Long-Term Stewardship

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What is Long-Term Stewardship?

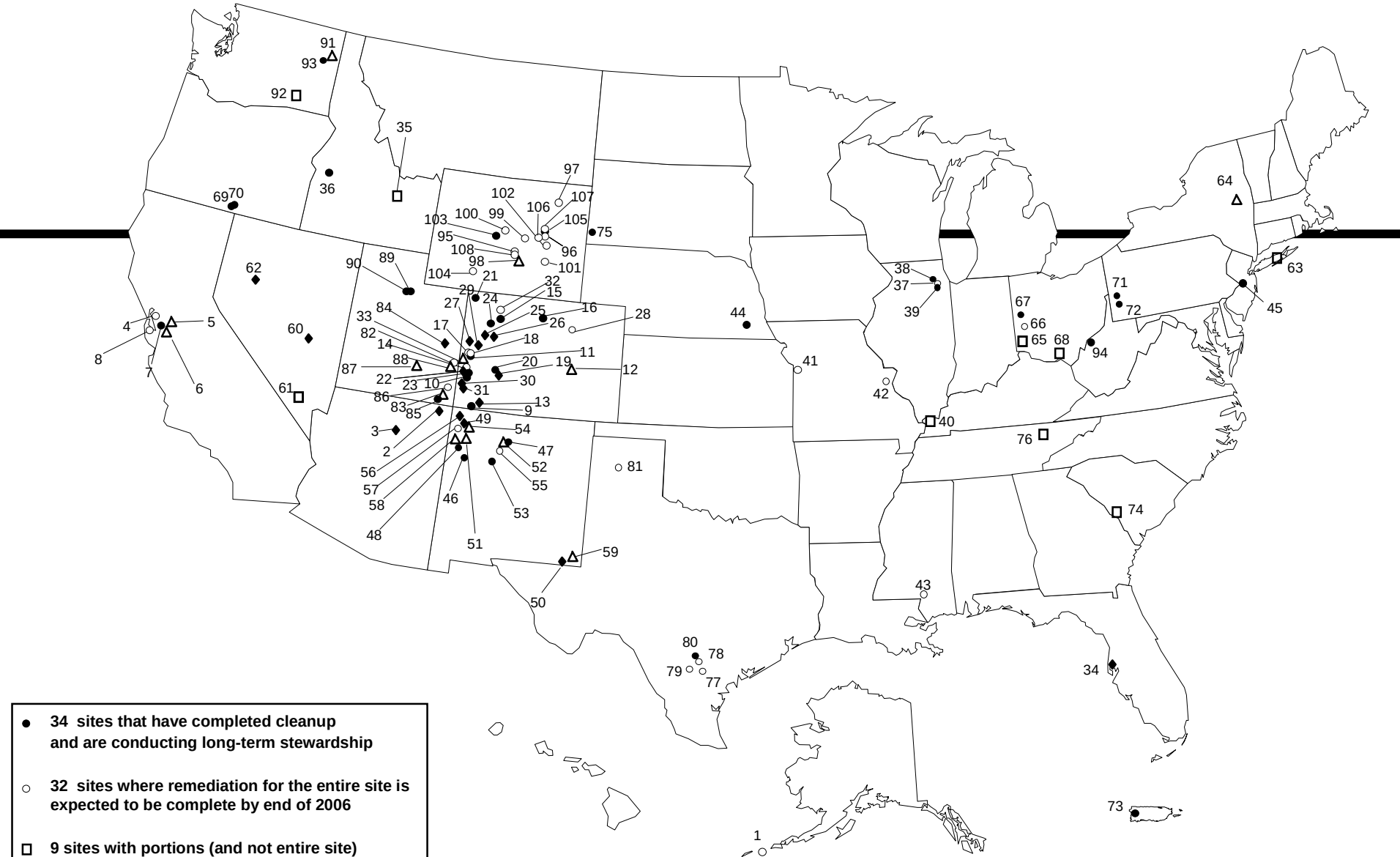
- All activities necessary to ensure protection of human health and the environment following completion of cleanup, disposal, or long-term stabilization at a site or a portion of a site

- Includes all engineered and institutional controls designed to contain or prevent exposures to residual contamination and waste

Why is Long-Term Stewardship Needed?

