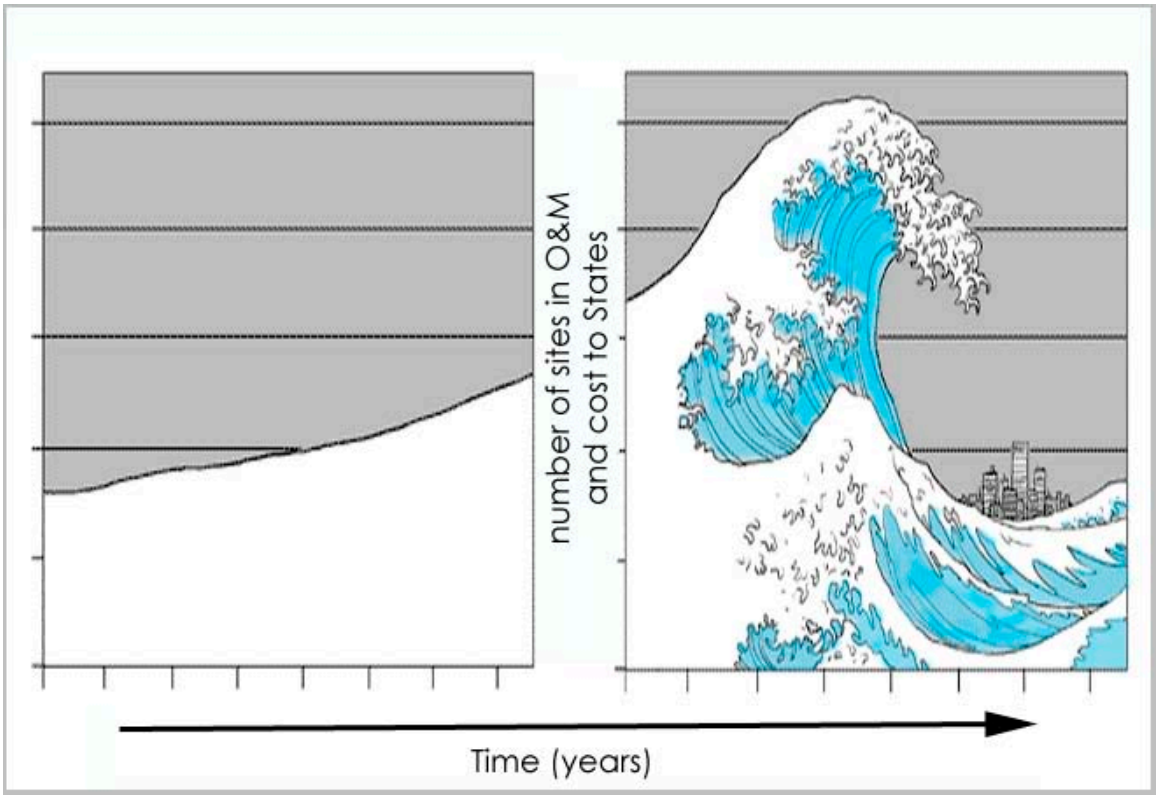
Association of State and Territorial

ASTSWMO

Solid Waste Management Officials

Analysis of State Strategies for Funding O&M at Superfund Sites



Prepared By:

Long-Term Stewardship
Focus Group

November 2008

Acknowledgements

This document was prepared by the ASTSWMO Long-Term Stewardship Focus Group, with assistance from the U.S. Environmental Protection Agency under Cooperative Agreement RT-83376901.

It is important to note that this document does not establish any official opinions, positions, preferences, or recommendations by ASTSWMO or by any individual ASTSWMO member or their respective State or region.

ASTSWMO thanks the following members for their participation in development of this report:

George Klein, NJ (Chair)
Robert Stout, MO (Vice-Chair)
Paul Locke, MA
James Carroll, MD
Jere “Trey” Hess, MS
Heidi Sorin, OH
Catherine Sharp, OK
Catherine LeCours, MT
Mark Berscheid, CA
Bruce Wicherski, ID
Jennifer Patterson, ASTSWMO staff

In addition, the Focus Group wishes to thank Skylar McElhaney of Oklahoma for assisting in the final editing process.

Table of Contents

List of Figures

List of Tables

Glossary of Commonly Used Terms

Long Term Stewardship (LTS)

Long-term stewardship applies to sites where long-term management of contaminated environmental media is necessary to protect human health and the environment. Long-term stewardship generally includes the establishment and maintenance of physical and legal controls, implementation entities, authorities, accountability mechanisms, information and data management systems, and resources that are necessary to ensure that these sites remain protective of human health and the environment.

Operations and Maintenance (O&M)

Operations and Maintenance describes measures "initiated after the remedy has achieved the remedial action objectives and remediation goals in the Record of Decision (ROD), and is determined to be operational and functional, except for ground-or surface-water restoration actions covered under 40 CFR§300.435(f)(4)." A remedy is a remedial action (RA) described in a ROD. A ROD may contain several remedies, each with differing O&M requirements and time frames for completion. O&M measures are designed to maintain the remedy at a site to ensure that the remedy remains protective of human health and the environment.

Operable Unit (OU)

Term for each of a number of separate activities undertaken as part of a Superfund site cleanup. A typical operable unit would be removal of drums and tanks from the surface of a site. The term is also sometimes applied to separate areas of a larger site, where each area may require different and unrelated actions.

Trust Fund

A fund established using a variety of financial sources with more generalized purposes and objectives than a dedicated fund. Sources of funding include bonds, general revenue, tipping fees, cost recovery monies, and grants.

Tipping Fee

A fee associated with the disposal of material at a solid waste or hazardous waste facility.

State Superfund Contract

An agreement between the U.S. Environmental Protection Agency (EPA) and a State regarding roles and responsibilities for oversight of CERCLA remedial actions. It documents the responsibilities of the lead Agency (EPA) and the support Agency (State) during the remedial action and includes clauses that

outline the basic purpose, scope, and administration of the' Contract, as well as those activities described in the attached Statement of Work.

