

OVERSIGHT OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S SUPERFUND PROGRAM

HEARING

BEFORE THE

SUBCOMMITTEE ON SUPERFUND, WASTE
MANAGEMENT, AND REGULATORY OVERSIGHT
OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED FIFTEENTH CONGRESS

FIRST SESSION

AUGUST 1, 2017

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OVERSIGHT OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S SUPERFUND PRO- GRAM

TUESDAY, AUGUST 1, 2017

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON SUPERFUND, WASTE MANAGEMENT,
AND REGULATORY OVERSIGHT,
Washington, DC.

The Committee met, pursuant to notice, at 9:59 a.m. in room 406, Dirksen Senate Office Building, Hon. Mike Rounds (Chairman of the Subcommittee) presiding.

Present: Senators Rounds, Harris, Ernst, and Booker.

Also present: Senators Boozman, Carper, and Markey.

OPENING STATEMENT OF HON. MIKE ROUNDS, U.S. SENATOR FROM THE STATE OF SOUTH DAKOTA

Senator ROUNDS. Good morning. The Environment and Public Works Subcommittee on Superfund, Waste Management, and Regulatory Oversight is meeting today to conduct a hearing entitled "Oversight of the U.S. Environmental Protection Agency's Superfund Program."

Today we will hear testimony from witnesses with extensive involvement in cleaning up Superfund sites. Our witnesses will discuss their experiences in working with the EPA, State governments, and local communities to clean up and repurpose these sites, as well as offer suggestions on how cleanups can be completed quicker and more efficiently while best utilizing taxpayer dollars.

Since 1980 the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA, has been a cornerstone of our nation's hazardous waste management program. CERCLA, also known as Superfund, was enacted by Congress to give the Federal Government authority to clean up contaminated and hazardous waste sites, and respond to environmental emergencies, oil spills, and natural disasters.

The program created a trust fund that is dedicated to cleaning up abandoned waste sites and gives the Agency the authority to work with Potentially Responsible Parties to facilitate a site cleanup. It also allows for two types of cleanup actions: short-term removals in emergency instances that require prompt action and long-term remedial response actions that allow for the permanent reclamation and reuse of the site.

Superfund sites take many forms. They can be abandoned mine lands, manufacturing facilities, military installations, or shuttered chemical facilities. Common contaminants at these sites include lead, asbestos, and dioxin, all of which can pose a great danger to human health and can contaminate soil and groundwater. They are located in all of the 50 States and several U.S. territories.

These sites pose a risk to human health, the environment, and can contaminate the water supply and prevent valuable land from being used to benefit the community.

Created in 1983, the National Priorities List, or NPL, consists of 1,336 sites across the country that are a national priority for cleanups. These sites represent those that pose a great risk to human health and the environment. Now, in addition to these 1,336 sites, there are 53 sites proposed for listing on the NPL. Three hundred ninety-three sites have been successfully cleaned up and deleted from the list.

While the Superfund program has been vital to reclaiming previously contaminated sites, cleanups are often delayed due to a complex bureaucracy and a delayed decisionmaking that can hinder the cleanup process. These delays result in contaminated sites languishing in communities—at times for decades—while stakeholders and other parties involved in the cleanup determine the best path forward for the site.

These cleanups should not be delayed or halted because of bureaucratic red tape and lingering disagreements among the parties. When these delays occur, it is the citizens and the local communities that pay the price.

When contaminated sites are allowed to languish and no progress is made toward a cleanup, the site continues to pose a potential risk to human health and valuable property that could benefit the community remains unused.

The EPA, under the leadership of Administrator Pruitt, has made cleaning up Superfund sites a priority for the Agency. Earlier this year, Administrator Pruitt established a Superfund task force that was tasked with providing recommendations on how the Superfund Program can be improved.

Last week the task force released their report, which provided 42 recommendations that can commence within 1 year and are currently within the EPA's existing statutory authority. These recommendations aim to expedite cleanups and remediation, reinvigorate Responsible Party cleanups, encourage private investment, promote redevelopment and community revitalization, and better engage partners and stakeholders.

On the same day the report was released, Administrator Pruitt issued a memorandum directing the EPA to immediately begin implementing 11 of these recommendations. I am encouraged that Administrator Pruitt has made cleaning up these sites a priority, and I am hopeful that the recommendations provided by the task force will result in programmatic improvements that allow for quicker and more efficient cleanups.

The EPA should strive to work in a transparent, cooperative fashion with State and local governments and stakeholders to make certain these sites are effectively cleaned up and can be safe-

ly redeveloped for the benefit of the communities in which they are located.

I would like to thank our witnesses for being here today, and I look forward to hearing their testimony, as well.

Now I would like to recognize Senator Harris for her opening statement.

Senator Harris.

[The prepared statement of Senator Rounds follows:]

STATEMENT OF HON. MIKE ROUNDS,
U.S. SENATOR FROM THE STATE OF SOUTH DAKOTA

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It also allows for two types of cleanup actions:

- Short-term removals in emergency instances that require prompt action, and
- Long-term remedial response actions that allow for the permanent reclamation and reuse of the site.

Superfund sites take many forms. They can be abandoned mine lands, manufacturing facilities, military installations, or shuttered chemical facilities.

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These sites represent those that pose a great risk to human health and the environment.

In addition to these 1,336 sites, there are 53 sites proposed for listing on the NPL. 393 sites have been successfully cleaned up and deleted from the list.

While the Superfund program has been vital to reclaiming previously contaminated sites, cleanups are often delayed due to a complex bureaucracy and delayed decisionmaking that can hinder the cleanup process.

These delays result in contaminated sites⁷ languishing in communities—at times for decades—while stakeholders and other parties involved in the cleanup determine the best path forward for the site.

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On the same day the report was released, Administrator Pruitt issued a memorandum directing the EPA to immediately begin implementing 11 of these recommendations.

I am encouraged that Administrator Pruitt has made cleaning up these sites a priority and am hopeful that the recommendations provided by the Task Force will result in programmatic improvements that allow for quicker and more efficient cleanups.

The EPA should strive to work in a transparent, cooperative fashion with State and local governments and stakeholders to make certain these sites are effectively cleaned up and can be safely redeveloped for the benefit of the communities in which they are located.

I'd like to thank our witnesses for being here today, and I look forward to hearing your testimony.

OPENING STATEMENT OF HON. KAMALA HARRIS, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator HARRIS. Thank you, Mr. Chairman.

Mr. Chairman, I am really pleased to be with you today. This is my first time serving as a Ranking Member for a committee hearing in the U.S. Senate, and this hearing certainly speaks to a topic that is part of a core mission of the U.S. Government, which is to keep the American people safe.

CERCLA statute, more commonly known as Superfund, was created to help make sure that anyone who puts public health at risk by releasing hazardous waste is held accountable for cleaning up the damage they created. This is a matter of basic justice. Communities and families should not have to pay the price for someone else's pollution. This is a matter of basic economic justice.

We should clean up our communities so that jobs can be created and properties can be used for good. This is a matter of basic opportunity, the notion that all Americans should have a chance at a healthy and productive life, regardless of where they happen to call home.

That is why I am so glad to be holding this hearing with you, Mr. Chairman. We share a common goal of improving the cleanup process to better protect public health by restoring contaminated sites, without cutting corners. This is something we have a real opportunity to do, and I look forward to working with you and the members of our Committee to help make it happen, and I am heartened to see strong bipartisan interest in figuring out ways to make Superfund work better.

Our work is guided by two key principles that Superfund laid out nearly four decades ago to guide its implementation: first, that toxic waste contamination threatens public health and requires a comprehensive cleanup response; second, that polluters should be held accountable and pay for the damage they cause.

While Superfund has successfully cleaned up thousands of the most heavily contaminated sites across the country, there are still 53 million Americans who live within 3 miles of the nation's more than 1,300 Superfund sites. Poor communities and communities of color are disproportionately likely to live near these sites. This is

true from the mountains of Appalachia to the cities and streets of Los Angeles.

The Americans who are most likely to be exposed to toxic waste are the same Americans who have the fewest resources to deal with the consequences. I think we can all agree that that is wrong and that it is something we need to do more to address.

However, I am concerned by some of the signs I have seen from the EPA Administrator about the direction the EPA will take on Superfund. On the one hand, I am encouraged that he has said that he considers cleaning up contaminated lands to be a core responsibility of the EPA and that, last week, a Superfund task force was created, which he created, and offered 42 recommendations on ways to expedite cleanups. Truly am heartened by this action. And some of these recommendations I believe may be genuine efforts to help the program operate more efficiently and effectively, and produce better outcomes for the people we all represent.

On the other hand, other recommendations give me pause, especially in light of the Administrator's skepticism of science and prioritization of corporate interest over public health. Examples of this include weakening requirements that polluters show they can pay for cleanups they agree to or reducing Federal oversight of cleanups. When you add on top of that the 30 percent proposed cut for the upcoming 2018 fiscal year to the Superfund account at EPA, and the 24 percent proposed cut to the office that enforces the law, the rhetoric and the reality may not add up.

We should reject efforts to expedite cleanups if it means cutting corners on health and environmental standards, if it means letting polluters off the hook for the harm they have done, or if it means shutting out input from members of the public that are bearing the brunt of the harm.

So, Mr. Chairman, I look forward to holding a hearing with EPA officials in the near future, and I would like to hear how the Agency plans to accelerate the pace of cleanups while significantly cutting the sources of funding to do that cleanup. And I look forward to working with you to find ways to make sure this program is working for all Americans, regardless of where they live, who they are, or who polluted their community.

Again, thank you, Mr. Chairman, and I look forward to our hearing today.

Senator ROUNDS. Thank you, Senator Harris.

Now I would like to introduce our witnesses today. To begin with, Steven C. Nadeau. He is a partner with Honigman Miller Schwartz and Cohn LLP; Jeffery A. Steers, Director of Regional Operations, Virginia Department of Environmental Quality; and Katherine N. Probst, Independent Consultant, Kate Probst Consulting.

Welcome to all of you. Your full statements will be made a part of our record today. I would ask that we begin with opening statements, and if you could limit them to about 5 minutes, that would be appreciated.

We will turn to our first witness today, Steven Nadeau, for a 5-minute introduction.

Mr. Nadeau, please proceed.

STATEMENT OF STEVEN C. NADEAU, PARTNER, ENVIRONMENTAL PRACTICE GROUP, HONIGMAN MILLER SCHWARTZ AND COHN LLP

Mr. NADEAU. Thank you, Chairman Rounds, Ranking Member Harris.

Good morning, Chairman Rounds, Ranking Member Harris, and members of the Subcommittee. Thank you for holding this important oversight hearing on implementation of CERCLA. My name is Steve Nadeau, and I am an environmental attorney with more than three decades of experience working with industry and EPA on developing remedies for complex Superfund sites across the country. I have also served as the Coordinating Director of the Sediment Management Workgroup since 1998.

I am delighted to be here today to share my experience with the Superfund program. However, before I do, I should note that these views are my own and do not represent the views of any particular client or organization.

As you know, Congress enacted CERCLA to ensure that the nation's most contaminated sites would be cleaned up. For more than 30 years EPA successfully identified and remediated hundreds of Superfund sites, typically old abandoned landfills or industrial properties. However, the typical Superfund site profile has changed to complex mining and river sediment sites, often referred to as mega-sites. These mega-sites are far more complicated, expensive, and time consuming than traditional Superfund sites, often exceeding 10 to 15 years of study with pre-remedy selection costs ranging from \$100 million to \$150 million.

Contaminated sediment sites are the results of hundreds of years of urban industrial activity from hundreds of sources, presenting unique challenges to the Superfund program. These large scale cleanups often cost more than \$1 billion and drag on for decades.

That is why I am pleased to see a diligent effort by the new Administration to address concerns with the entirety of the Superfund process, from initial assessment to remedy selection. This includes the Administrator's change to the Superfund Delegation Authority on May 9th, requiring all CERCLA remedial decisions expected to cost more than \$50 million to be approved by the EPA Administrator, rather than being decided exclusively by the regions.

Subsequently, the Administrator created a task force on May 22nd to recommend improvements to the Superfund program resulting in the release last Tuesday of 42 recommendations designed to achieve a number of worthy objectives to expedite cleanup and remediation, such as promoting the use of a phased approach at large and complex sites, further incorporating technical and scientifically sound review, engaging partners and stakeholders, prioritizing redevelopment, and encouraging public-private partnerships.

My oral and written testimony is consistent with and builds upon these valuable regulatory improvements, but also identifies additional issues that need to be addressed.

There are several steps in the Superfund process, and each one can cause undue delay in putting sites back into productive use if not conducted according to EPA policy.

There are two steps that often cause the most delay and expense. The first is the collection of excessive amounts of data, rather than focusing on the data needed for decisionmaking. This is often driven by a desire to eliminate all uncertainty, which is an unachievable goal. A second example is the protracted debate that often occurs over the appropriate assumptions for determining the assessment of risk.

In addition, some EPA regions impose conservative assumptions at the project level that go well beyond the scope of what is required by applicable Superfund guidance on virtually every aspect of the site. These assumptions unfortunately result in an artificially inflated risk that significantly skews the information the Administrator will need to decide whether to approve a proposed remedy.

Another issue I have observed is that some EPA regions have ignored the sediment guidance risk reduction focus, and instead favor the far greater dredging component that is technically necessary, particularly at the larger sediment sites.

Historically, some EPA regions have also set unrealistically low background concentration levels for the sediment, which result in cleanup goals that are unattainable because the sediments are likely to become re-contaminated to the levels above the cleanup goals due to the ambient conditions.

In 2005 EPA issued a policy guidance document for contaminated sediment sites, commonly known as the Contaminated Sediment Guidance. This represents a comprehensive, technically sound policy, a roadmap for addressing complexities associated with contaminated sediment sites. However, the disregard of the Sediment Guidance and the failure to follow the national contingency plan requirements, particularly at the regional level, are severely limiting the effectiveness of the Superfund program, delaying remediation of impacted sites, and stymieing redevelopment along our nation's waterways.

So, in terms of solutions, I respectfully request that you consider the following recommendations to improve and streamline the site investigation and remedy selection decisions at contaminated sediment sites.

No. 1, EPA headquarters should require the regions to strictly adhere to CERCLA, the NCP, and the Sediment Guidance at all phases of the site investigation risk assessment, remedy evaluation, and remedy selection stages at all contaminated sediment sites.

No. 2, EPA should restore its Contaminated Sediment Technical Advisory Group independent review of the region's recommended remedy prior to the National Remedy Review Board review. In addition, CSTAG and NRRB reviews of the region's proposed remedy should be required to include a specific recommendation of the appropriate remedy for the site. This recommendation would be provided to the Administrator for review of sediment remedies expected to cost more than \$50 million.

This would allow for the Agency's most experienced staff with contaminated sites to have direct input and recommend a remedy to the Administrator, which we feel is important. Moreover, EPA's regions should be required to consult with CSTAG on certain steps

in the Superfund process, including the scope of the remedial investigation, where things often get bogged down, the assumptions for developing the risk assessment, and a review of the remedial options during the all important feasibility study phase.

No. 3, EPA regions should be required to apply the well established Superfund process of adaptive management at the sediment mega-sites, rather than waiting for years, and sometimes decades, before beginning construction. This would also solve one of the most problematic approaches of Superfund, which is attempting to address virtually all of the site issues, large and small, up front, in one massive ultraconservative remedy. In contrast, the adaptive management approach will accelerate cleanups while achieving a scientifically supportable remedy.

No. 4, every sediment site ROD should comply with the cost effectiveness requirement of the NCP by including a detailed and transparent analysis demonstrating the proportionality between the anticipated risk reduction of each remedial alternative and the incremental cost of each such alternative. This way you can balance the benefits and the costs of each remedy under consideration.

No. 5, EPA should formally incorporate a sustainability analysis in its Superfund remedy selection evaluation. Sustainability is consistent with the Superfund NCP criteria and should be incorporated into the CERCLA remedy evaluation.

No. 7, existing authority should be used to develop an approach that addresses contaminated sediment sites through collaborative public-private partnerships. This would build upon the highly successful Great Lakes Legacy Act model where sites after sites have been addressed in a very timely and very efficient manner.

So, in conclusion, implementing these recommendations will protect human health and the environment, will accelerate sediment cleanups and redevelopment of adjacent sites, and provide for efficient use of our Federal resources by ensuring cost effectiveness, saving the EPA and taxpayers money.

I want to thank the Subcommittee for holding this important hearing, and I look forward to answering your questions.

[The prepared statement of Mr. Nadeau follows:]

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Contaminated Sediment Expertise

Honigman Miller Schwartz and Cohn LLP (HMSC) is a Michigan-based law firm with a full service Environmental Law Department. One of the many areas of HMSC's environmental expertise includes assisting clients on the challenging issues relating to the evaluation and remediation of contaminated sediments, as well as Natural Resource Damages issues. Steven C. Nadeau, the chair of the HMSC Environmental Law Department, has a substantial national sediment practice. Mr. Nadeau has been working on sediment issues extensively since 1992.