- Unable to achieve unrestricted use due to:
  - Technical limitations
  - Economic limitations
  - Worker health and safety challenges
  - Collateral ecological damage caused by remediation

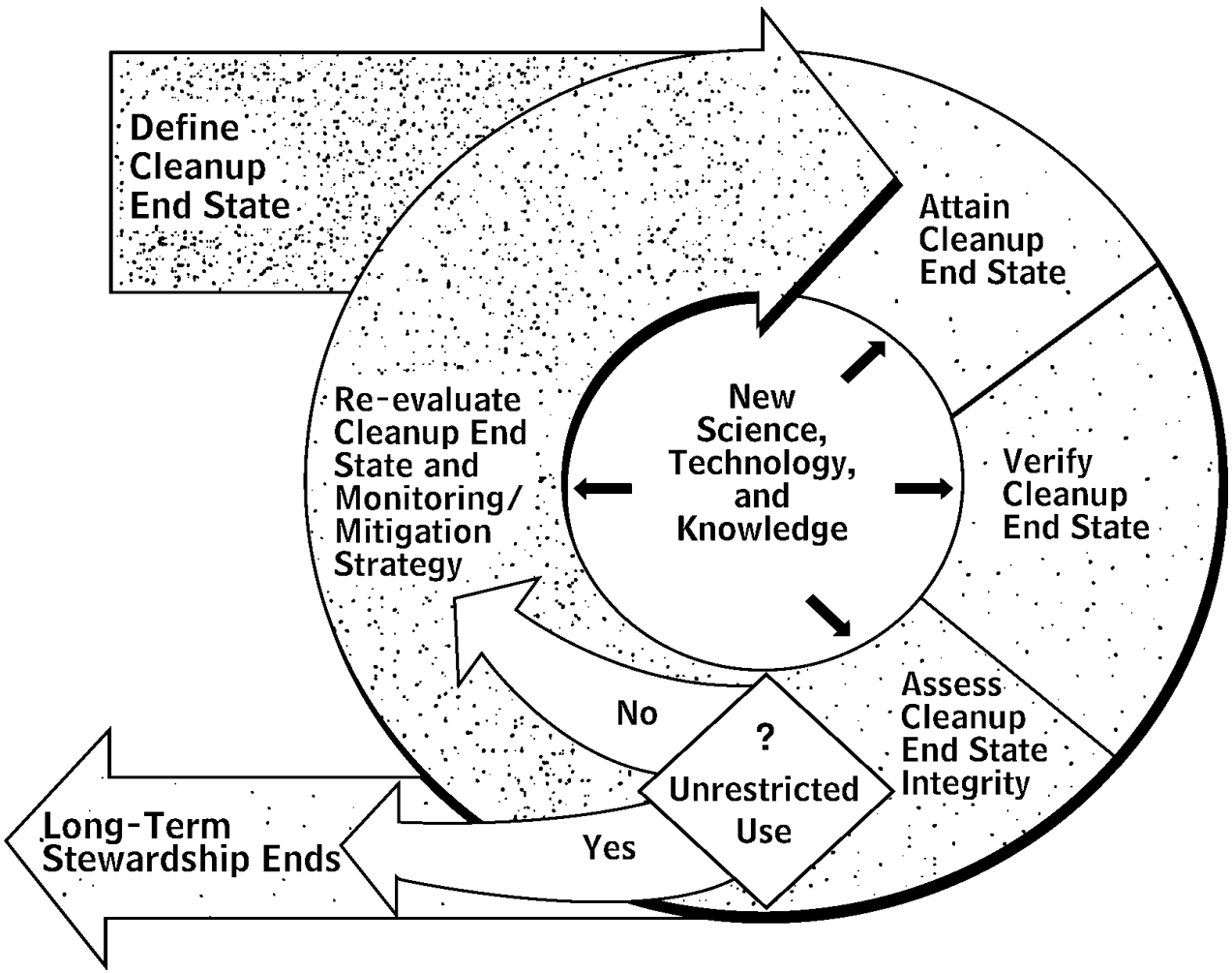
Map of 108 Sites Requiring Long-Term Stewardship



