support the development of an analysis of ICs to determine the reliance on (and burden to) State, Tribal, and local governments.
- To enhance the availability and reliability of ICs, EPA should encourage States to review the Uniform Environmental Covenants Act or similar legal provisions for potential state applicability.

Engineering Controls (ECs)

Challenge: Ensuring the Effective Implementation and Evaluation of Engineering Controls

Engineering controls at a site may require LTS activities to ensure that the remedy functions properly and remains protective. To maintain the effectiveness and operational integrity of the engineering component of a remedy, LTS activities typically involve ongoing O&M, performance monitoring, and periodic reviews and inspections. In addition, LTS activities may include reviews of the engineering controls to improve their performance and/or reduce the annual operating cost without compromising protectiveness.

Recommendation:

- EPA should adopt a flexible approach for re-evaluating the effectiveness of ECs and, if appropriate, modifying ECs to optimize remedial system performance and minimize LTS costs.

LTS Funding and Resources

Challenge: Ensuring that Funding and Other Resource Needs Are Adequate and Sustainable

A reliable funding source or mechanism is needed to ensure that the long-term responsibilities are fulfilled. For responsible parties, operating facilities, and new landowners, this may involve securing funding or other financial mechanisms. For government agencies with oversight and enforcement responsibilities, this may involve obtaining adequate funding through an annual appropriations process. With a true understanding of the life cycle LTS costs and a reliable source and mechanism for funding, sound decision-making will lead to cleanup actions that are both effective and fiscally responsible.

Recommendations:

- EPA should work with outside organizations to explore adequate and sustainable funding sources and mechanisms at the Federal, State, and local level to monitor, oversee, and enforce LTS activities.
- EPA should continue to explore the role of the private sector in supporting the LTS of sites and foster their involvement, as appropriate.

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