Fund Lead/State Lead/PRP Lead

Refers to a description of which organization is primarily responsible for official actions and funding of those actions at a CERCLA site.

Removal Site

The site at which a CERCLA removal action takes place. A removal action describes the steps taken by EPA, when the determination has been made that there is a threat to public health or welfare of the United States or the environment, to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or the threat of release.

CERCLIS

Comprehensive Environmental Response, Compensation, and Liability Information System.

Dedicated Fund

A fund established using a variety of financial sources with specific purposes and objectives defined for the use of those funds, such as paying for the costs of operation and maintenance of remedies at response sites.

ROD

Record of Decision

RACER

Remedial Action Cost Engineering and Requirements (RACER) software is a Windows-based environmental remediation/corrective action cost estimating system. RACER software estimates costs for all phases of environmental remediation projects – from site investigation through site closeout.

Executive Summary

This report was developed by the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) Long Term Stewardship Focus Group for the purpose of identifying the costs associated with long term stewardship of Superfund sites. Because the long term care of such sites is generally the responsibility of State regulatory agencies, it is important for States to define and quantify that expense. Additionally, this report examines the methods that States are using to plan for handling the financial aspects of these sites, including estimating costs, budgeting, and ensuring sufficient funds exist for long-term O&M. The results indicate that the number of sites with O&M obligations is increasing. Additionally, of the 36 States which supplied information for this effort:

- 18 States have sites with at least one operable unit undergoing O&M,
- 7 States have no operable units in O&M but expect to have at least 1 in the next 10 years,
- 6 States have no operable units in O&M and also expect none in the next 10 years

States rely on a variety of sources for funding long term site-related costs. Nearly one- fourth of the responding States indicated the use of a dedicated fund for this purpose. Other sources reported include:

- State fees from hazardous and solid waste
- General revenue
- State appropriations
- Trust funds, and
- Bond funds

The majority of States indicated that their current funding sources are adequate to meet current obligations. However, several States are projecting budget shortfalls. Other findings indicate that:

- Current budgeting processes employed by States appear to be reactive, rather than proactive. The process looks at current or past costs, but rarely considers the obligations in future years.
- States will likely address budgetary shortfalls by cutting costs and reducing or deferring stewardship activities. States may need to examine their organizational structure and make adjustments in order to secure

funds that will be required to ensure that long-term stewardship commitments are effectively addressed.

- States may not be fully assessing all costs associated with long-term stewardship and therefore, may be underestimating the scope of the O&M liabilities that are to be transferred to them.
- States and EPA may not be tracking future O&M liabilities in the same way.

Looking to the future and the increasing number of sites moving into long term O&M, it is important that we obtain an accurate picture of our financial needs. In addition to using reliable estimates which cover the life cycle of the projects, States should move toward a practice of conducting periodic re-evaluations of the costs and the suitability of the remedies involved as well as the effectiveness of their stewardship systems.

Purpose

The ASTSWMO Long Term Stewardship Focus Group ("Focus Group") developed this report to help describe the costs associated with long term stewardship of Superfund sites. Recognizing that each State's inventory of sites represents a different timetable and range of financial obligations, cataloging each State's experiences can provide useful information.

In June 2007 the Focus Group asked States to define the actual costs they had incurred for sites in Superfund O&M.[1] The evaluation focused on costs incurred *after* construction of the remedy was completed. This period, often referred to as O&M, or operation and maintenance, is typically the responsibility of a State environmental agency. This report is a result of continued research conducted by the Focus Group in this area.

The overall objective of both phases of the study was to provide States with information with which to better prepare themselves for these obligations. An added benefit to collecting and sharing this information is that its conclusions should also apply to the various remediation programs for which the States will be responsible for ensuring long-term stewardship. These include, but are not limited to, tank programs, brownfields/voluntary cleanup programs, and State response programs. The information contained here will help all those involved in Superfund site cleanup to better understand and address long range site cleanup costs.

[1] The research instrument was sent to 50 States and 6 territories. 36 States supplied information for purposes of this report.

For large scale cleanups, it is difficult to predict exactly when the O&M phase will start. Additionally, States use a variety of methods to budget revenue for future needs. Therefore, this phase of the study involved polling State regulators regarding how they plan and budget for long term O&M obligations.

Introduction

Since its inception, the Superfund Program has completed remediation at hundreds of the most contaminated sites in the country. However, the milestone of completing construction of the remedy does not end the process. Once construction is concluded, O&M begins. Under CERCLA, the responsibility for ensuring long term protectiveness at National Priorities List (NPL) sites falls on the States. States accept this responsibility and the financial obligations that accompany it when they sign the State Superfund Contract (SSC).

Experience in the Superfund Program has taught us that addressing complex environmental cleanups is expensive, and that achieving cleanup levels which allow unrestricted land use is often unrealistic. In certain settings, it may be impossible. Risk-based cleanups are practical, protective, and consistent with the levels of funding currently available. Using a risk-based approach, more sites can be remediated and redeveloped, which results in benefits to communities as these properties are returned to productive re-use and perhaps to the tax rolls. However, because most remedies now involve leaving some contamination in place, there is a need to monitor and control ongoing activity and future land use at these locations, often referred to as long-term stewardship.

Historically, forecasts and projections of long-term costs have focused mainly on O&M activities related to a specific cleanup project, and typically looking out only to a 30 year horizon. However, these project-specific O&M activities and costs are not the only costs of long-term stewardship. There are other costs of maintaining institutional controls that must also be considered. States must be able to estimate all their future financial obligations as accurately as possible. Remedy selection must accurately factor in all the long-term costs to the State when estimating actual remedial action costs. It is therefore essential that States be able to accurately determine all the costs associated with O&M at the time of remedy selection, in order to be able to agree to fund long-term stewardship activities at the site.