- ● **34 sites that have completed cleanup and are conducting long-term stewardship**
- ○ **32 sites where remediation for the entire site is expected to be complete by end of 2006**
- □ **9 sites with portions (and not entire site) complete by 2006**
- ♦ **18 sites that have surface remediation complete by 2006 but have ongoing subsurface characterization and remediation**
- △ **15 sites that will not have portion complete by 2006**

See Appendix A for list of sites

The Dynamic Nature of Long-Term Stewardship



Office of Long-Term Stewardship Mandates

Legally Enforceable Requirements:

- National study pursuant to PEIS Lawsuit Settlement Agreement (*Natural Resources Defense Council, et al. v. Richardson, et al.*, Civ. No. 97-936 (SS) (D.D.C. Dec. 12, 1998)
- Report to Congress on Long-Term Stewardship Activities and Costs (pursuant to FY2000 National Defense Authorization Act)

DOE Senior Management Directives:

- Ensure effective long-term stewardship - *One of Assistant Secretary Huntoon's Strategic Priorities*
- Manage long-term stewardship as a project
- Develop performance metrics to evaluate performance
- Develop DOE policy for long-term stewardship responsibility at sites with expected non-EM missions

What Have We Learned?

- LTS is an integral part of an effective cleanup program
- LTS is occurring now
- Many challenges remain before an effective LTS program is implemented

Key Challenges Identified in *Draft Study*

- Incorporating long-term stewardship considerations into cleanup decisions
- Ensuring continued effectiveness of long-term stewardship through multiple changes in property ownership
- Ensuring open access to information about residual hazards
- Ensuring reliable and sufficient funding
- Maintaining continued partnerships with state, local, and Tribal governments
- Developing mechanisms and technologies to promote the sustainability of long-term stewardship
- Building the concept of “stewardship prevention” into planning for new construction and operation

Where Are We Going?

- Improve planning and develop baseline for LTS
- Define roles and responsibilities with EM, DOE, federal and non-federal organizations
- Integrate research and development on critical issues into LTS program

Current LTS Responsibilities

- **Office of Long-term Stewardship -** Policy, guidance, analysis, and coordination
- **Grand Junction -** UMTRCA and other sites
- **Site Landlords -** Budgeting and performance of Field LTS activities (not assigned above)
- **ID/INEEL -** Lead Laboratory for S&T development
- **NETL -** Lead Laboratory for development of cost modules

High Priority Science and Technology Needs Include:

1. Information about durability of materials and more durable materials - capping/barrier materials (e.g., clay, geotextile, plastic, rock), waste containers and waste forms

2. Knowledge of fate and transport mechanisms and predictive capabilities

3. Monitoring and surveillance methods (e.g., methods of detection, analysis, remote sensing, and data transmission)

4. Information management - methods for identifying, recording, storing, archiving, and accessing relevant and necessary information for future site stewards and land/facility users

5. Support systems - renewable energy systems (e.g., geothermal heat pumps, solar photovoltaic systems) that can reduce the costs and improve the reliability of pump-and-treat and monitoring systems