Mr. Nadeau was instrumental in founding the Sediment Management Work Group (SMWG) in 1998 and has served as its Coordinating Director since that time. The SMWG is an *ad hoc* organization of entities with potential responsibility for contaminated sediments. The SMWG is dedicated to the advancement of risk-based, scientifically sound approaches for managing contaminated sediments and has provided a strong leadership role in influencing the emerging national and international policy on contaminated sediments. Through his position as Coordinating Director of the SMWG, Mr. Nadeau has gained considerable insight into state-of-the-art contaminated sediment management practices, knowledge of the leading experts in the area, as well as a working relationship with many of the key regulators involved with the issue of contaminated sediment.

Mr. Nadeau has been involved in numerous meetings with U.S. EPA senior management at Headquarters over the past decade, discussing contaminated sediment policy issues. He also has co-chaired and addressed numerous national sediment symposiums, sediment training courses, state environmental agencies, and industry groups on the topic of a risk-based decision making framework for managing contaminated sediment and numerous other sediment topics.

Mr. Nadeau has developed a vibrant national practice assisting individual or multiple PRPs at complex contaminated sediment sites around the country, including Michigan, Illinois, Indiana, Minnesota, Ohio, Wisconsin, New Jersey, New York and the Pacific Northwest. In addition to his role as the primary advisor at various sediment sites, Mr. Nadeau also is frequently called upon to provide ancillary support to supplement existing site teams in a number of areas including peer reviewing key documents (*e.g.*, work plans, RI/FS reports, feasibility studies and remedy selection white papers) to optimize technical advocacy and to ensure the benefits of the risk-based approach reflected in current national contaminated sediment

policy, such as the EPA Sediment Guidance are fully optimized. Mr. Nadeau has developed a strong working relationship with U.S. EPA Headquarters' senior management in the OSRTI group. Based on his involvement on the national sediment scene for over 25 years, Mr. Nadeau also is often called upon to serve in a cameo role to provide resources, ideas and strategy on complex sediment sites.

In addition, Mr. Nadeau is very engaged with the federal contaminated sediment program, including U.S. EPA's Contaminated Sediment Technical Advisory Group (CSTAG) and is able to advise and assist companies interested in optimizing the effective utilization of this important review opportunity at complex sediment sites. Likewise, Mr. Nadeau can provide assistance in strategic and effective use of the Superfund Sediment Resources Center (SSRC).

In 2007, Mr. Nadeau served as a peer reviewer of the National Research Council's Report, *Dredging Effectiveness at Superfund Megasites: Assessing the Effectiveness* (2007).

Mr. Nadeau is also an expert on the Great Lakes Legacy Act (GLLA) and has assisted companies in preparing, submitting and securing approval of GLLA funding for remedial activities at contaminated sediment sites in the Great Lakes.

In addition, Mr. Nadeau also handles natural resource issues. Many sediment sites also have incorporated a resource restoration component on top of the remediation itself, particularly in Great Lakes Legacy Act projects. Mr. Nadeau has assisted many clients in addressing these natural resource issues.

Recently, Mr. Nadeau was retained to jump start and facilitate settlement of a long-pending NRD matter in Stryker Bay in Duluth, Minnesota. Mr. Nadeau utilized his long standing relationship with one of the Minnesota DNR team and his consensus building approach to facilitate progress on resolving the Federal and State NRD claims.

Mr. Nadeau is a 1977 *cum laude* graduate of Boston College Law School and is a 1974 *magna cum laude* graduate of Boston College. Mr. Nadeau has been recognized by *Michigan Super Lawyers* as one of its "Super Lawyers" and was recently named "Detroit's Best 2010 Environmental Lawyer" and Michigan's Outstanding Environmental Professional for 2011.

HONIGMAN

Testimony of Steven C. Nadeau
Partner, Environmental Practice Group
Honigman Miller Schwartz and Cohn LLP
Hearing on “Oversight of CERCLA”
Before the United States Senate’s Environment and Public Works Committee
Superfund Subcommittee
August 1, 2017

Overview:

- For more than 30 years, the United States Environmental Protection Agency (EPA), has successfully identified and treated hundreds of Superfund sites, typically old abandoned landfills or industrial properties. However, the “typical” Superfund site profile has changed from abandoned landfills and industrial properties to complex mining and river sediment sites, often referred to as mega-sites. These mega-sites are far more complicated, expensive, and time consuming than traditional Superfund sites, reflecting hundreds of years of industrial activity and the activities of hundreds or even thousands of public and private parties.
- There are six main steps in the Superfund process—and each one can cause undue delay to putting sites back into productive use if not conducted according to EPA policy. These steps include (in order): (1) investigating the site conditions; (2) assessing the site risk; (3) determining the site background conditions by taking into account contributions from on-going sources; (4) evaluation and selection of the remedial options; (5) remedial design; and (6) remedy implementation. For the assessment phase, EPA must focus on collecting only the data needed for decision-making and risk assessment. It is essential that the agency assess realistic risk and receptors to more accurately evaluate potential human health and ecological site risks.

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- It is critically important that EPA headquarters provide earlier and more consistent support throughout the entirety of the Superfund process. At sites where progress is stagnant, several characteristics exist: (1) an unnecessary amount of time and money is wasted on extensive data, of which only a small fraction is used. Instead, EPA should use a step-by-step approach, known as adaptive management; (2) EPA Regions set unrealistically low background concentration levels, which are used to set cleanup goals that are unattainable. Furthermore, cleanup goals that are below background levels make it very difficult to accurately evaluate recontamination levels mid-cleanup or post-cleanup; (3) Regions impose conservative assumptions at the project level that go beyond what is required by applicable law, and EPA's Superfund guidance documents, on virtually every aspect of the site evaluation and risk assessment. These assumptions artificially inflate risk, and significantly skew the information needed by the Administrator in order to make an informed judgment on the appropriate remedy. As a result, it is nearly impossible for the Administrator to effectively select a remedy consistent with EPA's own policies. This pattern of conservatism, when coupled by uncertainty and gridlock, often wastes 10 to 15 years on site investigation and remedy evaluation, costing between \$100 and \$150 million.
- To assist EPA Regions and Project Managers in making scientifically sound and nationally consistent risk management decisions at contaminated sediment sites, EPA issued two critical policy guidance documents: Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites (OSWER Directive 9285.6-08, 2002) and the comprehensive (170 pages) Contaminated Sediment Remediation Guidance for Hazardous Waste Site, (OSWER 9355.0-85, 2005) (EPA Sediment Guidance or Sediment

Guidance). In the face of growing concern that EPA was not applying these policies consistently or effectively, the Agency formally reaffirmed these policies on January 9, 2017, in memorandum titled "Remediating Contaminated Sediment Sites -- Clarification of Several Key Remedial Investigation/Feasibility Study and Risk Management Recommendations, and Updated Contaminated Sediment technical Advisory Group Operating Procedures, (OLEM Directive 9200.1-130).

- The substance of the Sediment Guidance presents a comprehensive, technically sound policy roadmap for addressing complexities associated with contaminated sediment sites. However, despite this sound national policy, some of the EPA's Regional offices have disregarded the Superfund National Contingency Plan (NCP) regulations and the Sediment Guidance, resulting in inappropriate remedy decisions and significant delays in remediation of impacted sites and the redevelopment of our nation's waterways. The remediation of these waterways is critical to job growth and economic revitalization of these areas.
- Administrator Pruitt's Task Force's 42 recommendations to improve the Superfund program, which were released last Tuesday, as well as the recent change in Delegation of Authority to require the Administrator's approval of all remedies at Superfund sites expected to cost more than \$50 million, are important steps in addressing several of the issues currently plaguing the contaminated sediment site cleanups.
- The Task Force's 42 recommendations include many valuable improvements to the administration of the Superfund program. I am especially encouraged that the Task Force's recommendations recognize the value of early actions to address complex sites,

including sediment sites, and the use of adaptive management to refine the remedial approach as progress is made toward cleanup. The Task Force's report also includes sound recommendations regarding the roles of the National Remedy Review Board (NRRB) and the Contaminated Sediment Technical Advisory Group (CSTAG) and EPA Headquarters review of remedy decisions involving costs over \$50 million. The Task Force's report is an important contribution to the discussion.

- Although the Delegation of Authority and the Task Force's recommendations are important improvements, I believe there are additional issues that need to be addressed. Appropriate application of NCP provisions, the EPA's Contaminated Sediment Guidance, and the recommendations in my testimony would produce faster, fairer, and more efficient remedies; and would lead to significant acceleration of the redevelopment of Superfund sites located along our nation's waterways.

Chairman Rounds, Ranking Member Harris and Members of the Subcommittee:

Thank you for holding this important oversight hearing on the Comprehensive Environmental Response, Compensation and Liability Act of 1980, otherwise known as CERCLA, or Superfund. My name is Steven Nadeau, and I am an environmental law attorney with more than three decades of experience representing potentially responsible parties (PRPs) at complex Superfund sites across the country, including Michigan, Illinois, Indiana, Ohio, New York, New Jersey and the Pacific Northwest. I also serve as the Coordinating Director for the Sediment Management Work Group (SMWG), which is an ad hoc group of Superfund technical practitioners dedicated to ensuring remedial actions at Superfund sites are based on sound science and risk-based solutions.

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I am delighted to be here today to share my experience with the Superfund program.

However, before I do, I must say that these views are my own and do not represent the views of any particular client or member of SMWG.

I appreciate the oversight that this subcommittee is providing on Superfund reforms and in particular, as it affects contaminated sediment sites. Since January, I have observed a diligent effort by the new Administration to address concerns with the entirety of the Superfund process—from initial assessment to remedy selection. This includes the Administrator's change to the Superfund Delegation Authority (No. 14-2) on May 9, 2017, requiring all CERCLA remedial decisions expected to result in costs that exceed \$50 million to be approved by the EPA Administrator, rather than being decided exclusively by the Regions. Subsequently, the Administrator created a Task Force on May 22, 2017, to recommend improvements to the Superfund program. Last Tuesday, the Task Force released 42 recommendations, which are designed to achieve a number of worthy objectives, including (among others):

- Implementing measures to expedite cleanup and remediation, including by promoting the application of adaptive management at complex sites and through the use of early/interim RODs (Records of Decision) and removal actions and the use of early response action while comprehensive negotiations are underway for the entire cleanup.
- Clarifying policies and guidance to expedite remediation, including expanding the role of the National Remedy Review Board (NRRB) and the Contaminated Sediments Technical Advisory Group (CSTAG).
- Maximizing the use of Special Accounts to facilitate site cleanup and/or redevelopment.
- Promoting sustainable redevelopment/reuse of sites and community revitalization.

- Engaging with partners and stakeholders to improve decision-making.

The Task Force's work is a key step toward ensuring that testing and evaluation are not overly conservative, which artificially creates risk and adds expense and time to the process, and requiring accountability and compliance with CERCLA, the NCP, and the EPA Contaminated Sediment Guidance (2005) at the Regional level for Superfund sites expected to cost over \$50 Million.

Unfortunately, significant concerns remain about two major aspects of contaminated sediment mega-sites: (1) the change in delegation only affects future decisions and, therefore, does not correct several contaminated sediment remedy decisions with serious inconsistencies with the NCP and the Sediment Guidance that were issued by EPA Regions during the past two years, and (2) the pattern of lengthy (10-15 years) and costly (\$150-\$100 million) pre-remedy selection phases also needs to be addressed.

In addition, changes in the review process for contaminated sediment sites by CSTAG and the NRRB, are necessary to ensure that the Administrator has a strong foundation of information on which to efficiently and effectively approve remedy selection decisions. These include requiring CSTAG and the NRRB to specifically recommend the appropriate remedy for the site. CSTAG's recommendation should be highly valued because it consists of the leading sediment experts at EPA Headquarters and the Regions.

Today, I would like to discuss with you some of the critical improvements necessary to restore the basis of the investigation and remediation of contaminated sediment sites on sound science, in an expedited and cost-effective manner. Doing so will achieve the societal goal of accelerating the redevelopment of the communities bordering our nation's waterways.

Congress enacted CERCLA in response to a growing desire for the federal government to ensure the cleanup of the nation's most contaminated sites and to protect the public from potential harm. CERCLA authorizes the cleanup and enforcement actions of federal agencies, such as the EPA, to respond to actual or threatened releases of hazardous substances into the environment. CERCLA establishes a broad liability scheme that holds past and current owners and operators of facilities, from which a release occurs, financially responsible for cleanup costs, natural resource damages, and the cost of federal public health studies. Accordingly, the EPA identifies PRPs for hazardous substances releases to the environment and then either requires them to clean up the sites or undertakes the cleanup on its own using the Superfund trust fund and/or costs recovered from potentially responsible parties. (Significantly, the single most common PRP at CERCLA sites is the federal government itself, so any program to render CERCLA more cost-effective yields a net saving to the taxpayer.) The liability of these PRPs has been interpreted by the courts to be strict, joint and several, and retroactive.

I. The New Reality of the Superfund Program

For more than 30 years, the EPA has successfully identified and remediated hundreds of Superfund sites, typically old abandoned landfills or industrial properties. However, the "traditional" Superfund site profile has changed from abandoned landfills and industrial properties to complex mining and river sediment sites, often referred to as mega-sites. These mega-sites are far more complicated, expensive, and time consuming than traditional Superfund sites. These mega-sites typically reflect hundreds of years of urban and industrial activity, and at contaminated sediment sites, sources often include hundreds and even thousands of public and private entities. As such, these sites present the challenge of addressing the environmental

impacts of ongoing urban and industrial use, rather than cleaning up discreet releases from individual entities.

For example, large-scale, contaminated sediment remediation projects on urban rivers, like the Willamette River in Portland, Oregon, can often include dozens of PRPs, including public entities, with a cost over \$1 billion, that will drag on for decades. Contaminated sediment is a widespread and costly problem in the United States. It is often tied to large scale urban development generating municipal and industrial waste by untold number of parties, over a hundred years or more. Its wide distribution results from the propensity of many contaminants that migrate or are discharged to surface waters to accumulate in sediment or in suspended solids that later settle. Furthermore, specific contaminants can persist in sediment over long periods if they do not degrade (i.e. metals) or if they degrade very slowly. The map below shows EPA-identified watersheds as of 2004 containing areas of concern for sediment contamination.

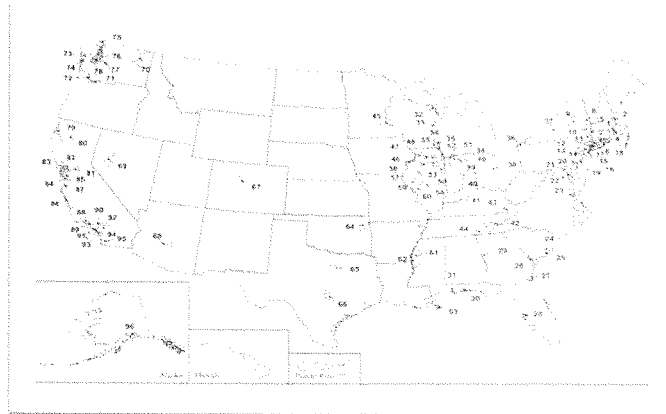


Figure 1: Source: Environmental Protection Agency - National Sediment Quality Survey, 2nd Edition (2004)

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To put costs in perspective, in 1998, in a limited survey of the problem, EPA estimated that 1.2 billion cubic yards of sediment are contaminated nationwide. Assuming dredging is required, the total cost, using a conservative \$250 per yard for dredging, would be a staggering \$300 billion. And that is an underestimate because scores of additional contaminated sediment sites have since been identified.

From a regulatory standpoint, contaminated sediment sites are challenging to manage. There is a limited range of remedial techniques that one can employ for managing contaminated sediments, including dredging; application of in-situ amendments to bind up contaminants; capping or covering contaminated sediments with clean material; and relying on natural processes to reduce risk, while monitoring the site to ensure that contaminant exposures are decreasing or stable. Each approach differs in complexity and cost. Dredging typically is the most complex and expensive, and monitored natural recovery is the least intrusive and least expensive. In addition, each remedial action has certain trade-offs between the short-term and long-term risks that are created during implementation and the anticipated risk reduction from the remedy.

To assist EPA Regions and Project Managers in making scientifically sound and nationally consistent risk management decisions, EPA issued two critical policy guidance documents: Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites (OSWER Directive 9285.6-08, 2002) and the comprehensive (170 pages) Contaminated Sediment Remediation Guidance for Hazardous Waste Site, (OSWER 9355.0-85, 2005) (EPA Sediment Remediation Guidance or Sediment Guidance). The EPA Sediment Guidance was meticulously developed by EPA over five years and was the subject of internal review, comments from EPA Regions, and extensive public comments.

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The Sediment Guidance presents a comprehensive, technically sound policy roadmap for addressing complexities associated with contaminated sediment sites. In particular, the Sediment Guidance called for a phased iterative approach to addressing complex sediment sites, known as adaptive management. For sediment sites, as an example, most critical areas of a large site would be addressed first, and the remainder of the site would be evaluated for recovery before additional remediation is implemented. This approach has been proven to be successful, but is not applied consistently by the Regions.