Scope

In Phase I of the Project, the Focus Group defined the qualifying sites using EPA data sources and developed a sample representative of the range of qualifying sites based on the availability of data. Criteria for inclusion in Phase I included:

- Fund-lead; post construction completion; in O&M

  OR

- Removal sites where removal action is complete

In Phase II of the Project, the Focus Group expanded the scope to include not only the Phase I data but by also querying CERCLIS for States with sites where O&M was projected within the next 10 years. The research was conducted with States using a standardized process that included a request for information on the following topics:

- Fiscal basis for budgeting;
- Definition of how States estimate long-term costs;
- Types of funding mechanisms; and
- Whether funding sources are adequate.

The data described herein represents a subset of the total number of sites for which States are currently paying O&M costs.

Methodology

Last year, the Focus Group collected site data on actual and projected long-term O&M costs at Superfund sites, with a focus on how States are estimating and projecting their future costs and the sources of funding States use to support long-term O&M activities at these sites. In addition to augmenting last year's O&M cost information, Phase II focused on how States are estimating and projecting their future costs and how they are funding O&M activities at these sites.

Phase I research identified sites where the State is responsible for conducting and paying for O&M for a Fund-lead remedial or removal action. The Focus Group used USEPA's CERCLIS database to identify sites that would be moving into State O&M in the next 10 years. This information was used to identify States that are currently funding O&M or will be obligated to do so in the next decade.

The Focus Group developed a standard data collection methodology and format to normalize the information as much as possible (see attached Excel workbook). Data collection focused on:

- defining the fiscal basis for budgeting (*e.g.*, annual, biennial);
- defining how States estimate long-term O&M costs for their budgets;
- determining whether funding sources are adequately providing revenue to meet State O&M obligations and how any shortfalls are addressed; and
- defining the types of funding sources used for O&M.

Additionally, the Focus Group requested that States project which sites were anticipated to move into State-funded O&M within the next 10 years.

The research instrument allowed States to provide narrative responses but also provided drop-down menus to help standardize the data. Both raw data and a summary of findings are provided in this report.

Data Limitations

As with any research effort, limitations in the data analysis became apparent as the data were summarized. The following items outline those limitations.

Phase II Data Limitations

- States use different budgeting processes and nomenclature for describing their budgeting tools and revenue sources, so it was sometimes difficult to evaluate whether similar processes and tools were being used among States.
- Submitting information for this project was voluntary. Therefore, the dataset presented in this report is not inclusive of the total number of States paying for O&M for sites that would be eligible for analysis under this project nation-wide.
- The number of States and territories reporting was 36. This represents 64 percent of the total number of States and territories at the time of the latest summary of Phase II data. When compared to CERCLIS, the data set presented in this report does not represent the total number of States paying for O&M at sites eligible for analysis under this project nation-wide.
- Since each State's environmental organizations are most likely set up and operate differently there may be significant variation in the responses.
- State respondents with varying degrees of authority and direct knowledge of Phase II inquiries were responsible for Phase II inputs and this may contribute to data variability.
- The data were not subjected to statistical analysis.

Findings

Introduction

This research examined various aspects of the budget process used by State agencies to fund long-term O&M. Specific issues included:

- How States incorporate estimated O&M costs into their Agency's budget,
- Whether funding is adequate to support current O&M costs,
- How funding shortfalls would be addressed.

Funding Process

The majority of States use a budgetary process by which estimates of O&M costs for the next budget cycle are itemized, incorporated into the larger organizational budget (program, division or agency), submitted to the governor's office or a financial management office, and are then subject to legislative approval.

Several variations on this common process were identified, including:

- *Where funding is a function of the source:* Some States derive funding from a dedicated fund derived from tipping fees or a bond fund. Funding requests are for spending authority from money which already exists in the fund rather than a request for new money.
- *Where funding is site-specific or tied to site-specific characteristics such as size:* In the case of a particularly large (*i.e.*, expensive) project, the request for funding might take the form of a special appropriation request as part of the agency budget rather than being funded from a dedicated source that might be used to fund a number of sites in aggregate.

In some cases, such as where no clear process exists or was described (*e.g.*, because the projected need is in the future) States indicated that a line item appropriation request to the legislature was a possible process.

Funding Adequacy

The majority of States indicated that their current funding sources are adequate to meet their current O&M obligations. At the same time several States either indicated increasing pressure on funds or projected future funding shortfalls. For example, Michigan projected budget shortfalls in the near-term (2009), Utah in 2-3 years, and Colorado projected shortfalls in the long-term (2023). Some States (Montana and Oklahoma) indicated that their

funding sources are being depleted but offered no projection for when they might be exhausted if new funding is not secured.

While 50 percent of the responding States indicated that they have no funding issues now; 40 percent reported some type of future unaddressed budget issues. These issues included funds that are sun-setting, trust funds that will be depleted, and the prospect of future expenses that they have no way of covering under their current budget.

Funding Shortfall

States identified a wide range of strategies for dealing with shortfalls. These strategies generally fell into two categories; developing sources of additional funding or attempting to reduce the costs of O&M.

Most States responding would first try to find additional funds. Strategies include requesting special appropriations through the governor's office or legislature, seeking increases in tipping fees (for those O&M activities funded this way), or shifting funds from other programs.

As a last resort, States indicated they would attempt to reduce the overall cost of O&M by:

- shifting internal programmatic priorities,
- suspending activities at certain sites by prioritizing certain sites over others,
- prioritizing activities at a specific site,
- suspending the start of new projects,
- optimizing remedies/actions for potential cost savings,
- modifying remedial objectives to less restrictive levels,
- moving more quickly from active to less costly remedial strategies (*e.g.*, natural attenuation), or
- reducing personnel costs (worst case).

Funding Sources

The sources of funding used by States to pay for long-term O&M are diverse (see Figure 1) and are not dominated by one funding mechanism. A dedicated fund was identified by nearly a quarter of States responding as the primary source of funding for O&M. Other major sources were general revenue (14 percent) and trust funds (14 percent) with appropriations accounting for a minor portion (7 percent). In most cases where a dedicated

fund or trust fund was identified the source of money for the fund was not identified.