Long-Term Stewardship Publications

- **The 1995 and 1996 Baseline Environmental Management Reports** provided the first comprehensive scope and cost estimates for the cleanup of the nuclear weapons complex.
- **Closing the Circle on the Splitting of the Atom** describes environmental, safety, and health problems throughout the nuclear weapons complex and what the Department of Energy (DOE) is doing to address them.
- **Linking Legacies** connects the missions and functions of our nation's nuclear weapons facilities with the inventories of waste and materials remaining at the Plants, and the extent and characteristics of contamination in and around the sites.
- **The Paths to Closure Reports.** The 1998 report articulated the vision of reducing the overall program costs by accelerating cleanup, completing project, and closing sites. The 2000 Status Report updates life-cycle cost and schedule estimates.
- **Managing Data For Long-Term Stewardship** is an initial effort to inform DOE policy makes, advisory boards, and stakeholders about the significance of long-term stewardship.
- **From Cleanup to Stewardship** was published as a companion document to the 1998 Paths to Closure report and began to examine national policy issues, challenges, and barriers associated with transition from cleanup to long-term stewardship.

Where to Obtain Publications

- Long-Term Stewardship Information Center
  http://lts.apps.em.doe.gov

- Environmental Management Information Center
  http://www.em.doe.gov or 1-800-7-EM DATA

- Office of Scientific and Technical Information (OSTI)
  http://www.osti.gov or 865-576-1188

Six Principles of Environmental Management

- **Safety -** Putting health and safety of workers, public and the environment at top of the list
- **Good Project Management -** Establishing and maintaining sound project management complex wide
- **Science and Technology -** Applying the best science and technology to remedy problems, reduce costs and solve long term problems
- **Long-Term Stewardship -** Developing an effective stewardship program to address long-term management
- **Keeping our Promises -** Making good on our word by meeting our commitments
- **Public Confidence -** Bolstering public confidence through greater openness, stakeholder involvement, tribal collaboration and community outreach and demonstrable progress in the five areas above

Office of Long-Term Stewardship Activities & Update

- Draft Study on Long-Term Stewardship to be released this fall
- Report to Congress on Long-Term Stewardship to be sent to Congress December 1st
- Guidance documents for long-term stewardship at both EM and non-EM sites are currently in development
- Operational Roadmap for Office of Long-Term Stewardship is currently in development
- Database of weapons sites from *USA Today* series is currently in development

Cost Estimation Support for LTS

- Need for LTS Cost Estimates
- Objectives for Cost Estimation
- Approach
- Relationship to ECES/ECAS

Need for LTS Cost Estimates

- IPABS/LTS Project Baselines
  - LTS cost estimates needed to support project baselines required by IPABS.
- Assess LTS “Mortgage”
  - Need to characterize long-term resource commitments associated with LTS.
- Long-range Planning
  - Cost estimates needed to support long-range planning efforts, identify and prioritize R&D needs.

Objectives for Cost Estimation

- Provide Consistency of Estimates
  - Need to have consistent structure and basis for LTS estimates across DOE Complex.
- Maximize Use of Existing Tools
  - Make use of existing tools including ECES/ECAS and RFETS LTS cost tool.
- Flexibility to Support Other Uses
  - Provide data and framework for sensitivity/uncertainty and other analyses; support other reporting requirements (e.g., NDAA).

Approach

- Identify Scope of LTS Activities
  - Sources included Closure to Stewardship Report, DOE LTSM Program, RFETS LTS estimate, LTS groundwater assessments, D&D guidance.
- Develop LTS WBS
  - WBS based on ECES – removed elements not applicable to LTS; added new elements not in ECES.
- Modify RFETS Cost Tool
  - RFETS tool modified to be more general and to incorporate LTS WBS.

Relationship to ECES/ECAS

- LTS WBS Based on ECES
  - Common WBS will facilitate integration of LTS project plans at sites using ECES for closure activities.

- Plan to Use ECAS for Historical Cost
  - Actual LTS costs to be collected and used to support future estimates. Use of ECES structure will allow ECAS to be used for historical costs.