I applaud the new EPA Administrator's recent change to the Superfund remedy selection delegation that requires all Superfund remedy selection decisions expected to cost over \$50 million to be reviewed and approved by the EPA Administrator. This should go a long way towards ensuring that EPA's sound national sediment policy is followed. However, as I describe below, some of the EPA Regions failure to follow the Sediment Guidance in the recent past has severely limited the effectiveness of the Superfund Program at sediment sites. In fact, the failure to follow the NCP and the Sediment Guidance often has long lasting impacts on local communities and their citizens. For example, risks to human health and the environment posed by contaminated sediments are ongoing during delays of ten to twenty years or more in order to complete studies deemed necessary due to an aversion of decision-making in the face of some uncertainty. Similar lengthy delays often occur beyond the study phase if large scale dredging remedies are implemented over a decade or more. Lengthy dredging remedies often result in adverse impacts to biota in the waterway, to transportation and other infrastructure in urban areas, and to disruption of commercial and recreational use of the waterway for many years, which prevents redevelopment.

II. Typical Issues and Challenges at Contaminated Sediment Sites

Despite the existence of a sound national contaminated sediment policy (as embodied in the EPA Sediment Guidance), the EPA Superfund program has not functioned properly at sediment mega-sites for a number of years. For example, the Sediment Guidance and the remedy selection criteria within the NCP regulation have been disregarded by the EPA Regions at many sediment sites, particularly where it is needed the most—at mega sediment sites (with projected costs greater than \$50 million, with several projected to exceed \$1 billion dollars)¹. This disregard of NCP regulations and the Sediment Guidance is significantly delaying the remediation of impacted sites and the redevelopment of our nation's waterways.

I support EPA Administrator Pruitt's efforts to prioritize and enhance the effectiveness and efficiency of the Superfund program. Enhancing the process to remediate sediment sites can result in earlier risk reduction and more efficiently put these water bodies into beneficial use generating billions of dollars in economic and social benefits.² Reaching sensible risk-based remedy decisions that allow the cleanup to be completed sooner, rather than many years in the future, unlocks vast opportunities for human health protection, greater public use, and promotion of urban redevelopment.

¹ The magnitude of these sediment sites is extraordinary: Lower Willamette River, Portland OR –the January 2017 Record of Decision estimated remedy costs to be \$1.7 billion; Lower Passaic River, NJ - \$1.38 billion for the lower eight miles of the river; Lower Duwamish, Seattle WA -- \$395 million; Gowanus Canal, NY -- \$560 million; and the Fox River, WI –originally was estimated to cost \$390 million, but costs now are projected to exceed \$1 billion

² <https://www.epa.gov/superfund-redevelopment-initiative/redevelopment-economics-superfund-sites>

1. Adherence By All EPA Regions to the National Sediment Policy is Critical to the Effectiveness and Success of the Superfund Program.

The lack of accountability of the EPA Regions when they disregard the provisions of the NCP or the Sediment Guidance has led to long delays in addressing contaminated sediment sites and remedies that are unachievable, impractical and excessive in scope and cost. In contrast, realistic risk-based remedies will drive efficient and protective results without excessive cost and delays. EPA's Sediment Guidance provides a comprehensive foundation for decision-making at contaminated sediment sites that is based on risk management principles. Although the Sediment Guidance was adopted after an extensive internal and external review process, some recent EPA Region decisions involving contaminated sediment sites are inconsistent with the Sediment Guidance, particularly at sediment mega-sites. The following recommendations are designed to correct many of these inconsistencies between the applicable NCP and Sediment Guidance provisions and the remedies being selected. Renewed focus on adherence to the NCP and Sediment Guidance in decision-making will further the objectives set forth in the Administrator's May 22, 2017 Superfund Task Force memorandum by reducing the amount of time before a site can be determined ready for reuse, realigning the incentives of all parties to foster faster cleanups, supporting the use of risk-management principles in remedy selection at contaminated sediment sites and promoting consistency in remedy selection.

These difficult and unpredictable factors have led to numerous issues and challenges at contaminated sediment sites, many of which are described below.

- Example: Lower Passaic River (NJ) – The 2016 Record of Decision (ROD) for the river's lower eight miles included additional dredging to accommodate navigational

needs. Navigational dredging is beyond the scope of CERCLA. CERCLA is a cleanup statute. The navigational dredge is estimated to be 1/3 of the cost of the ROD for the Passaic's lower eight mile

2. Sources are Inadequately Characterized and Source Control is Incomplete, Especially at Large Urban Rivers.

At some sediment sites, EPA has ignored the Sediment Guidance and selected remedies without adopting adequate measures to reasonably control continuing contamination sources before implementing those remedies. The failure to adequately characterize and control upstream and adjacent sources can result in ineffective remedies that are almost certain to be re-contaminated, often shortly after remedy completion, especially in large urban rivers.

- Example: Gowanus Canal (NY) – The ROD only addresses a handful of the hundreds of municipal storm water and industrial outfalls as well as contaminated surface water runoff and upland contaminated soil sources that contribute hundreds of millions of gallons of contaminated water to the canal. This leaves the waterway completely vulnerable to recontamination and failure after completion of the remedy at a cost of more than \$550 million.

3. Lengthy and Costly Studies, Spurred by Ultra-Conservatism and the Fear of Proceeding in the Face of Uncertainty, Despite the Availability of Sufficient Information to Make Sound Decisions.

The length of the RI/FS phase at large contaminated sediment sites is running ten to twenty years with investigation and administrative costs running over \$100 - 150 million while little to no risks are being addressed. Such delays are spurred on by regulatory conservatism and an emphasis on dredging, even where it is not cost-effective or necessary based on the best available sciences. As a result, appropriate risk management is delayed, community-based redevelopment of waterfronts is impaired, and resources that could be used to implement a cleanup are instead spent on unnecessary and unproductive studies.

- Example: Willamette River (OR) RI/FS – 15 years duration and a cost of over \$100 million for the investigation phase.

4. EPA's Reliance at the Regional Level on "Mass Removal"—Disregarding the Sediment Guidance's Strong Emphasis on Risk Reduction.

EPA's unrealistic risk scenarios and failure to apply the sediment guidance have led to overly conservative remedies that focus on "mass removal," rather than reducing risks, which often results in significant release of contaminants from the sediment into the water. Sediment sites differ significantly from traditional upland CERCLA sites in that more intrusive remedies (i.e., dredging) can potentially increase the risk of harm to human health and the environment. Despite the use of Best Management Practices, resuspension and release of contaminants during dredging is inevitable and unavoidable. This can cause short term and long term adverse impacts to the waterbody and fish, such as elevating fish tissue concentrations often for decades, depriving communities of the use of their natural resources. Proper application of the Sediment Guidance would help ensure that the appropriate remedy, or mix of remedies, is

chosen to appropriately reduce risk rather than to just maximize sediment removal. This approach would significantly speed up remedy decision-making, remedy completion and the return of a valuable resource to the community.

- Example: Commencement Bay (WA) – After two major dredging projects were completed, concentrations of PCBs in fish tissue are still higher than they were over twenty years ago before dredging began (38 ppb before and 70 ppb after).
- Example: Lower Duwamish River (WA) – Remedial alternatives three through six of the Feasibility Study would have all achieved approximately the same level of long-term risk reduction, yet EPA Region 10 selected a remedy that required 460,000 cy of additional dredging (a 94 percent increase) and added four additional years of dredging/construction time. This will inevitably result in a substantial release of contaminants to the river during the Region's estimated seven years of dredging.

5. Disregard of the Recommendations of NRRB/CSTAG and Lack of Senior HQ Support for NRRB/CSTAG's Recommendations.

EPA established CSTAG as a panel of 18 experts in the field of sediment remediation drawn from each EPA Region, Headquarters, and EPA's Office of Research and Development to provide expert advice and foster consistency with the NCP and the EPA Sediment Guidance at contaminated sediment sites, including the critical remedy selection decision. The role of CSTAG's experts was greatly diminished in 2011 when CSTAG's review was combined with the previously separate NRRB review.³ EPA's Regions have frequently disregarded the

³ In the combined NRRB/CSTAG review, CSTAG's role has been greatly diminished, with only two or three CSTAG representatives (instead of the full panel of 18 experts) listening in on the NRRB deliberations. This well-intended

recommendations of NRRB/CSTAG because the review is considered advisory and non-binding. Of equal significance is that, based on the historical EPA decision-making process (prior to the Delegation of Authority change on May 9, 2017), senior EPA Headquarters management did not make the remedy selection decision at mega-sediment sites and typically did not push back on the Regions that ignored the CSTAG or NRRB recommendations due to the previous Superfund delegation of remedy selection authority to the Regions.

- Example: Gowanus Canal (NY) – NRRB/CSTAG recommended that the Region evaluate several specifically listed alternatives that could reduce the amount of dredging based on what CSTAG saw as the “expected limited effectiveness of dredging.” However, the Region’s Feasibility Study failed to consider CSTAG’s recommended alternatives.
- Example: Lower Passaic (NJ) – In its 2014 review of Region 2’s Proposed Plan, CSTAG/NRRB noted remedial goals were below background levels, but the Region’s Proposed Plan and eventually the ROD still included remedial goals that were below anthropogenic background (contradicting long-standing EPA policy). NRRB/CSTAG also recommended that the Region address the potential for recontamination after the proposed remedy was implemented for the Lower Passaic River, yet the final Conceptual

streamlining significantly diluted and changed the nature of the internal EPA peer review, because the CSTAG’s members consist of some of the leading EPA sediment experts, whereas the NRRB members typically are senior Regional Superfund Program Managers, normally not schooled in complex sediment issues. Notwithstanding their diminished nature, the combined NRRB/CSTAG reviews have recognized and commented on many of the same Regions’ inconsistencies with the NCP and Sediment Guidance noted in this memorandum and have made specific recommendations to the Regions to correct those inconsistencies, many of which have been ignored by the Regions without consequences

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Site Model issued by the Region did not adequately account for ongoing sources and the potential for sediment recontamination.

6. CSTAG and NRRB Enhancements for Reviewing Key Issues at Contaminated

Sediment Sites Expected to Cost Over \$50 Million Are Needed. In Particular, CSTAG Should Be Required to Recommend the Appropriate Remedy for the Site to the NRRB, and then by the NRRB to the EPA Administrator.

I recommend that EPA's decision process for contaminated sediment sites fully integrate the comments of CSTAG and the NRRB into the formal sediment site remedy selection process and formalize the existing process for CSTAG involvement at all stages in the process.

Although CSTAG includes personnel within EPA with the greatest technical expertise as it relates to sediment sites, I believe that CSTAG's ability to positively influence decisions has been diminished because CSTAG's recommendations have been viewed by Regional staff as merely advisory, and not given appropriate weight. This dynamic should be formally changed. Also, CSTAG's former (from 2002-2011) separate review of the EPA Regions' recommended remedy for contaminated sediment sites prior to NRRB review should be restored for all sediment sites expected to cost over \$50 million (currently only sites over \$500 million are eligible for a detailed CSTAG remedy review).

Consequently, the CSTAG and NRRB procedures should be revised to require that their respective sequential deliberations on evaluation of site remedial options include the issuance of a recommended remedy from each Board for all sediment sites expected to cost over \$50 million. This important change would make CSTAG's recommendations, including its recommended

remedy, a formal step in the Agency's decision-making process for sediment remedies (as opposed to its current "advisory only" status).

In addition, although interaction currently occurs between CSTAG and the Regions before remedy selection, I recommend that the current CSTAG procedures that contemplate ongoing interaction with the Regions throughout the various stages of the site prior to the remedy evaluation stage be formalized at sediment mega-sites on critical site issues. CSTAG's involvement at these sites should include the critical issues of the appropriate scope of the Remedial Investigation, the appropriate assumptions and basis for the Risk Assessment and the review and evaluation of the Feasibility Study's analysis of the remedial options, which is meant to focus—not slow—progress towards reaching the remedy selection phase. Conducting reviews at the end of the process is simply too late. It does not allow for review of critical aspects of the site that provide a foundation for effective remedy evaluation and selection.

Also, in order to provide the EPA Administrator with a sound and informed basis to approve future sediment remedies expected to cost over \$50 million, the NRRB should review CSTAG's recommended remedy and make its own recommendation to the Administrator. This change would formally incorporate the NRRB's remedy recommendation into the Agency's decision-making process for contaminated sediment sites as opposed to its current "advisory only" role.

Enhancing the role of the CSTAG and the NRRB in remedy decisions would provide a critical cornerstone of the changes needed in order to meet the objectives of EPA's May 22, 2017 Task Force memorandum by ensuring that the NCP and Sediment Guidance are appropriately applied in making the remedy selection at contaminated sediment sites over \$50 million and by promoting more effective use of the experience and expertise of CSTAG and the NRRB in an

efficient and expeditious manner. For major sites, these updates would add some additional ongoing interaction between CSTAG and the Regions prior to the remedy evaluation process. But this increased oversight would lead to significant efficiencies and the substantial reduction of Agency and PRP costs, because there will be much greater alignment between the thinking of Headquarters and the Regions throughout the process.

7. Using Adaptive Management to Develop Consensus Remedies that Reduce Risk Quickly, Through a Phased Approach, Rather than Attempting a Single, Comprehensive Remedy that Takes Decades to Develop and Billions to Implement.

At many sediment mega-sites, some EPA Regions have selected remedies that unrealistically and inappropriately attempt to address all site risks in one comprehensive, ultraconservative ROD. A large part of this phenomenon appears to have resulted from fear of the uncertainty about the effectiveness of a complicated, long-term remedy. Such all-encompassing RODs can stall remediation work, increase risks and drive away responsible parties who would otherwise be willing to implement.

Fortunately, the Sediment Guidance identifies a mechanism to address this problem: a step-wise approach to risk reduction called Adaptive Management. Adaptive Management tools are designed to implement specific, focused remedies and then monitor the results and effectiveness before proceeding with additional remedial measures if necessary. Adaptive Management, and other similar tools for phasing cleanups, have been successful at many large upland Superfund sites for years. The Sediment Guidance also recognizes that a phased, adaptive, approach "may be the best or only option" at complex sites.

The Adaptive Management approach would greatly accelerate progress at sediment mega-sites by facilitating earlier risk reduction in areas of the site needing the most attention, instead of waiting for 10 to 20 years to select mega-remedies that mandate virtually all perceived risk be addressed up front, regardless of the actual level of risk posed. I strongly urge that this approach be utilized at all sediment mega-sites, including those with recent selected remedies that are not yet under construction. The Superfund Task Force has recommended the expanded use of Adaptive Management, and Secretary Pruitt has already directed EPA to identify pilot sites to implement this approach. Emphasizing the use of early actions will further the objectives of EPA's May 22, 2017 memo to achieve protective, faster and more cost-effective remedies at contaminated sediment sites. Indeed, some EPA Regions have already begun to apply this approach at certain sediment mega-sites. This trend should be required in all Regions.

8. Selection of Cleanup Standards that are Unachievable as a Result of Setting Inappropriate Cleanup Goals that are Lower than Ambient Background Conditions.

While the CERCLA program focuses on contamination caused by local releases into the environment, some contaminants in water and sediment can be naturally occurring or the result of ongoing, uncontrollable human-caused sources. Some contaminants, such as mercury, are transported atmospherically before being deposited on soil or in waterbodies hundreds of miles away. Under CERCLA, the Sediment Guidance and other longstanding EPA policy documents, cleanup standards are not to be established below anthropogenic background concentrations. "Anthropogenic background" refers to the level of contaminants that is present as a result of human sources (not specifically related to the contaminated site in question) and causes sediments not to recover to the levels below those numbers. Despite this policy, which

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recognizes the reality of other sources that will prevent achieving and maintaining remedial goals, some EPA Regions' decisions inappropriately set remedial goals below anthropogenic background.

- Example: Lower Duwamish (WA) – The 2014 ROD inappropriately requires remedial goals to achieve natural background levels, which are not achievable due to anthropogenic conditions.
- Example: Lower Duwamish River (WA) – The remedy selected by EPA Region 10 for the Early Action Area in the Lower Duwamish Waterway required full dredge and backfill of the contaminated sediments. Shortly after the construction was complete, elevated concentrations of PCBs were found in the fine-grained material being deposited on the clean backfill surface. Current average concentrations of PCB's in the incoming material are 100 µg/kg DW, which is 50 times higher than the Lower Duwamish Waterway Superfund Site cleanup goal of 2 ug/kg DW set in the ROD.
- Example: Lower Passaic River (NJ) – EPA selected remediation goals that are 1/10th of background levels for mercury and PCBs.