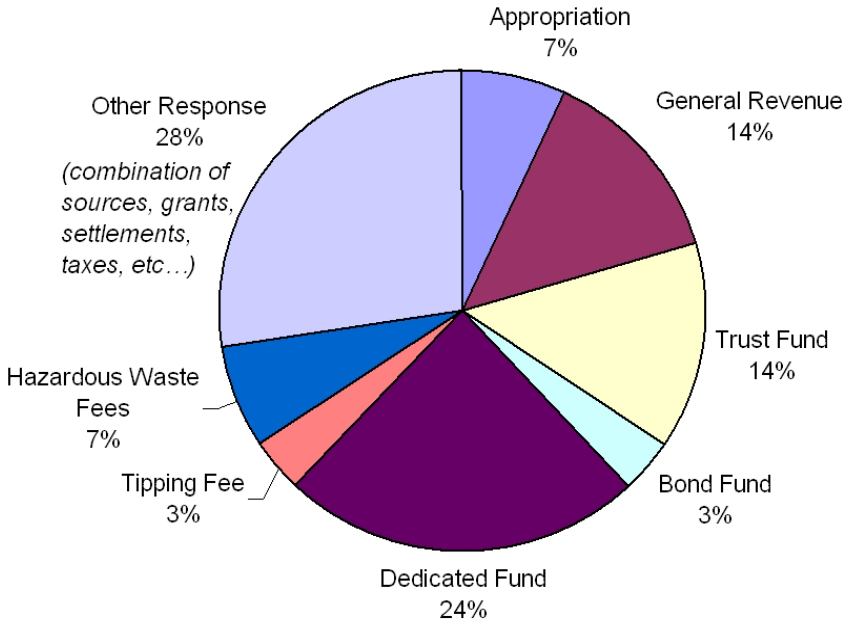


Figure 1 - Funding Sources

Nearly half of respondents listed "other" sources of funding. Other sources of funding that were identified included bond funds, tipping fees, hazardous waste fees, etc. Those who identified "other" often indicated that funding came from multiple sources (*e.g.*, general revenue and appropriations, dedicated funds and general funds, or a mix of corporate business taxes, bonds, cost recovery monies, and other site specific accounts). In some cases, if a dedicated fund was identified as the source, that fund might be used or available for activities besides O&M (*e.g.*, emergency response and voluntary cleanup programs).

There are likely overlaps in responses to the research question where a State uses multiple funding mechanisms. Additionally, States that, for example use a trust fund, could have responded appropriately as using a "Trust Fund" or a "Dedicated Fund." Figure 1 represents our best interpretation of responses and interprets narrative responses in either new categories that fell out of our data evaluation or places an "Other" response into an existing category in which it appeared to fit.

Therefore, the information can be used in a general way, but there is no way to make specific findings with regard to this data.

Estimating O&M costs for budgeting purposes

Many States use estimates generated during development of the ROD as they begin to budget for O&M costs, but change to other methods for long-term, more accurate estimations of ongoing O&M costs. About half the States estimate their O&M costs using recent (actual) costs. Many of the other States use other methods and/or site-specific work plans to develop their O&M budgets. Some States use information or cost estimates developed by or for EPA to plan for long-term O&M. Others indicated they use a combination of methods.

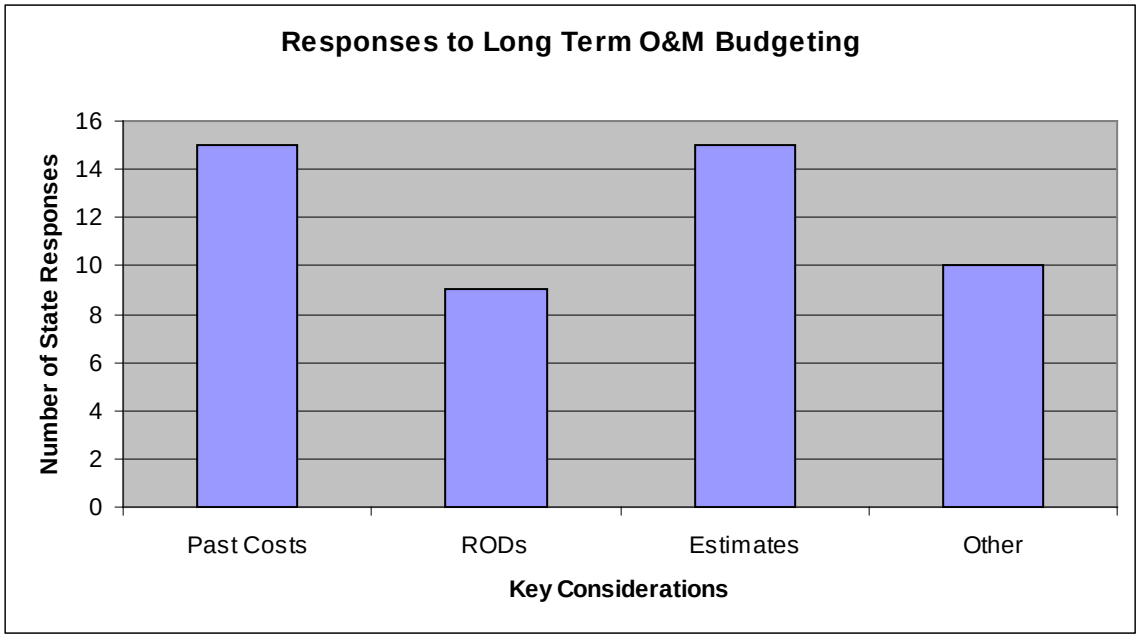


Figure 2 - Long Term O&M Budgeting

In reviewing the data, it is important to note that respondents may have identified one or more elements that contribute to the development of a long-term O&M budget. For example, California noted that it uses past costs, information from a site's ROD, information from USEPA, and RACER cost estimates to forecast long-term costs.

Changes in the budgeting process over time

States addressed this issue in two different ways. The intent of the question was to determine whether States changed their budgeting process to better forecast future costs. However, several States interpreted the question as asking whether budget forecasts changed over time. Two States noted that the funding source for O&M was compromised and that this caused changes in how future budgets were

projected for long-term O&M projects. Twenty-three States noted that there were no changes to the budgeting process while eight States indicated that their budgeting process has changed.