Table 2-1. 108 Sites That Will Require Long-Term Stewardship

No.	State	Site
1	AK	Amchitka Island
2	AZ	Monument Valley Site
3		Tuba City Site
4	CA	Lawrence Berkeley National Laboratory
5		Lawrence Livermore National Laboratory - Main Site
6		Lawrence Livermore National Laboratory - Site 300
7		Sandia National Laboratories - CA
8		Stanford Linear Accelerator
9	CO	Bodo Canyon Cell
10		Burro Canyon Disposal Cell
11		Cheney Disposal Cell
12		(Cotter) Cañon City Site
13		Durango Mill
14		(HECLA) Durita Site
15		Estes Gulch Disposal Cell
16		Fort St. Vrain
17		Grand Junction Mill 1
18		Grand Junction Mill 2
19		Gunnison Disposal Cell
20		Gunnison Mill
21		Maybell Mill Site
22		Naturita Mill
23		Naturita Site
24		Naval Oil Shale Reserves Site
25		Rifle (New) Mill
26		Rifle (Old) Mill
27		Rio Blanco Site
28		Rocky Flats Environmental Technology Site
29		Rulison Site
30		Slick Rock (North Continent) Mill 1
31		Slick Rock (Union Carbide) Mill 2
32		(UMETCO) Maybell Site 2
33		(UMETCO) Uravan Site
34	FL	Pinellas STAR Center
35	ID	Idaho National Engineering and Environmental Laboratory
36		Lowman Site
37	IL	Argonne National Laboratory East
38		Fermi National Accelerator Laboratory
39		(Site A/Plot M) Palos Forest Site
40	KY	Paducah Gaseous Diffusion Plant
41	MO	Kansas City Plant
42		Weldon Spring Site Remedial Action Project
43	MS	Salmon Site
44	NE	Hallam Nuclear Power Facility
45	NJ	Princeton Plasma Physics Laboratory
46	NM	Ambrosia Lake Site
47		Bayo Canyon
48		Bluewater Site
49		Gasbuggy Site
50		Gnome-Coach Site
51		Homestake, Grants
52		Los Alamos National Laboratory
53		Lovelace Respiratory Research Institute
54		Quivera Ambrosia Lake
55		Sandia National Laboratories - NM
56		Shiprock Site
57		(SOHIO) LBAR Site
58		(UNC), Church Rock
59		Waste Isolation Pilot Plant
60	NV	Central Nevada Test Area
61		Nevada Test Site
62		Project Shoal Area
63	NY	Brookhaven National Laboratory
64		Separation Process Research Unit
65	OH	Fernald Environmental Management Project
66		Miamisburg Environmental Management Project
67		Piqua Nuclear Power Facility
68		Portsmouth Gaseous Diffusion Plant
69	OR	Lakeview Mill
70		Lakeview Site
71	PA	Burrell Site
72		Canonsburg Site
73	PR	Center for Energy and Environmental Research
74	SC	Savannah River Site
75	SD	Edgemont Site
76	TN	Oak Ridge Reservation
77	TX	(Chevron) Panna Maria Site
78		(Conoco) Conquista Site
79		(Exxon) Ray Point Site
80		Falls City Site
81		Pantex Plant
82	UT	Atlas Moab Mill
83		EFN White Mesa
84		Green River Site
85		Mexican Hat Site
86		Monticello Remedial Action Project
87		(Plateau) Shootaring
88		(Rio Algom) Lisbon Valley
89		Salt Lake City Mill
90		South Clive Disposal Cell
91	WA	(Dawn) Ford
92		Hanford Site
93		(WNI) Sherwood Site
94	WV	Parkersburg Site
95	WY	(ANC) Gas Hills Site
96		(Exxon) Highlands Site
97		Hoe Creek Underground Coal Gasification Site
98		(Kennecott) Sweetwater
99		Naval Petroleum Reserve No. 3 Landfill/Landfarm
100		(Pathfinder) Lucky Mac
101		(Pathfinder) Shirley Basin
102		Petrotomics, Shirley Basin
103		Riverton Site
104		Rock Springs Oil Shale Retort Site
105		Spook Site
106		(UMETCO) Gas Hills Site
107		(Union Pacific) Bear Creek Site
108		(WNI) Split Rock