EPA needs to reaffirm its existing policy regarding cleanup below anthropogenic background, and should issue a new policy guidance on the proper determination and use of background concentrations that is specifically tailored for use at contaminated sediment sites. This document should provide clear and detailed methodology for the identification and use of realistic background conditions. This guidance must account for many sediment sites that are located in highly urbanized settings in order to set achievable remedial goals. In addition, EPA Regions must not be allowed to selectively pick data to drive cleanup goals below the actual

regional background, as has happened at some sites. It is essential that technically defensible, representative background values be used in setting appropriate cleanup levels at contaminated sediment sites, taking urban settings into account, to develop achievable and sustainable cleanup goals.

9. EPA Should Support the Use of the Realistic Risk Assessment Methodologies at Contaminated Sediment Sites.

Use of realistic risk assessment is particularly valuable when highly specific (and uncertain) exposure scenarios are driving cleanup standards. For example, at contaminated sediment sites, many risk-based cleanup goals are based on hypothetical risks based on worst-case (and in some cases, unrealistic) assumptions, such as artificially inflated public fish consumption rates. Particularly where the exposure pathway involves multiple sources, significant uncertainty and highly unrealistic risk estimates can result. Realistic risk assessment provides a more accurate understanding of actual risk. It requires populations to be identified that are currently at risk and can lead to the development of meaningful risk management plans while expediting remedies by focusing on areas that exceed risk levels or background. This approach is consistent with the objectives of the EPA May 22, 2017 memorandum while being protective of stakeholders but eliminating unrealistic risk scenarios that have been known to drive unnecessary remedies (in some instances increasing the cost by hundreds of millions of dollars) that in turn lead to legal disputes and delays.

10. Sustainability Principles Are Consistent with the Superfund NCP Criteria and Should Be Incorporated into the Remedy Selection Evaluation at Sediment Sites.

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EPA should formally incorporate a sustainability analysis in its Superfund remedy analysis and decisions. Sustainability incorporates risk-based decision-making by incorporating consideration of social and economic impacts as well as environmental impacts over the life cycle of the remedial action. It is, therefore, a useful concept under which risk and long-term stewardship fit well. Opportunities exist for utilizing sustainability analysis both in pending Superfund remedy decisions and also for those sites where RODs have been issued but not yet constructed. Increased utilization of sustainability principles in remedy selection decisions will further the objectives of the EPA May 22, 2017 memo.

11. Disregard of the Cost-Effectiveness Test Set Forth in CERCLA, the NCP, and the Sediment Guidance.

EPA must now take seriously the requirement in the law and regulations that remedy selection must ensure that "costs [be] proportional to the [remedial alternative's] overall effectiveness."⁴ Unfortunately, EPA Regions often have historically rejected remedies that provide equivalent risk reduction at lower costs in favor of more costly remedies that focus on dredging more sediment but do not significantly reduce risk. This emphasis on dredging over risk reduction is inconsistent with the CERCLA statute, the NCP and the Sediment Guidance. This concept was further explained in the *Federal Register* preamble to the NCP, which states that "if the difference in effectiveness is small but the difference in cost is very large, a proportional relationship between the alternatives does not exist."⁵

⁴ 40 CFR §300.430(f)(1)(ii)(D).

⁵ U.S. EPA 1990, Preamble to NCP.

Simply put, the idea that the more sediment removed, the better, does not work at contaminated sediment sites. Not only does this thinking often result in more releases of contaminants into the water body, which cause greater short- and long-term impact on fish and other aquatic life, it is contrary to the requirements of the statute.⁶

- Example: Lower Duwamish (WA) – Region 10’s 2014 ROD selected an alternative (5C modified) that will cost at least \$142 million more (representing a 71% increase) than the alternative with a comparable level of protectiveness.
- Example: Lower Passaic (NJ) – Region 2’s cost-effectiveness “analysis” for a \$1.4 billion remedy consists of six sentences, provides no details as to how cost-effectiveness or proportionality were determined, and fails to address how the cost-effectiveness of the selected remedy was compared to other alternatives, as required by the NCP.

To remedy this distortion of CERCLA’s requirements, EPA should issue detailed guidance requiring that Superfund sediment remedies comply with the NCP’s requirement that there be a proportionality between incremental risk reduction and incremental cost in the proposed remedy. This guidance should further specify a method or process for transparently determining and documenting how potential remedies meet the objective of cost/risk proportionality. New guidance is needed to ensure that EPA’s decision-makers will be required to demonstrate that a proportional relationship exists between the incremental risk reduction expectations of a given remedy and the incremental cost of that remedy over the next protective alternative.

⁶ See p. 15, Commencement Bay example.

12. EPA Should Use its Existing Authorities to Develop an Approach That Addresses**Contaminated Sediment Sites by Using a Collaborative Public-Private Partnership****Such as the Highly Successful Great Lakes Legacy Act Program.**

Large sediment sites pose a challenge to EPA, since these waterways reflect the impacts of hundreds of years of industrial activity and general urbanization. This process often broadly benefited the public, either directly by managing the sewage generated by a growing population, or indirectly by encouraging the growth of industry and jobs. At any given sediment site, potentially thousands of public and private entities having, at one time or another, contributed pollutants to these rivers. This is not the classic Superfund scenario where one, two or a handful of entities are responsible for polluting a relatively confined area. These sites are truly societal issues, created by many actors, public and private, that resulted in the urbanization and industrialization of our cities.

For these sites, a mixed public/private funding model is often the best solution. Not only does this approach recognize the reality of how these rivers were developed around urban areas, it also results in quicker and better decision making about remedies. Having a monetary stake in the cleanup process bolsters commitments from both PRPs and the federal government to more quickly and efficiently identify and implement a remedy. This, I believe, would drastically speed up the investigation and remediation of these sites and reduce the overall cost of the Superfund Program, perhaps dramatically.

This mixed funding model has been very successfully used at contaminated sediment sites under the Great Lakes Legacy Act, administered by EPA's Great Lakes National Program Office (GLNPO). Under this program, sediment sites are efficiently and cost-effectively getting cleaned up. The Legacy Act requires a binding cost-sharing agreement between the EPA and a

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non-federal cooperating agency and/or industry partner. Industry has significantly participated in funding numerous sediment cleanups in the Great Lakes over a very short number of years. In particular, GLNPO has demonstrated an ability to work collaboratively with private PRPs to implement cost-effective and timely remedies. GLNPO has shown an ability to base its decisions on realistic risk assessment assumptions and with due consideration of the relative costs and benefits among remedial alternatives. EPA Administrator Pruitt has recently noted the success of the GLNPO model in achieving cleanups of sediment sites cost-effectively, expeditiously, and with broad stakeholder support. The Superfund Task Force has recommended greater exploration of use of non-CERCLA authorities to remediate contaminated sites, and the expanded use of Special Account funds to facilitate cleanup, recommendations that are consistent with the expanded use of the GLNPO model. I urge EPA to follow through on these recommendations by creating a public-private collaborative program using the very successful Great Lakes Legacy Act program as its model.

Also, EPA should increase its collaboration with the Army Corps of Engineers at sediment sites. EPA should partner with the Corps (which does have navigational responsibility under the "Water Resources Development Act) so that navigational dredging can be coordinated with sediment remediation, expediting the restoration of these waterways. Greater collaboration with the Corps can also reduce the cost of sediment remedies by making use of the Corps' lower cost sediment disposal facilities.

III. Solutions

Based on my extensive work at sediment sites across the country and the issues outlined above, I respectfully request you consider the following recommendations to improve remedy

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selection decisions at contaminated sediment sites. Implementing these recommendations, most of which are consistent with and build upon the recommendations of the Superfund Task Force, will protect human health and the environment, will accelerate sediment cleanups and redevelopment of adjacent sites, and will provide for efficient use of our national resources by ensuring cost-effectiveness, which in turn will save the EPA (and taxpayer) dollars. Most importantly, it will return the EPA to compliance with the requirements of the governing statute and regulations.

1. EPA Headquarters should require Regions to strictly adhere to CERCLA, the NCP, and the Sediment Guidance at the site investigation, risk assessment, remedy evaluation and remedy selection stages at all contaminated sediment sites.
2. The remedy-selection recommendations by the NRRB and CSTAG should be documented and incorporated into the agency's formal decision process, rather than their current status as a non-binding (and largely ignored) internal agency peer review. Moreover, EPA Regions should be required to consult with CSTAG at all key phases of the sediment site assessment, including the Remedial Investigation, Risk Assessment and Feasibility Study phases. CSTAG should be tasked to recommend the appropriate remedy at contaminated sediment sites to the NRRB. Likewise, the NRRB should make a recommendation of the appropriate remedy for the Administrator's consideration.
3. The pre-2011 CSTAG and NRRB process involving a comprehensive review of all stages of remedy identification and selection for mega sediment sites by the full CSTAG prior to the NRRB review should be restored to permit the agency's leading subject-matter sediment experts around the country to provide detailed review and comment on the consistency of Regional Proposed Plans with the NCP and the Sediment Guidance.

4. EPA Regions need to follow the Sediment Guidance and apply well-established Superfund process of Adaptive Management at sediment mega-sites, rather than attempting to address virtually all site issues, large and small, up front in one massive, ultraconservative removal remedy. This will accelerate cleanups and get to the right answers in the most efficient way to achieve a scientifically supportable remedy.
5. Every ROD should comply with the cost-effectiveness requirement of the NCP by including a detailed and transparent analysis demonstrating the "proportionality" between the anticipated risk reduction of each remedial alternative and the incremental cost of such alternative. This will force the Regions to actually conduct a detailed evaluation of the proportionality cost-effectiveness requirement of the NCP rather than simply stating the remedy is cost-effective, which is the current, unacceptable practice.
6. Use existing authorities to develop an approach that addresses contaminated sediment sites through collaborative public-private partnership, building upon the positive experience of the GLNPO model.

IV. CONCLUSION

Appropriate application of CERCLA's NCP provisions, EPA's Contaminated Sediment Guidance, and these recommendations would result in making remedies faster, fairer, more efficient and more effective. This would result in the important societal benefit of significantly accelerating the redevelopment of Superfund sites located along our nation's waterways.

Again, I want to thank the Committee for holding this important hearing, and I look forward to answering your questions.

Senate Environment and Public Works Committee
Subcommittee on Superfund, Waste Management, and Regulatory Oversight
Hearing entitled, “Oversight of the U.S. Environmental Protection Agency’s Superfund Program.”
August 1, 2017
Questions for the Record for Steven C. Nadeau
Responses- September 14, 2017

Senator Inhofe:

1. Mr. Nadeau, you talk about the challenges at sediment sites in many bodies of water. However, similar challenges exist at upland sites as well. Do the recommendations of the report make a significant positive difference in the superfund program and the ways risk is evaluated in upland sites?
 - A. Yes, although my testimony focused on issues that are specific to sediment sites, which present unique challenges, the Superfund Task Force Report includes many recommendations that will make a positive impact at upland sites. Of particular note, the recommendations to increase the use of Early Actions and Adaptive Management and to promote the eventual redevelopment and reuse of sites will have a positive impact on the pace and efficiency of remediation at both upland and sediment sites. In addition, the Task Force’s strong recommendations to review and improve agency decision processes to better promote national consistency, including the role of the National Remedy Review Board (NRRB) for all sites over \$50 million and the Contaminated Sediment Technical Advisory Group (CSTAG) for sediment sites, will improve decisions at both upland and sediment sites. Numerous other process improvements and efficiencies recommended by the Task Force, including increased attention from the highest levels of EPA administration, should improve accountability and accelerate progress at both upland and sediment sites.
2. It seems that some complex, multi-party sites have been dragging on for decades. Will the actions described in the recommendations expedite clean-ups at those multi-party sediment sites?
 - A. Yes, the recommendations in the Superfund Task Force Report, collectively, will improve agency decisions, which should alleviate some areas of conflict that currently create obstacles to efficient cleanup of sites. In addition, as noted above, the Task Force Report’s support for increased use of Early Actions at contaminated sediment sites should reduce the time needed to start some initial targeted remediation of site conditions that are identified early as driving the existing risk. This should further simplify and accelerate the evaluation and selection of the final remedy. Likewise, use of Adaptive Management as a tool for these sites would allow for monitoring of the risk reduction impact of the Early Action on the overall site risk, allowing the focus to turn efficiently to other, more long-term aspects of the potential additional remediation, if needed. Employing these existing Superfund tools should eliminate or mitigate many of the causes of the delays and road blocks currently resulting from the conservative tendency

of the decision-makers to insist on extended remedial investigations, often lasting twenty or more years, in an effort to identify a solution that mandates that every conceivable risk be addressed up front, regardless of the level of risk. These significant changes to the way complex Superfund upland and sediment mega-sites are addressed will facilitate the ability of PRPs to reach agreement on multi-party sites, as well by bringing greater certainty to the table. Finally, as I indicated in my oral and written testimony, in order to take full advantage of the Task Force Recommendations, there are important details and follow up actions that will need to be identified and implemented in order for the Superfund program to operate as efficiently as we all want it to.

Oversight Costs

3. Can EPA establish guidelines for presumptively reasonable levels of oversight on a percentage basis? Specifically, is there a percentage of overall remedial costs that ought to apply to EPA and other agency oversight of PRPs? EPA oversight bills for major Superfund sites now amount to millions of dollars per year per site. What controls can EPA put in place to reduce oversight costs?
 - A. Agency administration is not my area of expertise, but I can tell you that there are many variables and considerations at complicated sediment sites that make a one-size-fits-all solution for agency oversight difficult to formulate. As I noted in response to a question posed by the Subcommittee during my testimony, I do believe that agency oversight costs can be significantly reduced at both sediment sites and upland sites by promoting Early Actions and practicing Adaptive Management, as recommended in the Task Force Report. I also believe that faithful adherence to the sound principles in EPA's 2005 Sediment Guidance, which has been lacking in recent years, will also result in improved efficiency and reduced oversight costs. Finally, I believe that focusing data collection on the types of information that will drive remedy selection, without trying to completely eliminate all potential uncertainty, will reduce agency oversight costs as well as investigation costs for companies that can be better utilized for remedy implementation.

Cost of Risk Reduction

4. How can EPA better weigh costs for risk reduction in the Superfund process? For example, if two remedies with dramatically different costs result in the same level of overall risk reduction, EPA ought to pick the more cost effective remedy.
 - A. Unfortunately, EPA has generally failed to conduct a proper cost-effectiveness assessment in making remedy decisions at most sediment sites. Although CERCLA and the NCP require remedies to be cost-effective, I have found that at contaminated sediment sites, there has been a lack of a robust cost-effectiveness proportionality evaluation, if any. Therefore, new Agency Guidance is needed requiring EPA decision-makers to comply with the Superfund National Contingency Plan's requirement to demonstrate that a proportional relationship exists between the incremental risk reduction expectations of a given remedy and the incremental cost of that remedy over the next

alternative. This proportionality needs to be evaluated in a detailed (i.e., non-conclusory) and transparent manner.

Remedy Implementation Risk

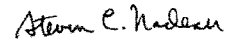
5. How does EPA address risks associated with remedy implementation? How does EPA balance long term residual risk associated with waste remaining in place against short term risk to workers arising from remedy implementation?
- A. At sediment sites in particular, the short term risks from intensive remedies like dredging can be very substantial. These risks affect not only the workers implementing the remedy, but also the aquatic ecosystem and environment. In addition, "short-term" risk can be a misnomer, because we have seen adverse effects from aggressive dredging linger for decades. For example, at the Commencement Bay site, after two major dredging projects were completed, the risks resulting from the remedy implementation (releases of contaminants during dredging to the water body) based on concentrations of PCBs in fish tissue are still higher than they were over twenty years ago before dredging began (38 ppb before and 70 ppb after).

From a 30,000-foot perspective, at sediment sites in particular, the long-term (twenty or thirty years in the future) risks associated with different remedy alternatives tend to be similar. This is because recovery of the system through processes such as natural attenuation or natural recovery in areas where ongoing deposition of clean or less-contaminated sediment on top of the old sediment reduces the overall risk of exposure.

Because the long term risks tend to be similar, I believe greater emphasis on short-term risk to human health and the aquatic ecosystem is needed. At many sites, this can be effectively accomplished by requiring careful consideration of the incremental cost-effectiveness of potential remedies compared to the incremental short- and long-term risks, as discussed in the answer to the previous question.

If the Subcommittee needs amplification of any of my answers or has any additional questions, please do not hesitate to contact me.

Respectfully submitted,



Steven C. Nadeau
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Senator ROUNDS. Thank you, Mr. Nadeau. I appreciate your testimony.

We will now turn to our second witness, Director Jeffery A. Steers.

Director Steers, you may begin.

STATEMENT OF JEFFERY A. STEERS, DIRECTOR OF REGIONAL OPERATIONS, VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Mr. STEERS. Good morning, Chairman Rounds, Ranking Member Harris, and members of the Subcommittee. My name is Jeffery Steers, and I am the Director of Regional Operations for the Virginia Department of Environmental Quality. Virginia DEQ is a member of the Association of State and Territorial Solid Waste Management Officials, or ASTSWMO, of which I previously served as President.