Differences in the budgeting process based on size of site

It did not appear that responses indicated different budget processes were used for small, medium or large sites. However, some States indicated that larger sites having greater impact on program budgets were given a higher level of scrutiny and, frequently, site-specific budgets were developed for such sites. Of States that responded in the positive, the primary difference was for the level of detail.

O&M Items or Concerns Unaddressed in Agency Budgets

Eighteen States reported there were no long term O&M issues unaccounted for or unaddressed by their agency's budget. However, 13 States indicated there were long-term O&M issues that were not addressed in their agency's budgets. Several States identified the lack of contingency funding mechanisms and the instability of existing funds over the long run. In addition to the stability of long term funding, some States identified the cost of monitoring and enforcing institutional controls as a concern.

Number of sites with at least one Operable Unit in State-lead O&M.

States were asked to provide (a) a list of their sites with at least 1 Operable Unit currently in State-lead O&M, and (b) a list of their sites they believe have at least a 50 percent chance of having at least 1 Operable Unit in State-lead O&M within the next 10 years.

It is important to note that many sites have multiple Operable Units. As States pick up the O&M for each additional Operable Unit, the number of sites in State-funded O&M will remain the same, but the State costs will rise as the remedy for each Operable Unit is passed to the State for O&M. Appendix A provides the names of each site currently in O&M.

Figure 3 identifies 34 States or 61 percent of the 50 States, the District of Columbia and the territories of Puerto Rico, U.S. Virgin Islands, American Samoa, Guam, and the Northern Mariana Islands that responded to our information request. (The Focus Group used Phase I data from one additional State and did not include that State in the summary or calculations below). Four States do not currently have any sites or OUs in State-lead O&M, and they do not anticipate any in the next ten years. Six States do not currently have any OUs in State-lead O&M but do anticipate at least one in the next ten years. Twenty-one States have at least one OU currently in State-lead O&M

and anticipate more in the next ten years. Three States currently have at least one OU in State-lead O&M but do not anticipate additional OUs in the next ten years. For one State, we know they have at least one OU in State-lead O&M but have no information for the future.

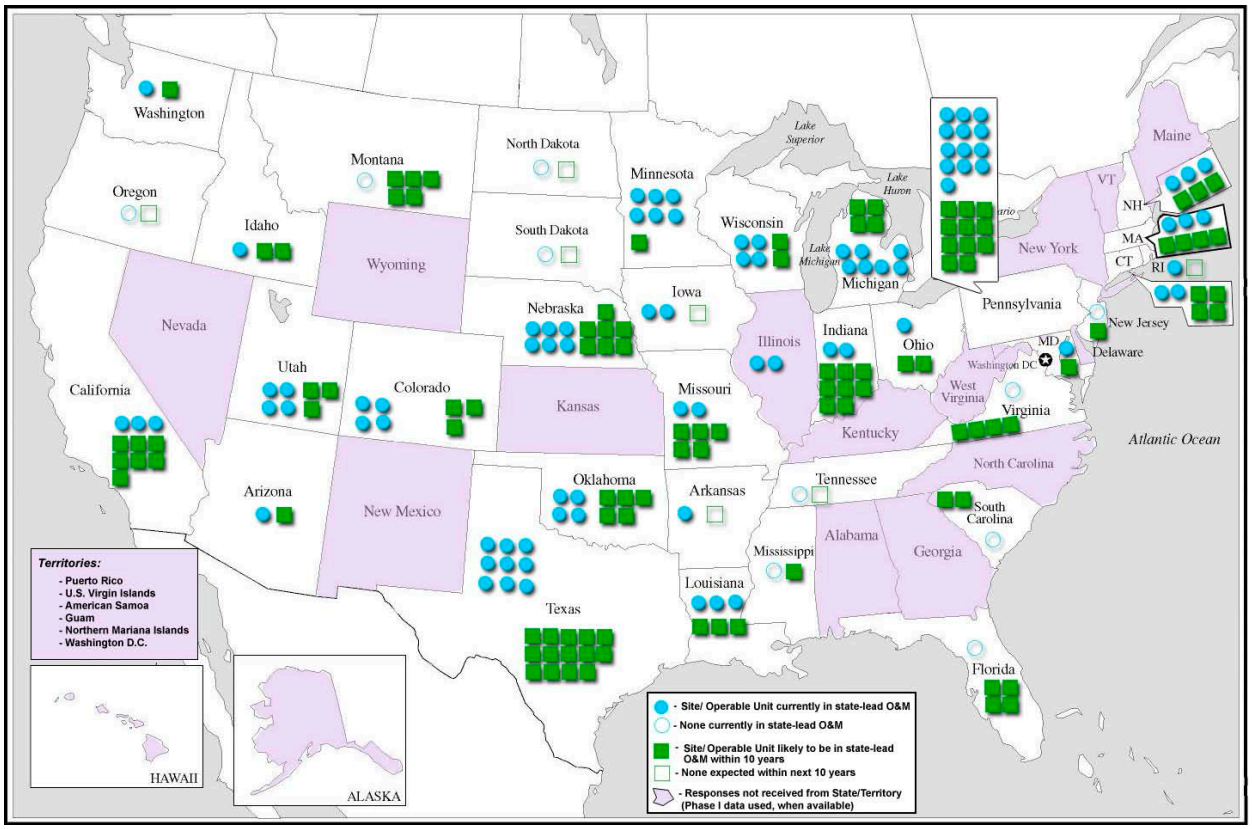


Figure 3 - Number of Current and Future State-Funded O&M

Table 1 - Number of States with Current or Future O&M Obligations

Status of Sites/Operable Units in O&M	States Responding Number	(percentage)
None currently and none anticipated	4	(12%)
None currently and at least one anticipated	6	(18%)
At least one currently and at least one anticipated	21	(62%)
At least one currently and none anticipated	3	(9%)
None currently	10	(29%)
At least one currently	24	(71%)
None anticipated	7	(21%)
At least one anticipated	27	(79%)

Number of sites likely to have at least One Operable Unit in State-lead O&M within 10 years.