ASTSWMO is an association representing the waste management and remediation programs of the 50 States, the territories, and the District of Columbia. Our membership includes State program experts with an individual responsibility for the regulation or management of waste and hazardous substances, including overseeing the cleanup of Superfund sites. ASTSWMO appreciates the opportunity to provide testimony on oversight of EPA's Superfund cleanup program.

While States do not assume primary CERCLA authority, we do play a role in its implementation. The decisions made by Congress and those made by EPA can have a profound impact on State resources. States share a common goal with the Federal Government, though, in ensuring that risks to human health and the environment are mitigated and appropriately addressed in a financially responsible manner. Our association is committed to ensuring that this is done in an efficient, cost effective way.

We support any legislation that encourages greater State collaboration with our Federal partners while ensuring that our voice and opinions are not diminished. ASTSWMO and its member States enjoy a positive working relationship with EPA and does not wish to discount these collaborative efforts. We do wish, however, to offer the Subcommittee some comments on opportunities to enhance the program.

States value the relationship with EPA and together, through several types of cooperative agreements both as individual States and as an association, continue to make great strides in addressing some of the most contaminated lands in the United States. ASTSWMO supports EPA Pruitt's May 22nd, 2017, memo stating that the Superfund program is a vital function of EPA and the Agency cannot have a successful program without substantial State involvement. Furthermore, the States support the input and role of local government in the communities in which contaminated sites exist.

Opportunities exist for improvements to the program to deal with costly and delayed cleanups that continue to have a negative impact on communities across this nation. While efficiencies can be realized administratively, without legislative changes to CERCLA or EPA's authority, there exists an opportunity to modernize cer-

tain aspects of the statute to acknowledge the roles that States, as co-regulators who operate sophisticated programs across the country, our members, and to some extent, our regulated community continue to be challenged with the skyrocketing financial obligations associated with remediating contaminated lands.

This past week EPA released the recommendations of a task force on Superfund appointed by Administrator Pruitt. ASTSWMO's member States are encouraged that the Administration recognizes the need for improvements to a program whose purpose is to ensure American communities are protected from contaminated sites.

While States are still reviewing this recently released report, we take note of the fact that the schedule for implementation is aggressive. Given the proposed reductions in the Agency's staffing and budget, States stand ready to assist EPA in meeting this schedule and hope that they can efficiently work with us in adopting and implementing some of these recommendations.

Experiences in working with EPA regional office has historically demonstrated inconsistent application of policy and guidance developed by headquarters. One of the task force recommendations states that regions are encouraged to consider greater use of early and/or interim actions, including use of removal authority or interim remedies to address immediate risks, prevent source migration, and return to portions of the site to use pending more detailed evaluations or other parts of sites. Regional offices must be held accountable in ensuring that consistent implementation of this and other recommendations are followed.

One area of difficulty for our member States is EPA's process to identify State regulations as potential Applicable or Relevant and Appropriate Requirements, or ARARs. Our main areas of concern include inconsistent application of ARARs from site to site, documenting EPA's decisions in these matters, and allowing States early interaction in the development of ARARs on specific sites. ASTSWMO recently participated in a process improvement team with EPA to identify tools that could streamline the process while providing States with meaningful involvement. While the exercise was successful and agreement on the path forward was gained between the Superfund program and the State participants, the outcome was thwarted by EPA's Office of General Counsel, who created bureaucratic roadblocks that prevented the project from being implemented. This is an example of a lost opportunity in improving Federal and State relations.

Another growing concern is the ongoing escalation of costs incurred by States on fund lead sites listed on the National Priorities List. As you may be aware, States are required to cost share 10 percent of the remedy construction, while incurring 100 percent of the operation and maintenance costs. States need to be given more authority in remedy selection and the up front cost decisionmaking early on, and often, in the process. Prior to transfer to States for O&M, EPA should be given the authority to consider evaluating whether the State has sufficient funds to take on O&M obligations. Even though the State agreed to assume O&M obligations in this process, it could be that projected costs haven't been appropriately updated by EPA. If the State does not have sufficient funding to

take on the O&M at the time of transfer, the statute should allow for a process that identifies options on how to address and fund State shortfalls.

The role that communities and local investors may play in the redevelopment of Superfund sites has historically been diminished. States are encouraged that the task force report recommends EPA identify sites for third party investment and to pilot how accelerating the remedies might be accomplished under these circumstances. While not mentioning State involvement in this recommendation, EPA must involve ASTSWMO members in the process as we have robust brownfield redevelopment programs and other tools that can facilitate expedited reviews, remedy implementation, and pragmatic yet protective long-term monitoring at these sites. Investors require a level of certainty not typically found in the Superfund program. The States can assist EPA in facilitating and negotiating agreements with third parties, and we stand willing to do so.

With respect to Responsible Party or RP-led sites under Superfund, States typically find themselves in a secondary oversight role. It is customary for a State to enter into a Cooperative Agreement which defines our role with EPA while providing a funding mechanism for State oversight. In Virginia, we have recently reached out to four Responsible Parties to gauge their interest in a pilot program where they enter into a Cost Oversight Agreement, agreeing to pay DEQ's project overcosts directly in lieu of funneling the money through EPA, and that results in administratively less burdened Cooperative Agreements for both EPA and DEQ. This approach is much more cost effective for the RP, increases DEQ's budget forecasting, positions Virginia to provide better customer service, and helps ensure that we have an opportunity to voice State specific concerns such as costs at key decision points.

Another State engagement issue related to RP oversight is where EPA enters into consent decrees or other types of settlement documents with RPs to settle costs of their cleanup. EPA often does not include the State in this settlement process, which can make it difficult for a State to engage the RPs to do additional work that may be needed to recover the State's current and projected oversight costs. This issue can be compounded if the site has the issue of less stringent or different ARARs than the State would require for the site.

Finally, coordination on local high profile sites must be a team effort between EPA, the State, and local government. Two recent examples in Virginia illustrate the need. In one case, the State had been working closely with local State health departments to characterize neighborhood drinking water next to an NPL site that contaminated private wells. The State provided a temporary solution of installing onsite filtration systems while a long-term fix was developed. Eventually, all parties agreed that a connection to the public water supply would reduce the exposure pathway for neighboring residents. However, there was a delay in getting public water extended to the area despite that being the apparent intended desire of all parties, largely due to EPA's very long step-wise process under Superfund that didn't easily facilitate connecting the public water.

In another case, the local community——

Senator ROUNDS. Mr. Steers, I am going to have to ask you to wrap it up.

Mr. STEERS. OK. In conclusion, States have positioned themselves to be effective partners with EPA on Superfund implementation and have developed working relationships with local government and communities that are home to contaminated sites on the NPL. We encourage continued Federal and State cooperative regulatory oversight as improvements continue to be made to the Superfund program.

Thank you for allowing me to testify, and I would be happy to answer your questions.

Thank you.

[The prepared statement of Mr. Steers follows:]

Jeffery Steers Bio

Jeff Steers is currently the Director of Regional Operations for the Virginia Department of Environmental Quality. Prior to this position Mr. Steers was the Director of Central Operations. Jeff serve on the Department's executive team while having overseen the operations of DEQ's Air, Water and Land Divisions. Mr. Steers was previously the director of the agency's land protection division and the director of DEQ's Northern Regional Office. Jeff is a native Ohioan, having spent 20 years with the Ohio Environmental Protection Agency in their water and waste programs. He holds a Bachelor of Science degree in Civil Engineering from the University of Toledo. Jeff is a Past President of the Association of State & Territorial Solid Waste Management Officials (ASTSWMO) and is a past DEQ Board Member of the Virginia Chapter of the Solid Waste Management Association of North America (SWANA).





ASTSWMO, Providing Pathways to Our
Nation's Environmental Stewardship Since 1975

**Hearing
U.S. Senate
Committee on Environment and Public Works
Subcommittee on Superfund, Waste Management and Regulatory Oversight
August 1, 2017**

**Testimony of
Jeffery A. Steers
Former President and Vice-Chair CERCLA Post Construction Focus Group
Association of State and Territorial Solid Waste Management Officials**

- States value their relationship with the United States Environmental Protection Agency (EPA) and together through several types of cooperative agreements, both as individual States and ASTSWMO, continue to make great strides in addressing some of the most contaminated land in the United States.
- ASTSWMO supports EPA Administrator Pruitt's May 22, 2017 memo stating that the Superfund program is a vital function of EPA and the Agency cannot have a successful program without substantial State involvement. Furthermore, the States support the input and role of local government in the communities in which contaminated sites exist.

- Opportunities exist for improvements to the program to deal with costly and delayed cleanups that continue to have a negative impact on communities across the nation. While efficiencies can be realized administratively without legislative changes to CERCLA or EPA's authority, there exists an opportunity to modernize certain aspects of the statute to acknowledge the role of States as co-regulators who operate sophisticated programs across the country. Our members, and to some extent our regulated community, continue to be challenged with the skyrocketing financial obligations associated with remediating contaminated lands.

Good morning Chairman Rounds, Ranking Member Harris and Members of the Subcommittee. My name is Jeffery Steers and I am the Director of Regional Operations for the Virginia Department of Environmental Quality. VADEQ is a member of the Association of State and Territorial Solid Waste Management Officials (ASTSWMO), of which I previously served as President. ASTSWMO is an association representing the waste management and remediation programs of the 50 States, five Territories and the District of Columbia (States). Our membership includes State program experts with individual responsibility for the regulation or management of wastes and hazardous substances, including overseeing the cleanup of Superfund sites.

ASTSWMO appreciates the opportunity to provide testimony on oversight of EPA's Superfund cleanup program. While States do not assume primary CERCLA authority, we do play a role in its implementation. The decisions made by Congress and those made by EPA can have a profound impact on State resources. States share a common goal with the federal

government in ensuring that risks to human health and the environment are mitigated and appropriately addressed in a financially responsible manner. Our Association is committed to ensuring that this is done in an efficient, cost-effective manner.

We support any legislation that encourages greater State collaboration with our federal partners while ensuring that our voice and opinions are not diminished. ASTSWMO and its member States enjoy a positive working relationship with EPA and does not wish to discount these collaborative efforts. We do wish to offer the Subcommittee the following comments on opportunities to enhance the Superfund program.

This past week, EPA released the recommendations of a task force on Superfund appointed by Administrator Pruitt. ASTSWMO's member States are encouraged that the administration recognizes the need for improvements to a program whose purpose is to ensure American communities are protected from contaminated land. While States are still reviewing this recently released report, we take note of the fact that the schedule for implementation is aggressive given proposed reductions in the EPA's staffing and budget. State experiences in working with EPA regional offices has historically demonstrated inconsistent application of policy and guidance developed by headquarters. One of the task force recommendations states that "Regions are encouraged to consider greater use of early and/or interim actions including use of removal authority or interim remedies, to address immediate risks, prevent source migration, and to return portions of sites to use pending more detailed evaluations on other parts of sites." Regional offices must be held accountable in ensuring that consistent implementation of this and other recommendations is followed.

One area of difficulty for our members is EPA's process to identify State regulations as potential Applicable or Relevant and Appropriate Requirements (ARARs). Our main areas of concern include inconsistent application of ARARs from site to site, documentation of EPA's decisions in these matters and constraints in allowing States' early interaction in development of ARARs on specific sites. ASTSWMO recently participated in a process improvement team with EPA to identify tools that could streamline the process while providing States with meaningful involvement. While the exercise was successful and agreement on the path forward was gained between the Superfund program and State participants, bureaucratic issues raised by EPA's Office of General Counsel prevented the project from being implemented. This is an example of a lost opportunity to improve Federal-State relations.

Another growing concern is the ongoing escalation of costs incurred by States on Fund lead sites listed on the National Priorities List (NPL). As you may be aware, States are required to cost share 10% of the remedy construction while incurring 100% of the Operation and Maintenance (O&M) cost for the life of the remedy. Prior to transfer to States for O&M, EPA should be given the authority to consider evaluating whether the State has sufficient funds to take on O&M obligations. Even though the State agreed to assume O&M obligations, it could be that projected costs haven't been appropriately updated. If the State does not have sufficient funding to take on the O&M at the time of transfer, the statute should allow for a process that identifies options on how to address (and fund) State shortfalls.

The role that communities and local investors may play in the redevelopment of Superfund sites has historically been diminished. States are encouraged that the task force report recommends EPA identify sites for third party investment and to pilot how accelerating the remedy might be accomplished under these circumstances. While not mentioning State involvement in this recommendation, EPA must involve ASTSWMO members in this process as we have robust brownfield redevelopment programs and other tools that can facilitate expedited reviews, remedy implementation and pragmatic yet protective long term monitoring as may be required. Investors require a level of

certainty not typically found in the Superfund program. The States can assist EPA in facilitating and negotiating agreements with third parties.

With respect to Responsible Party (RP) led cleanups under Superfund, States typically find themselves in a secondary oversight role. It is customary for a State to enter into a Cooperative Agreement which defines our role with EPA while providing a funding mechanism for State oversight. In Virginia, we've recently reached out to four RP's to gauge their interest in a pilot program whereby they enter into Cost Oversight Agreements agreeing to pay DEQ's project oversight costs directly, in lieu of funneling the money through EPA that results in administratively-burdensome Cooperative Agreements for both EPA and DEQ. This approach is much more cost effective for the RP, increases DEQ's budget forecasting, positions Virginia to provide better customer service, and helps ensure that we have an opportunity to voice State-specific concerns (cost, etc.) at key decision points.

Another State engagement issue related to RP oversight is where EPA enters into consent decrees or other types of settlement documents with RPs to settle costs of their cleanup. EPA often does not include the State in this settlement process, which can make it difficult for a State to engage the RPs to do additional work that may be needed and recover the State's current and projected oversight costs. This issue can be compounded if the site has the issue of less-stringent or different ARARs than the State would require for the site.

Finally, coordination on locally high profile sites must be a team effort among EPA, the State and local government. Two recent examples in Virginia illustrate this need. In one case, the State had been working closely with the local and State health departments to characterize neighborhood drinking water next to an NPL site that contaminated private wells. The State provided a temporary solution of installing onsite filtration systems while a long term fix was developed. Eventually, all parties agreed that connection to a public water supply would reduce the exposure pathway for neighboring residents. However, there was a delay in getting public water extended to the area despite that being the apparent

intended desire of all parties. This highlights some of the issues that can arise given EPA's long very stepwise process and highlight Superfund's sometimes inherent failure to "keep the end in mind". In another case, the local community worked closely with the State and EPA to address mercury contamination in a river. EPA had originally sought to use CERCLA authority to require remediation of sediments by an RP. Cooperative work with Region 3, DEQ, the RP and the local community resulted in Virginia oversight under RCRA authority to move the project forward faster than through Superfund, resulting in an expedited, efficient and equally protective cleanup.

In conclusion, States have positioned themselves to be effective partners with EPA on Superfund implementation and have developed working relationships with local government and communities that are home to contaminated sites listed on the NPL. We encourage continued federal/State cooperative regulatory oversight as improvements continue to be made to the Superfund program. I would be happy to answer any questions you may have.



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September 15, 2017

The Honorable Mike Rounds, Chair
Subcommittee on Superfund, Waste Management, and Regulatory Oversight
Environment and Public Works Committee
U.S. Senate
Washington, DC 20510

The Honorable Kamala Harris, Ranking Member
Subcommittee on Superfund, Waste Management, and Regulatory Oversight
Environment and Public Works Committee
U.S. Senate
Washington, DC 20510

Dear Chairman Rounds and Ranking Member Harris

Thank you for allowing me to provide testimony before the August 1, 2017 hearing of the Subcommittee on Superfund, Waste Management and Regulatory Oversight. This correspondence serves to respond to follow up questions to my testimony by Senator Inhofe. For ease of reference the questions and corresponding responses are illustrated below. It should be noted that my response to questions on how EPA conducts its activities is solely from the States' perspective.

Senator Inhofe:

Oversight Costs Question

1. Can EPA establish guidelines for presumptively reasonable levels of oversight on a percentage basis? Specifically, is there a percentage of overall remedial costs that ought to apply to EPA and other agency oversight of PRPs? EPA oversight bills for major Superfund sites now amount to millions of dollars per year per site. What controls can EPA put in place to reduce oversight costs?

Response

EPA should consider increased State involvement in oversight of PRP lead remedial activities. In Virginia, for example, DEQ is taking an active oversight lead on one sight and is directly billing the PRP for our oversight cost at a lower rate than EPA would otherwise and the company is not having to pay EPA's added mark up costs to process the State's invoice. Our field oversight activities will typically require less travel time and added travel costs as State staff are closer to these sites.

Cost of Risk Reduction Question

2 How can EPA better weigh costs for risk reduction in the Superfund process? For example, if two remedies with dramatically different costs result in the same level of overall risk reduction, EPA ought to pick the more cost effective remedy.

Response

Sites listed on the National Priorities List (NPL) span a wide range across the risk spectrum and are very site specific. Leaving contamination in place in a rural area with limited exposure may be acceptable, whereas sites located in an urban setting may present an unacceptable risk. Remedy costs oftentimes are dependent upon the level of effort expended in the early stages of an investigation. EPA investments in conducting thorough remedial investigations/feasibility studies (RI/FS) with significant State and stakeholder input, will better inform the remedy selection process that evaluates risk.

Remedy Implementation Risk Question

3. How does EPA address risks associated with remedy implementation? How does EPA balance long term residual risk associated with waste remaining in place against short term risk to workers arising from remedy implementation?

Response

Worker risk can be managed and mitigated with good health and safety plans and worker protection. Citizens who live near or work on un-remediated or partially remediated properties do not have the access to these resources in their everyday lives. That being said, there are times during a cleanup where it may be impossible or impractical to allow workers to safely conduct remediation activities. When this occurs, it is appropriate to note this on a property deed while documenting the details of what pollution is being left in place. It should also be noted that risk is a factor of exposure to a chemical over a period of time. Typically, the short term risk to a site worker can be managed as previously discussed. Exposure to a chemical(s) over a longer period of time requires a thorough evaluation by EPA, the State and the PRP.

We look forward to continuing discussions about funding and the co-regulator partnership between States and EPA. Should you have any additional questions, please contact me at 804-698-4079 or via email: jeffery.steers@deq.virginia.gov.

Sincerely,



Jeffery A. Steers
Director of Regional Operations
Virginia Department of Environmental Quality

Former Past President
Association of State and Territorial Waste Management Officials

cc: Dania Rodriguez, ASTSWMO

Senator ROUNDS. Thank you, Mr. Steers.
We will now turn to our third witness, Katherine Probst.
Ms. Probst, you may begin.

**STATEMENT OF KATHERINE N. PROBST,
INDEPENDENT CONSULTANT, KATE PROBST CONSULTING**

Ms. PROBST. Thank you.

Members of the Subcommittee, thank you for inviting me to testify before you today. My name is Kate Probst, and I am an independent consultant. For over 20 years I have worked as a researcher and policy analyst evaluating the Superfund program. I am the sole author of the recently released report Superfund 2017: Cleanup Accomplishments and the Challenges Ahead, an independent report commissioned by the American Council of Engineering Companies. I was also the lead author of the 2001 Report to Congress, Superfund's Future: What Will It Cost?, which was published by Resources for the Future, a Washington, DC, think tank where I was a senior fellow. The conclusions, recommendations, and opinions in my testimony today are mine and mine alone, and do not represent any other person or organization.

In my testimony, I am focusing on what do we know and what do we not know about Superfund cleanups. And I would note none of my data or anything has anything to do with Federal facilities; they are all sites that are not owned and operated by the Federal Government.

What do we know? First, we know that over two-thirds of the 1,555 sites on the NPL at the end of fiscal year 2016 either have been deleted from the NPL or are construction complete. The remaining 28 percent are in some stage of the remedial pipeline and will require additional actions by EPA and Potential Responsible Parties to complete implementation of all cleanup remedies. Those sites that are construction complete, but not deleted, also have more work to be done.

Second, funding for the Superfund program has declined markedly since fiscal year 2000, and it appears that the remedial program is facing a funding shortfall. In constant 2016 dollars, annual Superfund appropriations declined from a high of \$1.9 billion in fiscal year 2000 to a low of \$1.09 billion in fiscal year 2016, a decrease of 43 percent. Funding for the remedial program has declined as well, from a high of \$740 million in fiscal year 2004 to a low of \$501 million last year, a decrease of 33 percent.

Over the past 5 years the end of the year funding shortfalls for remedial action projects has averaged \$67 million. Much more difficult to quantify are more subtle results of funding constraints: sites not added to the NPL, sites studied and remedial projects spread out over a longer time period, and other less visible actions not taken or delayed due to lack of resources.

Third, cleanup progress has slowed in recent years. Since the beginning of fiscal year 2000, 462 sites have achieved construction complete status, an average of 27 a year. That average dropped to 12 sites a year for the 5 years from fiscal year 2012 through fiscal year 2016.

Fourth, sites needing Federal attention continue to be identified and added to the NPL. There continues to be a need for Federal

dollars, Federal enforcement, and Federal expertise to address contaminated sites. Since fiscal year 2000, a total of 310 non-Federal sites were added to the NPL.

What we don't know. First, why is it taking so long to complete cleanup at some of the sites on the NPL? There are 189 non-Federal sites that were added to the NPL before fiscal year 2000 that are still not construction complete. The question is why. Possible explanations include lack of adequate EPA funding, PRP inaction, EPA inaction, the sheer magnitude of the site and contamination, and technical limitations of available cleanup technologies. Any initiative by EPA to speed cleanup should begin by identifying the specific factors that are contributing to delay at these and other NPL sites. It is not possible to solve a problem if we don't know what is causing it.

Second, how much will it cost to complete cleanup at all current NPL sites? In order to evaluate whether annual Superfund appropriations are sufficient, we first need to have an estimate of how much money is needed to complete cleanup, as well as an estimate of remedial pipeline funding needs on an annual basis. Sadly, the last time such an estimate was made public was the 2001 Report to Congress, of which I was the lead author.

Third, why are contaminated sites still being added to the NPL? EPA should, of course, continue to list sites that need Federal cleanup dollars, enforcement, and expertise. However, it would be helpful to have a better understanding of the factors that have resulted in sites' being added to the NPL over the past 5 years. For example, are sites continuing to be placed on the NPL because they are truly orphan sites, that is, there are either no known PRPs or the PRPs are not financially viable? Do the types of sites being listed suggest gaps in other regulatory programs or inadequate financial assurance requirements? Are the sites being added to the NPL more expensive on average than in the early years of the program? Are they more complex technically? Are States referring certain kinds of sites to EPA for action that they do not have the financial or technical resources to address?

A better understanding of the factors leading to sites being listed on the NPL would be invaluable in efforts to close regulatory gaps, investigate needed cleanup technologies, and estimate future funding needs.

Fourth, and last, what is the financial capacity of State Superfund programs? Some have suggested that there is little or no need for a Federal cleanup program and that the program should be delegated to the States. Yet few, if any, States have the financial resources to pay for the cleanup of an NPL caliber site, much less a mega-site costing \$50 million or more. To address this issue, as well as State concerns about their financial burden of operation and maintenance at NPL sites, EPA should commission an independent analysis of the financial capacity and legal authorities of State Superfund programs.

Thank you for asking me to testify before you today. I would be happy to answer any questions.

[The prepared statement of Ms. Probst follows:]



Katherine N. Probst
Independent Consultant
Kate Probst Consulting

Kate Probst has over two decades of experience evaluating federal environmental policies and programs. For much of her career she has focused on identifying ways to improve implementation of the Superfund program. She is the author of many reports on Superfund, including *Superfund 2017: Cleanup Accomplishments and the Challenges Ahead*, an independent white paper commissioned by the American Council of Engineering Companies.

Ms. Probst was a senior fellow at the Washington D.C. think tank Resources for the Future (RFF) for almost 20 years. At RFF, she conducted research on ways to improve the Superfund program and the U.S. Department of Energy's program to clean up sites in the nuclear weapons complex. She was the lead author and project director for *Superfund's Future: What Will It Cost?*, a Report to Congress published in 2001. That report included estimates of the amount of funds EPA would need to implement the Superfund program for the ten years from FY 2000 – FY 2009 and contains a wealth of information on site-specific costs and the duration of key stages in the cleanup process for non-federal sites on the National Priorities List (NPL). Ms. Probst has authored studies evaluating Superfund's information systems and measures of success, alternative liability and financing approaches for site cleanup, and the reliability of institutional controls at NPL sites. Kate has served on advisory panels for the U.S. EPA and the U.S. DOE, as well as on a National Academy of Sciences panel on Contaminated Sediments.

After leaving RFF, Kate spent two years at Green Seal, Inc. as Vice President of Institutional Greening. Since leaving Green Seal, she has been an independent consultant. Kate has a B.A. from Wesleyan University and a Master's Degree in City and Regional Planning from Harvard University.

**Testimony of Katherine N. Probst
before the
Senate Committee on Environment and Public Works,
Subcommittee on Superfund, Waste Management, and Regulatory Oversight
Hearing on Oversight of the U.S. Environmental Protection Agency's Superfund Program
August 1, 2017**

Members of the Subcommittee, thank you for inviting me to testify before you today.

My name is Kate Probst, and I am an independent consultant. For over 20 years, I have worked as a researcher and policy analyst evaluating the Superfund program and making recommendations for improvement. I was the sole author of the recently released report *Superfund 2017: Cleanup Accomplishments and the Challenges Ahead*, an independent report commissioned by the American Council of Engineering Companies. I was also the lead author and project director of the 2001 Report to Congress *Superfund's Future: What Will It Cost?* which was published by Resources for the Future (RFF), a Washington, DC think tank where I was a Senior Fellow for many years. The conclusions, recommendations, and opinions in my testimony today are mine and mine alone, and do not represent any other person or organization.

I have organized my testimony today around three themes:

1. What we know about the Superfund program's efforts to clean up NPL sites,
2. What we don't know about the program that might be helpful to the Subcommittee in conducting effective oversight of the Superfund program, and
3. Recommendations for improvements in how the Superfund program tracks program accomplishments and develops information to inform future funding needs and program implementation strategies.

In the final sections of my statement I offer a few comments on the EPA's recently issued Superfund Task Force report and present some preliminary results of analyses of Superfund data that I am conducting with colleagues at the Environmental Law Institute. This information is preliminary, and has not been reviewed by EPA. I include it as it provides an indication to the kind of useful information that can be gleaned by parsing data in the Superfund program database (SEMS).

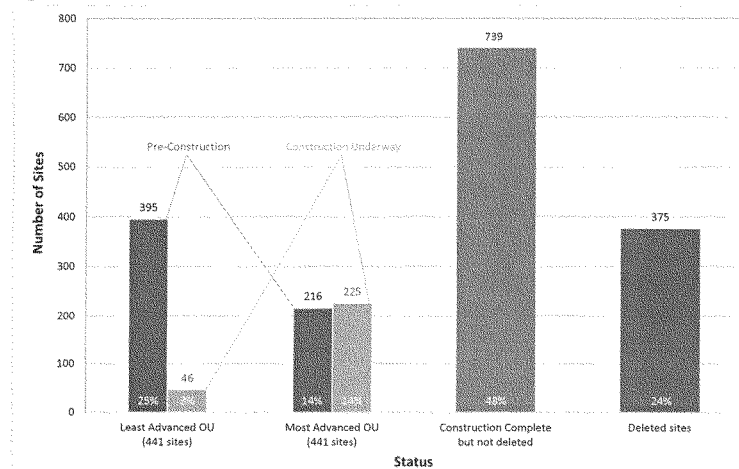
I would appreciate it if the full text of the report *Superfund 2017: Cleanup Accomplishments and the Challenges Ahead* were submitted to the record. The data and figures supporting many of the findings and conclusions herein can be found in that document.

All of the information presented today is for sites that are on the EPA's National Priorities List (NPL) that are not owned or operated by a federal agency, referred to inelegantly as "non-federal" sites. Information on federal facilities, proposed (but not final) NPL sites, and Superfund Alternative sites is not included. Most of the data is drawn from my recent report (*Superfund 2017*) and is as of the end of FY 2016. The underlying data was provided to me by the Superfund program for the *Superfund 2017* report, unless otherwise noted.

What We Know

1. Over two-thirds of the 1,555 non-federal sites on the NPL either have been deleted from the NPL (meaning that all response actions are complete and all cleanup goals have been achieved) or are construction complete (meaning all remedies have been constructed). As of the end of FY 2016, 24% (375) of non-federal NPL sites had been deleted from the NPL and another 48% (739) were construction complete but not deleted, meaning that all remedies have been constructed but all cleanup objectives have not been achieved. The remaining 28% (441) of sites are in some stage of the remedial pipeline and require additional EPA work or oversight. See Figure 1.

Figure 1. Status of 1,555 Non-Federal NPL Sites at the End of FY 2016



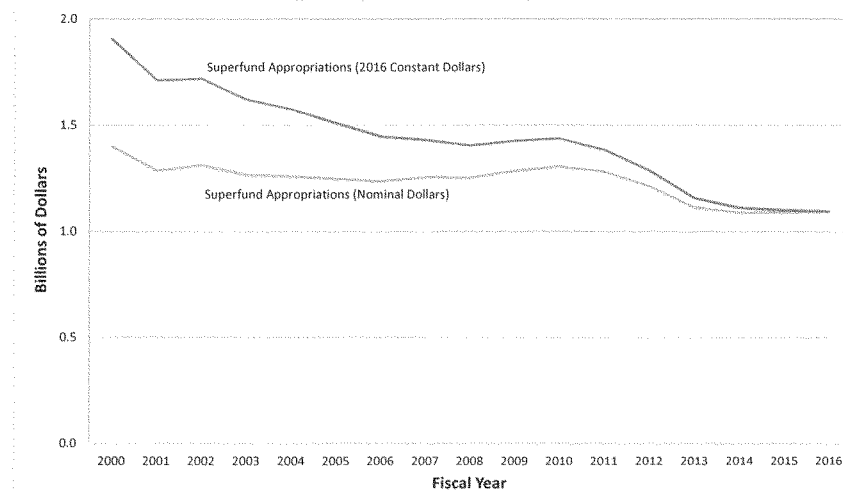
Source: US EPA

2. There are over 100 non-federal NPL sites where human exposure is not under control, and over 150 sites where there is insufficient information to determine if human exposure is under control (or not). Seven percent of non-federal NPL sites were

categorized by EPA as “human exposure not under control” at the end of FY 2016. At another 10% of these sites, there was insufficient data to determine whether human exposure was under control or not.

3. **Funding for the Superfund program has declined markedly since FY 2000, and it appears that the remedial program is facing a funding shortfall.** In constant 2016 dollars, annual Superfund appropriations declined from a high of \$1.9 billion in FY 2000 to a low of \$1.09 billion in FY 2016, a decrease of 43% in real dollars, as shown in Figure 2 below. Not surprisingly, funding for the remedial program declined as well, from a high of \$749 million in FY 2004 to a low of \$501 million in FY 2016, a decrease of 33% in constant dollars.

Figure 2. Superfund Appropriations in Constant and Nominal Dollars, FY 2000–FY 2016



Source: U.S. EPA

Note: Funds from the American Recovery and Reinvestment Act (ARRA) of 2009 that were allocated to the Superfund program in FY 2009 are not included in this figure.

Due to lack of funding, EPA has had to delay the start of some cleanups for 14 out of the past 17 years. Figure 3, below, shows the overall decline in remedial site allowances over time in constant 2016 dollars. Over the past five years, the end-of-year funding shortfalls for remedial action projects have averaged \$67 million in constant 2016 dollars. Most likely, this is only the tip of the iceberg in terms of underfunding, as

unfunded remedial action starts are among the easiest items to track. Much more difficult to quantify are more subtle results of funding constraints: sites not added to the NPL, site study and remedial projects spread out over a longer time-period, and other less visible actions not taken or delayed due to lack of resources.

4. **Cleanup progress has slowed in recent years.** Since the beginning of FY 2000, 462 non-federal NPL sites have achieved construction complete status, an average of 27 a year. The average dropped to 12 sites a year for the five years from FY 2012 through FY 2016, when only 60 sites were designated construction complete. Since the beginning of FY 2000, a total of 186 non-federal sites were deleted from the NPL, an average of just under 11 sites a year; since FY 2012, that average has decreased to eight deletions a year.

Figure 3. Remedial Site Allowances in Constant 2016 Dollars, FY 2002 - FY 2017



Source: U.S. EPA

Note: Additional funds for remedial pipeline actions come from special accounts, PRP-lead actions and state contributions.

5. **Sites Needing Federal Attention Continue to be Identified and Added to the NPL.** Since FY 2000, a total of 310 non-federal sites were added to the NPL, an average of 18 per year. Over the past 17 years the number of non-federal sites added to the NPL has

ranged from a low of eight in FY 2013 and FY 2015 to a high of 36 in FY 2000. The type of sites being placed on the NPL has changed over time. In the early years of the program, waste management facilities comprised the largest category of sites, but after FY 1990, manufacturing sites were the largest single category. And, of the 52 mining sites on the NPL at the end of FY 2016, over half were added during the ten years from FY 2000 through FY 2009.

To understand why sites continue to need federal attention, better information is needed to understand the factors that lead to NPL listing. According to EPA staff, sites added to the NPL typically fall into one or more of the following categories:

- The site is complicated from a technical standpoint,
- Cleanup is expected to be expensive,
- There are no financially viable or cooperating PRPs,
- The state does not have adequate funds to address the site,
- The site has recalcitrant PRPs and the state lacks the necessary resources and legal authority needed and seeks federal enforcement, or,
- The site is high-profile and has hit the front page of the national newspapers.

If, for example, there are an increasing number of truly orphan sites being added to the NPL, this has implications for annual funding needs, and, if, more sites have recalcitrant PRPs, this has implications for the workload of the enforcement program.