States were asked to provide a list of their sites they believe have at least a 50 percent chance of having at least 1 Operable Unit in State-lead O&M within the next 10 years. Figure 4 illustrates the estimated cumulative increase in the number of sites in State lead O&M and Figure 5 provides the estimated year-by-year increases. These figures may underestimate the true size of future State obligations for site O&M:

- there will be many sites with numerous Operable Units with separate and distinct remedies;
- some PRP-lead sites may eventually become fund-lead; and
- there is likely to be State-funded O&M in States and territories that did not respond to this information request.

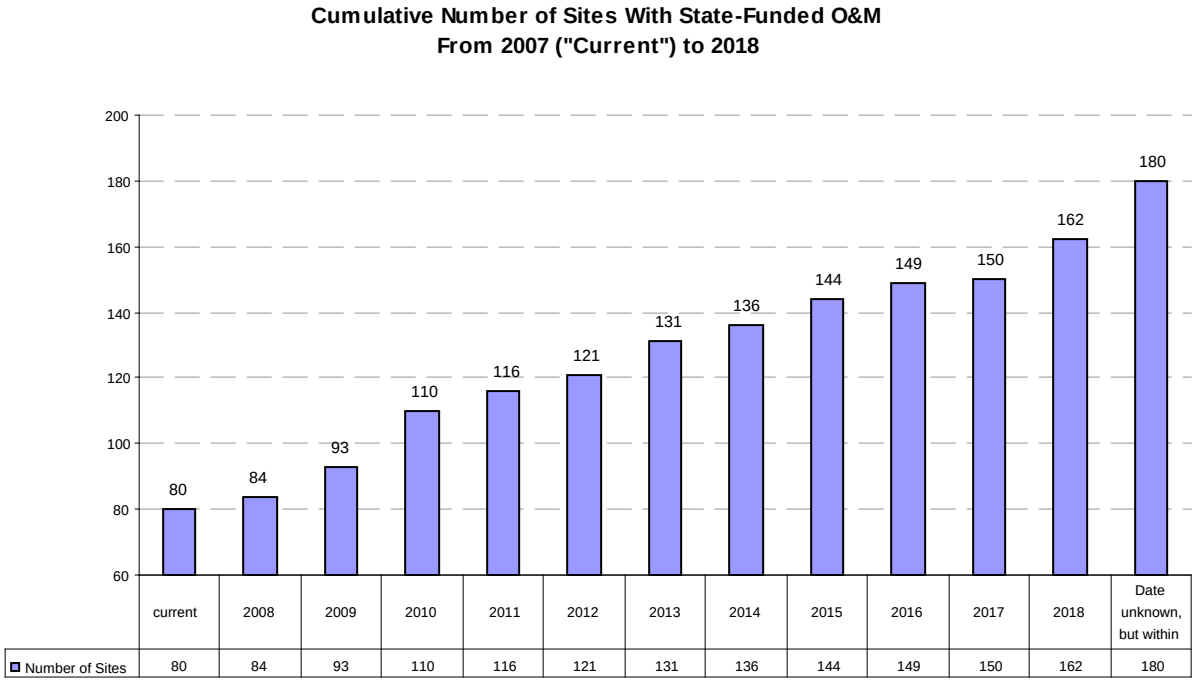


Figure 4 - Cumulative Number of Sites with State-Funded O&M

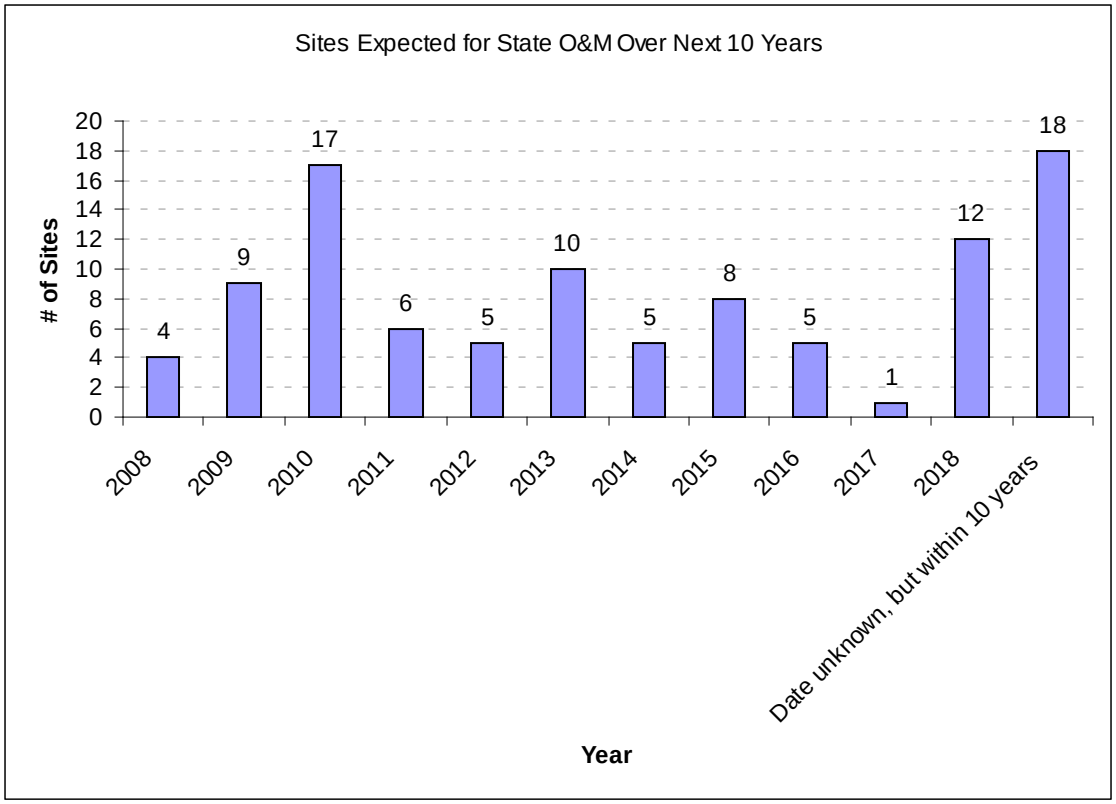


Figure 5 - Sites Expected for State O&M over the Next 10 Years

Discussion

The number of sites/OUs in State-funded O&M is increasing.
The number of States reporting sites in State-funded O&M increased over last year's effort. This provides a higher level of confidence in the data we collected. The data show a clear continuing trend of increasing O&M sites across the country. Intuitively, this must be so. Assessment activities are still underway in most States and this means that the pipeline will continue to flow for the foreseeable future. As time goes on, O&M responsibilities for all sites transfer to the States and this leads to a continuing accrual of sites in State stewardship. If anything, these data and trends are understatements.