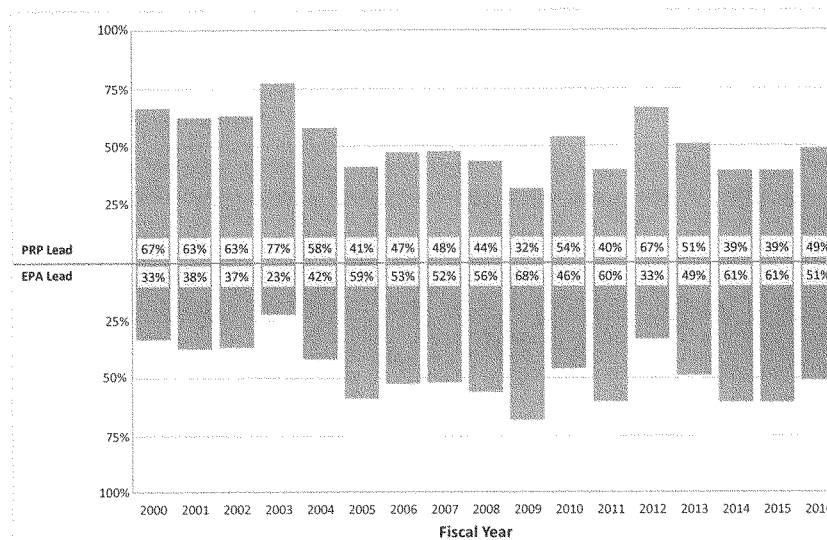
1. **Responsible parties play a critical role paying for and implementing actions at non-federal NPL sites.** As envisioned in CERCLA, responsible parties take the lead – and pay for – many actions at non-federal NPL sites. Since FY 2000, potentially responsible parties (PRPs) have taken the lead for from 32% to 77% of the remedial action project starts each year. From FY 2000 through FY 2004, PRPs took the lead for more than 50 % of remedial action starts; since then, EPA-financed actions have been the majority for most, though not all, years. See Figure 4 below.

While it is somewhat useful to look at the *number* of actions that are PRP and EPA lead, the reality is that this tells us nothing about the relative costs paid by EPA as compared to the costs borne by potentially responsible parties. In fact, we know very little about how much money is being spent at NPL sites by potentially responsible parties, nor about how many non-federal NPL sites are primarily PRP-lead. Better information on the role of potentially responsible parties in NPL cleanups is a critical input to identifying ways to accelerate cleanup and to estimating the future funding needs for the program. A more nuanced understanding of how many actions are PRP-lead, and the associated cost (in general, a remedial action at a contaminated sediment or mining site will be more expensive than at a dry cleaning or wood preserving site) would be extremely

valuable in helping the Agency to estimate the future cost of cleanup that will be paid by EPA.

2. **States are key partners in NPL cleanups, and, by statute, bear some of the costs for remedial actions and operations and maintenance.** Under Section 104 of CERCLA, states must contribute to the cost of cleanup at non-federal NPL sites when the remedial action is paid for by EPA. At these sites, the law requires states to pay for 10% of the cost of the remedial action and 100% of all operation and maintenance costs. As more sites enter the operation and maintenance phase, the financial burden on states has increased.

Figure 4. Percentage of Remedial Action Project Starts at Non-Federal NPL Sites that were PRP and EPA Lead, FY 2000 - FY 2016



Source: U.S. EPA

Note: Remedial actions starts are tracked at the project, not the operable unit, level.
Percentages may not add to 100% due to rounding.

3. **Better information on the basic building blocks of the Superfund remedial program is needed.** There is a lack of publicly available information on the cost of cleanup for non-federal NPL sites, the cost and duration of each major phase of the remedial pipeline, the types of sites being added to the NPL, and many of the critical "building blocks" that

would be needed to estimate EPA's future funding and staffing needs. In some cases, it appears EPA has not analyzed its own data to develop these estimates, and in other cases, EPA has not collected the kind of consistent and reliable information that is needed.

There is still a need for the federal Superfund program. Not only is there more work to be done to complete cleanup at current non-federal NPL sites, but new sites continue to be added to the NPL each year. Adequate funding for EPA-financed cleanups, oversight of responsible party actions, and EPA enforcement activities to maximize PRP-financing of future actions are critical to program success.

What We Don't (and Should) Know about NPL Cleanups

While the summary data above provide a snapshot of the status of non-federal NPL sites, effective oversight – and estimating the necessary resources to get the job done -- requires more specific information about the remaining work to be done at non-federal NPL sites, the cost of cleanup, who – potentially responsible parties or EPA – is likely to bear these costs, and the likely timeframe for completing work at these sites. The recommendations from *Superfund 2017*, which are included in my testimony below, address these issues at an organizational level. Below are some specific questions that, if answered, would be helpful to inform future Subcommittee Oversight activities. Wherever possible, EPA should provide actual expenditure data for all questions about the cost of cleanup.

Note: The list of questions below appears long and resource intensive to answer. This does not have to be the case. Much of the information needed to answer these questions is in the EPA program management database, and that data, along with input from senior regional officials (the Superfund Division Directors and enforcement officials) would enable the program to develop *initial* responses to these types of questions. As the program uses more of the information in its program management system, that will provide the incentive for the information to be updated and improved. The goal is to begin the process of asking more question to develop effective program reforms, not to get answers that are 100% correct.

Questions for Sites that are Not Yet Construction Complete (441 sites)

- How much more work is needed (e.g. number of site studies, remedial designs and remedial actions) for these 441 sites to reach construction complete?
- How many of the actions that are underway and expected in the future are likely to be paid for by PRPs and how many by EPA?
- What are the likely future costs to PRPs and EPA to complete cleanup at these 441 sites?
- Assuming average durations for the current and remaining steps in the remedial pipeline for each of these steps, when is it likely that each of these sites will be deemed construction complete?

- What are the key factors contributing to long cleanup times? Technical issues, funding issues, recalcitrant parties, other factors?
- At which (and how many) sites are funding constraints (whether for EPA or potentially responsible parties) increasing the amount of time it is expected to take for a site to achieve construction complete status?
- Does working with communities, local governments and outside parties to develop reuse plans contribute to delays implementing cleanup remedies?

Interesting Note: Some of the sites that are not yet construction complete have been on the NPL for many years. Preliminary analysis of EPA data, shown in Figure 5 below, suggests that 42% (189 of the 448)¹ of the non-federal NPL sites that were not construction complete at the end of May 2017 were added to the NPL before FY 2000 – over 15 years ago.² Even more astonishing is the fact that 57 of the 403 sites listed in FY 1983 are still not construction complete. This information should *not* be used to criticize the program – there are likely good reasons why these 57 sites are not construction complete – but to ask why they are not, and what, if anything, can be done to address the cause(s) of delay. Any criticism should be delayed until the reasons for delay are known.

Investigating *why* these sites are still not construction complete is critical to understanding the cause of delay. Is the obstacle to implementing all remedies at the site lack of EPA funding, lack of PRP funding, PRP inaction, technical challenges, or something else? Examining the 189 sites listed on the NPL before FY 2000 that are not construction complete, and determining what kind of action – if any – could accelerate cleanup would be an efficient way to identify the factors delaying cleanup and develop a path forward.

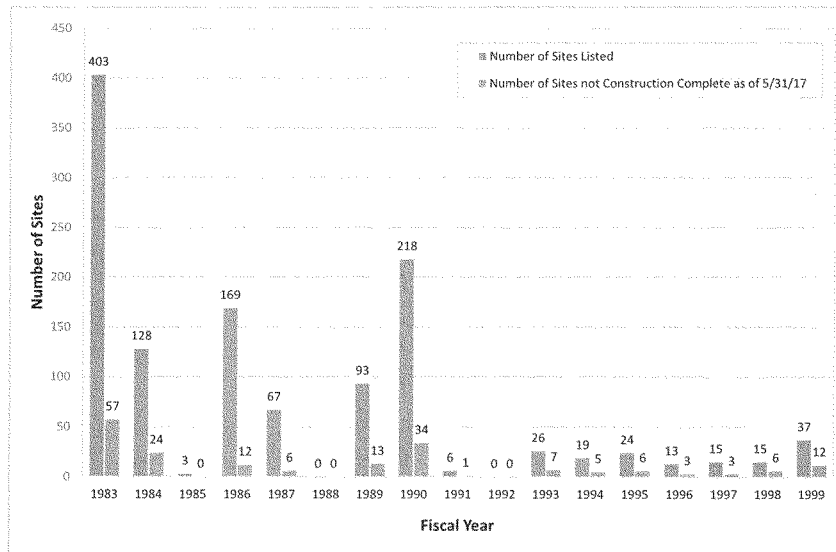
Questions for Sites that are Construction Complete but Not Deleted (739 sites)

- How many of these sites are likely to take more than five years, or, more than 10 years to, be eligible for deletion from the NPL for predominantly technical reasons? In other words, if there were absolutely no funding constraints – from either EPA or PRPs – how many sites are there where due to the nature of the contamination or the nature of the available remediation technology EPA estimates that it will take five or 10 years before for the all cleanup goals set forth for these sites can be achieved?
 - What are the types of sites that fall into this category, e.g. contaminated sediment, mining, etc. where this is the case?
 - How many of these sites are PRP vs EPA-financed?

¹ This is a different data set than that used for *Superfund 2017*, and the total number of non-federal NPL sites, as well as the subset that are not construction complete, is slightly different.

² This figure is based on data provided to the author by the EPA, but has not been reviewed by the program.

Figure 5. Non-Federal NPL Sites that are not Construction Complete as of May 31, 2017 by Year Added to Final NPL (1983 - 1999)



Source: U.S. EPA

- At which (and how many) sites are funding constraints – whether for EPA or potentially responsible party actions – contributing to increasing the amount of time it is expected to take for a site to be deleted?

Questions Regarding the Role of Potentially Responsible Parties P(RPs) at Non-Federal NPL Sites

- How many of the 441 active non-federal NPL sites primarily PRP-lead?
- How does the length of each of the key phases of the remedial pipeline compare for RP versus EPA implemented actions?
- Are responsible parties contributing to delays in site remedies being completed, that is, to sites reaching construction complete? How?
- Are potentially responsible parties contributing to delays in sites achieving their cleanup goals, that is, to being eligible for deletion from the NPL?
- How much money have potentially responsible parties spent for remedial pipeline

actions at non-federal NPL sites? (Note: this question is asking about actual PRP expenditures, not the value of settlement agreements.)

- How much money is it likely PRP's will spend in the next five or ten years to complete pipeline actions at non-federal NPL sites? (Note: this question is asking about estimates of actual PRP expenditures, not the value of settlement agreements.)

While some of these questions could be answered by regional EPA staff or with data that the program currently has, there is little or no information on actual RP expenditures. The Agency should explore mechanisms to collect information on actual PRP expenditures in the future.

Recommendations

Sound decisions about the future direction and funding of the Superfund remedial program require better information and data and a commitment to analyzing that data and making it public. It will be very difficult to identify effective reforms to speed cleanup and to develop better metrics of program accomplishments for the Superfund program without analyzing data EPA already has and filling in critical data gaps. Below are recommendations for specific studies and actions EPA should implement and should make public. It should be noted that, although the program may face staff and funding constraints, none of the recommendations below would require a large amount of time or money to implement.

1. **EPA should estimate the future cost of completing work at all non-federal sites on the NPL.** This estimate, and the assumptions behind it, should be made public and should be updated on an annual basis. Absent an annual estimate of the future cost of cleaning up non-federal sites on the NPL, it is difficult, if not impossible, to evaluate whether annual funding levels are adequate. To ensure the credibility of the effort, EPA should commission a small advisory panel of outside experts to review the approach, data used, assumptions, and results. This work does not have to be an expensive or time-consuming exercise, as the goal is to have a reasonable ballpark estimate of future costs, not a precise figure. A simple model with site-specific costs for all mega sites (cleanup cost of \$50 million or more) and average unit costs by site type for all other sites, based on the total number of operable units at each site, would be sufficient as a starting point. Over time, the estimate can become more precise. The model should include the cost of future EPA actions and activities at all non-federal NPL sites and of long-term response actions paid for by EPA. The estimate should include both extramural (contract) and intramural (staff) costs and the staff costs to oversee PRP-lead actions.
2. **EPA should develop credible and robust data about the critical building blocks of the Superfund remedial program.** As noted repeatedly, there is a lack of robust data and information about the building blocks of the Superfund remedial program. EPA should analyze its own data and develop and make public information regarding: the range and

average cost of cleanup at different types of sites, the range and average duration of the major steps in the remedial process for different types of sites, and the relative financial contribution of PRPs and EPA to cleanup costs. Without robust information on these critical building blocks of the program, it is difficult to assess whether current funding is adequate and how much future funding is needed, much less to hold EPA accountable for any lack of progress. Looking at the patterns among sites and examining trends and averages in site costs and cleanup duration could help senior management pinpoint anomalies, develop better metrics, evaluate progress, hold regions and PRPs accountable, and lead to a much more informed public debate about how to improve the Superfund program. This information should be updated at least every five years, if not annually.

3. **EPA should develop better information on the types of sites listed on the NPL.** Any effort to estimate future remedial program staff and funding needs requires a deeper understanding of the kind of sites that have been added to the NPL in recent years, what factors have led to the need for NPL listing, and what kinds of sites are likely to be added in the future. To fill this data gap, EPA should conduct or commission two studies, described below.

- **Analysis of NPL site types:** EPA should analyze the types of sites that have been added to the NPL over the past five years. This analysis should include information on the industrial operations at the site (if appropriate), the media contaminated, the extent or volume of contamination, the key factors that led to its listing on the NPL (such as bankrupt PRPs, or lack of state funding or legal authority), whether each site is likely to cost \$50 million or more to remediate (qualifying as a mega site), and whether the remedial actions are likely to be paid for by EPA or PRPs, among other attributes. This analysis should be based on current information about the sites, not information collected at the time of listing.
- **Estimate of sites to be added to the NPL:** EPA should issue a report estimating the number and types of non-federal sites likely to be added to the NPL in the future. This report should be based on interviews with EPA's 10 regional offices and with state agency officials to find out what kinds of sites they think are likely to be added to the NPL over the next five years, and why. This analysis should focus on identifying emerging types of sites, contaminants, and situations that are likely to warrant federal enforcement, federal funding, or both.

Both studies should be updated at least every five years.

4. **In addition to reporting program accomplishments for all NPL sites as a group, EPA should report progress for specific subsets or categories of sites and actions.** Providing information only for all sites on the NPL as a group, as EPA now does, obscures the very real challenges presented by complex sites. EPA should amend the coding in its central data

management system to enable it to easily cull different subsets of sites, such as mega sites, contaminated waterways, properties ripe for redevelopment, and sites where it is known that it will be 10 years or more before cleanup objectives are likely to be achieved. These categories of sites each present different challenges and opportunities, making it helpful to be able to examine cost and progress at each of these different types of sites as a group. For example, it is likely that it is difficult, if not impossible, to bring human exposure under control at a contaminated waterway such as the Hudson River or New Bedford sites. If the EPA data management system coded all contaminated waterways, then it would be easy to determine how many of the sites where human exposure is not under control are contaminated waterways, where this goal may not be achievable for many years. Similarly, some look to Superfund as an engine for redevelopment. Identifying that subset of NPL sites where the property is valuable and ripe for redevelopment, such as the Industri-Plex site in Woburn, Massachusetts, would provide a better gauge of the program's success in this area than tracking redevelopment at all NPL sites. These are just a few examples of ways in which the data management system could be improved to provide more nuanced information about the remedial program, its challenges, and successes.

- In addition, EPA should present all program metrics and accomplishments separately for EPA- and PRP-lead actions and for non-federal and federal facility NPL sites.
5. **Better Superfund metrics are needed.** The fact that so few non-federal NPL sites are being deleted and reaching construction complete each year suggests that the current array of metrics is no longer providing much useful information. As the Superfund program again faces external pressure to speed cleanup and show progress, it is likely EPA will seek to develop new metrics for documenting achievements. The incentive is to adopt measures that show larger numbers of program accomplishments. As an example, the original cleanup accomplishment measure for the program was the number of sites deleted from the NPL, but when it became clear this was taking a long time, the program came up with the construction completion measure, then partial deletions, and more recently remedial action project starts and completions. Without a context—such as the number of total remedial actions that will be undertaken at all sites—the number of remedial actions started or completed is meaningless. Simply dividing site activities into smaller and smaller units does not show progress. Moreover, these kinds of measures may not even provide useful information about the real accomplishments at the site in terms of protecting public health and the environment.
- The measures that are intended to document risks at the site—those indicating whether human exposure and groundwater contamination are under control—need improvement. These measures provide no indication of the severity of the risk, the likelihood of human exposure, or how long contamination has been uncontrolled. EPA should report each quarter the number of non-federal NPL sites that (1) were categorized as not under control in the previous quarter but are now under control, and

(2) were categorized as under control in the previous quarter but are now not under control. While some of this information is available on a site-by-site basis, the rationale for program metrics is to provide comparable information across all sites.