EPA officials at the 2008 State Superfund Managers Symposium expressed concern that States may be seriously underestimating the scope of O&M liabilities that are to be transferred to them. In fact, few of the sites that are included in the sample on which this report is based are large-scale high-cost projects or mega-sites. O&M costs are, of course, only a small part of the long-term stewardship responsibilities that States are facing. All cleanup projects result in long-term stewardship responsibilities. In addition to Superfund O&M, the long-term stewardship system will include cleanups from Emergency Response, Superfund Removal, RCRA, LUST, Federal Facilities, Drycleaner, Brownfields, Voluntary Cleanup and other State response programs.

The Focus Group compared the list of sites that States identified as entering O&M within the next 10 years with a list of Long-term Remedial Action (LTRA) sites provided by EPA based on their data sources. This comparison revealed that some sites in EPA's inventory were not in the States' listing. Conversely, there were also some sites in the States' inventories that did not appear in EPA's. While this disparity was not significant, it was clear that on some of these projects, there is a need for States and their EPA Regional counterparts to review and reconcile their views regarding what sites are moving to the States and when. The Focus Group recommends that States and EPA Regions routinely discuss the schedule for turnover of NPL sites for long-term O&M in their regularly scheduled meetings to ensure that States adequately plan and prepare to take on these obligations.

Current budgeting processes are reactive, not proactive.
The budgeting process, as reported by the States, looks at current costs or past costs, but rarely considers the obligations in future years. This leads to an examination of how States are preparing to deal with this increased responsibility. State responses to questions about their level of concern over their ability to fund their O&M liabilities now and in the future seem to indicate that many States believe their resources are adequate at present. Still, a significant

40 percent of States indicated that there were long-term O&M issues that were not addressed in their agency budgets.

States tend to shift their O&M cost estimates from those based on the ROD to estimates based on actual costs. States deal with expenses in the near term. State budgeting processes essentially run on either one or two-year cycles. Budget projections for long-term costs are often part of strategic planning, but for funding to be impacted, expenditures must be projected in the fiscal year budget. This means that expenses three, four, or five years out will not typically be dealt with until they move into the budgeting cycle. It was clear from discussions with some State Project Managers, that they had a pretty accurate grasp of the projects that would be moving into state-funded O&M. It was less clear that this information was being used to establish a long-term funding plan to meet the state's long-term stewardship responsibilities. The focus group suggests that a regular joint review by EPA Regions and States of the upcoming O&M responsibilities could serve as a means of providing state program budget developers with enough compelling data to make the case for fee or appropriation increases. Some States have good communication between State project management staff, program managers, and fiscal/budget personnel in planning and budgeting for site turnover and long-term stewardship activities. All States could benefit from enhancing these lines of communication. Examining the sources of funding that States are using to support O&M activities sheds light on a critical question. How stable and reliable is the funding for these activities?

States rely on trust funds, settlements, grants, fees, taxes, bonds, and they appropriate general revenue to cover their costs. Some of these strategies work well now, but may not be adequate in the long term. For example, the State of Michigan has used Environmental Protection Bond funds and Clean Michigan Initiative Bond funds to fund their O&M obligations. However, the revenue from these bonds has essentially been exhausted. At the time of this research effort, Michigan reported that they had adequate funding to meet all State O&M obligations. But, they also reported that they did not have a long-term funding source identified to cover future costs beyond State fiscal year 2009. Michigan has begun to educate State legislative staff as a first step to requesting additional bond authority or other funding.

Agency budgets can be vulnerable to a variety of threats. Funding sources may have sunset dates and require reauthorization that may be difficult to achieve if the State economy is in a down cycle. Fee structures that previously generated sufficient funds may decline as the fee-payers restructure, consolidate, or leave the State. In Missouri, for example, this occurred as the HW Generator fee declined over a number of years when generators merged. A new fee bill had to be negotiated and passed through the legislature to avoid bankruptcy of the hazardous waste fund. The resultant fee structure proved to generate revenues less than had been projected and consequently, additional legislative action will

now be required. The economy is another potential threat to revenues, budgets and projections. Rising energy costs and inflation add to costs, reducing the purchasing power of available funds.

When States run out of money, they may attempt to reduce the cost of O&M by cutting the activities.

An examination of the responses provided by States to the question concerning how they would address budgetary shortfalls may have serious implications. Budget shortfalls may be met by finding new funding or prioritizing activities. However, convincing fee payers to increase their contributions is often not an attractive option and increasing taxes and fees often requires legislative or regulatory authorization. While this process may provide the funding to meet a shortfall, it may cost significant time and resources to mobilize support and educate the legislators, stakeholders and the public.

Prioritizing activities means that something is left unaddressed or delayed. Where O&M responsibilities reside in the organization may significantly determine how much of the States resources it can count on. If O&M responsibility is one of many programmatic responsibilities, competing with assessments, investigations, Phase 1 and 2 determinations, remediation activities, etc., it may fall out of the budget or receive short shrift. Cleanup programs have typically counted pre-remedial milestones, RODs, construction completions, and five-year reviews. O&M has no such metric. States will need to ensure that O&M and its other long-term stewardship responsibilities receive organizational support that reflects the importance of managing the human health and environmental risks. States may need to examine their organizational structure and make adjustments in order to secure the budget and priority that will be required to ensure that long-term stewardship commitments are effectively addressed.

States may not be fully assessing the cost of Long Term Stewardship.

One factor that exacerbates the problem of funding long-term stewardship costs is the inability to create costing models that are reliable and accurate. As sites move into O&M and predictive models are refined, the real costs will emerge. The level of confidence in current costing models is low and projections are subject to significant and radical adjustment as contributing factors change over time. Added to these shortcomings, the models used are based on site specific project costs alone. There are additional indirect costs that are not considered in these cost models. These indirect costs are significant and largely still speculative. They are the costs of creating and maintaining a long-term stewardship infrastructure to support all the sites that require stewardship from the range of programs listed above. This infrastructure will incur costs associated with information management, monitoring and enforcement, and support of local government partners. These costs will have to be borne almost exclusively by States and are essentially in perpetuity.

Risk-based cleanups continue to be protective as long as stewardship activities are effective. Some stakeholders looked at risk-based cleanups as selecting the cleanup remedy that carries the minimal cost. Stewardship was an implied cost that could be deferred. The truth is that placing an engineering or institutional control on a property is not long-term stewardship. Each State must establish and maintain a robust and comprehensive long-term stewardship system to ensure that these controls are effective. This system must be supported by appropriate laws and regulations. It must be adequately staffed and it must have adequate and reliable funding.

States know more about sites in O&M than any other subset of sites in the Superfund program because we have been working on them for years as they have come to the end of the process. The Superfund process uses a well-defined, structured methodology to establish future costs. In spite of these facts, States are not confident about our ability to accurately predict the total cost of O&M over time. It is essential that States be able to accurately predict the budgetary needs for sites currently in O&M, for those entering O&M in the future, and for all the other sites for which the State will bear the cost of long-term stewardship.

Appendix A - List of Sites Currently in State-Lead O&M

(*As reported by responding states*.)

State	Site Name
AR	Old Midland in Ola, Arkansas
CA	Mountain View Mobile Home Estates
CA	Selma Pressure Treating, RCRA Cap Soil Impoundment Cell.
CA	Johns Manville Asbestos Mill Site (Including City OU) RP funded/DTSC CERCLA Lead Agcy
CO	Clear Creek OU's 1,2,3
CO	Denver Radium OU 8
CO	Sand Creek
CO	Summitville OUs 1,4
CT	Raymark Industries OU1-State assumed O&M of this final remedy August 15, 1998.
CT	Raymark OU2 groundwater (vapor intrusion
IA	Des Moines TCE, OU#3 North Plume
IA	Mid-America Tanning
ID	Bunker Hill
IN	Douglas Road Landfill - Landfill Cap Operable Unit
IN	Lake Sandy Jo
LA	Bayou Bonfouca
LA	Delatte Metals
LA	Madisonville Creosote Works
MA	Baird & McGuire, Holbrook (groundwater treatment)
MA	Charles George Landfill, Tyngsborough (cap maintenance)
MA	Nyanza Chemical Waste Dump, Ashland (cap maintenance & vapor infiltration mitigation)
MD	Ordnance Products, North East, MD (anticipated to begin O&M in a few years)
MI	Charlevoix Municipal Well
MI	Duell & Gardner Landfill, Landfill Contents Operable Unit (Groundwater is in LTRA)
MI	Grand Traverse Overall Supply, Norris Elementary School Emergency Action
MI	Gratiot County Landfill

State	Site Name
MI	Spartan Chemical, SVE System (currently on temporary shut down)
MI	Torch Lake, Operable Unit 2, Lake Linden, Tamarack City and Hubbell portions of OU1.
MI	U.S. Aviex
MN	Arrowhead Refinery
MN	Lehillier Ground Water Site
MN	Long Prairie Ground Water Plume Site
MN	MacGillis and Gibbs
MN	Perham Arsenic Site
MN	Ritari Post and Pole
MO	Oronogo-Duenweg Mining Belt OU02 and OU03
MO	Times Beach (deleted NPL)
MS	None currently
NE	Cleburn Street OU 1, 3 and 4 O&M
NE	Cleburn Street OU 2 LTRA
NE	Hastings Second Street OU 20 LTRA
NE	Columbus 10th Street OU 2 LTRA
NE	Ogallala Groundwater Contamination OU 2 LTRA
NE	Omaha Lead Site OU 1 Capital Costs
NH	Gilson Road (Sylvester) NPL Site
NH	Keefe Environmental Services NPL Site
NH	O&G/GLCC NPL Site
NJ	None currently
OH	Lincoln Fields
OK	Fourth Street - ground water OU
OK	Oklahoma Refining Company -South refinery source
OK	Tar Creek - OU1
OK	Tenth Street Landfill
PA	Moyers Landfill
PA	Raymark OU 2
PA	Strasburg landfill
PA	Wade
PA	Lackawanna Refuse

State	Site Name
PA	Lehigh Electric
PA	Crossley Farms OU1
PA	Berkley Products
PA	East Mt. Zion
PA	Raymark OU 1 & 3
PA	Croydon TCE
PA	Berks Sand Pit
PA	Bruin Lagoon
RI	Rose Hill Landfill Superfund Site
SC	None currently
TN	We have not fully defined this yet.
TX	Bailey Waste Disposal
TX	Geneva Industries
TX	Bio-Ecology Systems
TX	Conroe Creosoting
TX	Crystal City Airport
TX	Highlands Acid Pit
TX	Odessa Chromium 1
TX	Triangle Chemical
TX	United Creosoting
UT	Portland Cement
UT	Sharon Steel OU1
UT	Jacobs Smelter OU1
UT	Mountain Fuel Operations Center (State is lead agency, but RP conducts O&M at their expense)
VA	None currently
WA	Time Oil (well 12-A), Tacoma, WA
WI	Better Brite Zinc and Chrome Shops
WI	City of Stoughton Municipal Landfill
WI	N W Mauthe
WI	Refuse Hideaway Landfill