- New metrics should be judged by whether they provide useful information that increases understanding of site progress and the obstacles to progress, not by whether they will result in a larger number of the items being counted (“more beans”). EPA should seek to develop metrics that convey information about real program accomplishments, not simply steps in the remedial pipeline. The metrics should provide EPA senior management, Congress, and the public a more robust understanding of both the program’s accomplishments and the challenges that lie ahead.
6. **EPA should issue a report detailing what actions are needed to reduce possible human exposure to contamination at non-federal NPL sites where a site is characterized as having human exposure or groundwater migration that is “not under control.”** EPA should review all non-federal NPL sites where human exposure and groundwater migration (1) is not under control, or (2) where there are insufficient data to determine if it is under control, to determine what steps would be needed to resolve these issues. This assessment should identify the specific steps that are needed to bring human exposure and groundwater migration under control, as well as whether these actions would be paid for by PRPs or EPA and, if EPA, the associated cost. For those sites with insufficient data, the report should detail why this is the case, and what steps would be needed to make this determination. In addition, the assessment should examine whether there are technical obstacles to addressing these concerns and identify those specific sites where it is not technically possible to bring the measure under control in the next decade, and why. Based on this analysis, EPA should revise the current performance measures to make them more meaningful and create a new code for both metrics that indicates those sites where it is not technically feasible to bring (1) human exposure, or (2) groundwater migration under control in the next 10 years (or some specified time-period to be decided by EPA.)
 7. **EPA should commission an independent analysis of the financial capacity and legal authorities of state Superfund programs.** This report should be conducted in coordination with the Association of State and Territorial Solid Waste Management Officials, and potentially with the Environmental Council of the States or the National Governors Association. Some have suggested there is little or no need for a federal cleanup program and that the program should be delegated to the states. Yet few (if any) states have the financial resources to pay for the cleanup of an NPL-caliber site, much less a mega site. The report on state capacity should include information for all 50 states on the number of non-federal NPL sites where the state is currently responsible for 10% of government-performed remedial actions and the associated cost burden, as well as the estimated annual cost of operation and maintenance for these sites. In addition, the study should include information on the total amount of monies, if any, in each state’s cleanup fund (that is,

funds that could be used to clean up contaminated sites similar to those listed on the NPL), whether these funds are replenished on an on-going basis, the average cost of any state-funded cleanups implemented over the past 10 years, and whether state Superfund laws have the same liability provisions as CERCLA. This kind of information was previously available for a few years when EPA commissioned an in-depth analysis of state Superfund programs that was conducted by the Environmental Law Institute. The last of these reports was issued in 2002.

Comments on the EPA Superfund 30-Day Task Force Report

I am pleased to see that the EPA Administrator considers accelerating the cleanup of NPL sites a top priority and worthy of his personal attention. The Task Force report and action memo from Administrator Pruitt include some constructive recommendations regarding taking action at NPL sites where human exposure is not fully controlled, identifying complex sites for increased attention, and accelerating action at sites where cleanups are lagging. That said, there are a number of areas of concern that I want to briefly touch on below.

Resource Implications

The report does not detail the resource implications, both staff and dollars, of the various actions and recommendations therein, nor where these resources will come from. Thus, it is not possible to assess how the implementation of the recommendations will affect ongoing actions, programs, and priorities. A crucial next step by the Administration is a considered review of the 42 recommendations, a streamlining of the recommendations as there are too many to implement in a workable fashion, and a budget and resource plan for implementation. In addition, detailing the sequence of actions to ensure that the necessary base of information is developed for each of the goals (an example is provided for reuse, below) would likely result in a much more efficient and effective implementation plan.

Focus on Reuse and Redevelopment

Much of The Task Force report focuses on encouraging increased reuse and redevelopment of NPL sites. While likely few are “opposed” to appropriate redevelopment of NPL sites, the goal of CERCLA is to cleanup sites and reduce risk and contamination, not to redevelop sites and increase property values and local tax revenues. The fact that over one-third of the 42 recommendations are focused on reuse and redevelopment suggests that a good amount of agency resources will be devoted to this goal. The priority should be on budgeting and funding reforms that accelerate cleanup, and only when the necessary resources are assigned to that goal should any additional resources be assigned to encouraging reuse and redevelopment.

In addition, before initiating myriad outreach, training and other reuse programs it is important to get at least a ballpark estimate of the number of NPL sites that are, in fact, good candidates for redevelopment. While some NPL sites may well be ripe for redevelopment, many – I would suspect most – are not. From talking to various experts in the field, my guess is at most 10-20% of NPL sites would fall into this category. The investment of scarce EPA resources to this goal should be commensurate with number of sites which have reuse and redevelopment potential. Many of the recommendations in the Task Force report put the cart before the horse.

Identifying those sites that are “ripe for redevelopment” is not an area of EPA expertise. I would recommend the Agency bring in organizations, such as the Greenfield Environmental Trust Group, the Racer Trust and others that have experience developing contaminated properties, and contract with them to conduct an initial assessment of site reuse potential of NPL sites and develop an initial inventory of sites where the property is inherently valuable and attractive for development. Only once this inventory is developed does it make sense to consider implementation of the many recommendations in the Task Force report. As a side note, many NPL sites do, in fact, have ongoing operations on site. It is a misnomer (and not in the statute) to say that NPL sites are abandoned hazardous waste sites; they are not necessarily abandoned (though some may be), and they are not necessarily hazardous waste sites (though some may be).

Focus on Real Results

Every new Administration wants, understandably, to speed cleanup and show progress by deleting more sites from the NPL. However, as detailed in my recent report *Superfund 2017: Cleanup Accomplishments and the Challenges Ahead*, the only way to accelerate cleanup and increase deletions without jeopardizing the central purpose and fundamental goal of the Superfund program is to identify the reasons why cleanups are taking so long. I was disappointed that the Task Force did not include any recommendations to investigate the factors that are leading to lengthy cleanups, which is the first step to then addressing them. In addition, there are several actions and recommendations in the Task Force that raise concerns, as it is unclear if the end result will be watered-down cleanup goals; It is important that objectives of speeding cleanup and “maximizing deletions” do not become excuses to cut corners in addressing risks and contamination at sites. A key issue to watch is the FY 2018 appropriations and budget for the Superfund program, especially funding for remedial pipeline activities.

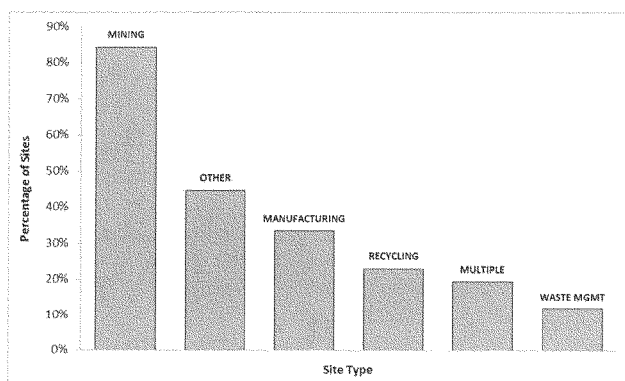
Preliminary Analysis: Food for Thought

As noted earlier, with colleagues at the Environmental Law Institute I am analyzing EPA data about the time it has taken for non-federal NPL sites to reach construction complete status and to be deleted from the NPL. This work, I would note, is being done without any outside

funding. We are in the early stages of analyzing the data, and our preliminary analyses have not been reviewed by the Superfund program. The reason I am including some of the preliminary results is to provide an example of the kind of information that can be gleaned from this type of analysis of Superfund data. I would note that these results do not provide answers, but they allow one to focus one's questions, and look for patterns and anomalies.

Figure 6, below, provides information on the percentage of sites that are *not* construction complete by the major site type categories in EPA's database. Over 80% of mining sites are not construction complete, while only about 10% of waste management sites have not achieved this milestone. This figure is purely illustrative – as there is more going on here that must be explored, as we know many of the waste management sites were listed in the early years of the program, and the mining sites were not added to the NPL until later. Still, the large variation in the percentage of sites, by site type, that are not construction complete suggests some new ways of looking at this issue. And, percentages are always to be taken with a grain of salt, as in this case. There are only 51 mining sites in this dataset, while there are 523 waste management sites.

Figure 6. Percentage of Non-Federal NPL Sites Not Construction Complete by Major Site Type Categories as of May 31, 2017



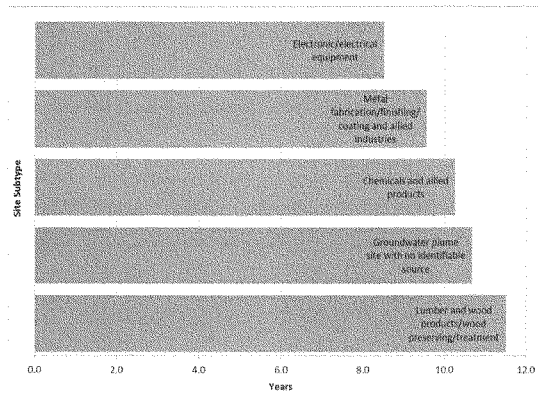
Source: U.S. EPA

Note: Preliminary data, not reviewed by EPA.

Figure 7, below, shows the median number of years that it took for sites in five different “sub-categories” of sites to reach construction complete. Again, this information is presented purely for illustrative purposes. It shows that the median number of years for sites with electronic/electrical operations to reach construction complete is two years less than for sites

that are (or were) lumber and wood products sites. Why is this the case? More or fewer orphan sites? Better remedial technologies available?

Figure 7. Median Years to Construction Completion for Five Site Type Sub-Categories, as of May 31, 2017



Source: U.S. EPA

Note: Preliminary data not reviewed by EPA.

* * * * *

Thank you for asking me to testify before you today. I would be happy to answer any questions.

Superfund 2017
Cleanup Accomplishments
and the Challenges Ahead

Katherine N. Probst

Superfund 2017

Cleanup Accomplishments
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Katherine Probst is an independent consultant who has written widely on the Superfund program. Ms. Probst is the sole author of this paper and was guaranteed complete independence in all aspects of the work by the funders. The analysis, conclusions, and language in this paper are solely those of the author. Funding for this paper was provided by ACEC.

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Acknowledgments

This paper was commissioned by the American Council of Engineering Companies (ACEC). In the summer of 2016, members of the ACEC Superfund Study Work Group decided that they wanted to fund an independent white paper on the status of the Superfund remedial program and contacted me to see if I would be willing to undertake such a project. By contract, I was assured that I would have complete independence regarding the paper. I greatly appreciate the support of the members of the ACEC Superfund Study Work Group and their adherence to the terms of the contract. The analysis, conclusions, and recommendations in the paper are mine, and mine alone, and do not represent the views of ACEC nor of any other organization.

The analysis in this paper would not have been possible without the help of staff and management in EPA's Office of Superfund Remediation and Technology Innovation, who provided historical and current data about the Superfund program. My thanks to all of them for their help, and for answering what must have seemed like endless questions about the data and many aspects of the remedial program.

Thanks are due as well to those individuals who reviewed a confidential draft of the paper for accuracy and structure: ACEC Superfund Study Work Group members, Amy Brittain with the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) Superfund CERCLA and Brownfields Subcommittee, David Lennett of the Natural Resources Defense Council, Walter Mugdan of EPA Region II, John Pendergrass of the Environmental Law Institute, Jennifer Roberts with the ASTSWMO Superfund CERCLA and Brownfields Subcommittee, Dania Rodriguez, ASTSWMO, Lawrence Schnapf, and Lenny Siegel of the Center for Public Environmental Oversight.

I would also like to thank those ACEC staff who worked with me on this project for their help and support.

Finally, any errors or omissions are those of the author.

Kate Probst

Executive Summary

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), better known as “Superfund,” is now in its 37th year. At the start of a new presidential administration it is timely, once again, to review the progress of the Superfund remedial program aimed at cleaning up sites on the National Priorities List (NPL). The NPL is the list of sites where federal funds can be used to pay for remedial actions or more colloquially, what are referred to as long-term cleanups. The NPL has become synonymous with those sites that are the highest priority in the country: contaminated areas warranting federal funding, federal enforcement action, or both.

The purpose of this paper is to provide information on the overall progress of the remedial program, looking at both the number and types of sites added to the NPL since FY 2000 as well as at key measures of program success. Program funding is also examined as one of the questions that has plagued the program for many years is whether Congress is appropriating adequate funds to ensure the timely cleanup of sites. This paper focuses on sites on the NPL that are not owned or operated by federal agencies (referred to as “non-federal” NPL sites) from FY 2000 through FY 2016; proposed NPL sites, federal facilities, and Superfund alternative sites are not addressed. Where appropriate, actual EPA expenditures and accomplishments are compared with the estimates that were presented in a 2001 Report to Congress, *Superfund's Future: What Will It Cost?*, published by Resources for the Future (RFF).¹ All dollar amounts are in constant 2016 dollars unless otherwise noted.

It is hoped that the information presented here will lead to a more informed debate about the future of the Superfund remedial program.

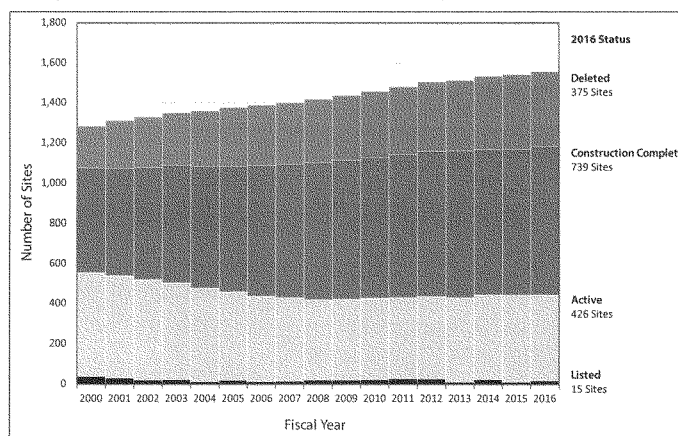
Superfund Snapshot

1. **Over two-thirds of the 1,555 non-federal sites on the NPL at the end of FY 2016 either have been deleted from the NPL (meaning that all response actions are complete and all cleanup goals have been achieved) or are construction complete (meaning all remedies have been constructed).**

As of the end of FY 2016, 24% (375) of non-federal NPL sites had been deleted from the NPL and another 48% (739) were construction complete but not deleted, meaning that all remedies have been constructed but all cleanup objectives have not

1. *Superfund's Future: What Will It Cost? A Report to Congress*, Katherine Probst et al., Resources for the Future, 2001, Washington, DC.

Figure ES-1. Cumulative Status of Non-Federal NPL Sites, FY 2000–FY 2016



Source: U.S. EPA

been achieved (see Figure ES-1). The remaining 28% (441) of sites (those identified as “active” and “listed” in Figure ES-1) are in some stage of the remedial pipeline and require additional EPA work or oversight. More detailed information on the number and cost of future site actions—as well as whether the costs will be borne by EPA or PRPs—is needed to estimate future EPA workload and funding needs.

2. There are some non-federal NPL sites where human exposure is not under control.

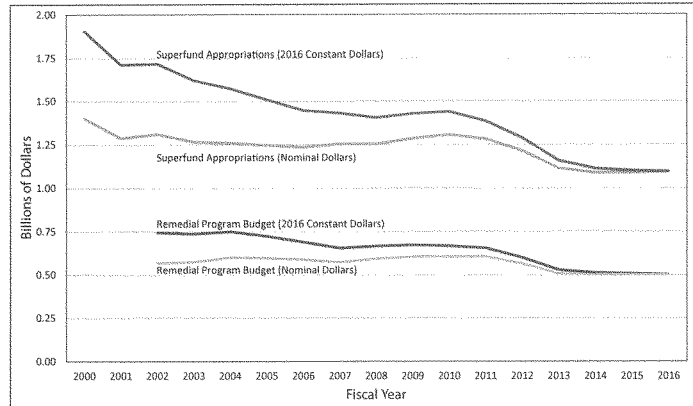
Seven percent of non-federal NPL sites were categorized by EPA as “human exposure not under control” at the end of FY 2016. At another 10% of these sites, there was insufficient data to determine whether human exposure was under control or not. This indicator is not precise because it is determined on a site-wide basis: Designating a site as having human exposure not under control could indicate that only a small portion of a site has contamination that is not under control, or it could mean that most of the site has uncontrolled contamination. Thus, more information is needed to determine the extent of concern at these sites.

Conclusions

1. Funding for the Superfund program has declined markedly since FY 2000, and it appears that the remedial program is facing a funding shortfall.

In constant 2016 dollars, annual Superfund appropriations declined from a high of \$1.9 billion in FY 2000 to a low of \$1.09 billion in FY 2016, a decrease of 43% in real dollars, as shown in Figure ES-2 (next page). Not surprisingly, funding

Figure ES-2. Superfund Appropriations and Remedial Program Budget in Constant and Nominal Dollars, FY 2000–FY 2016



Source: U.S. EPA

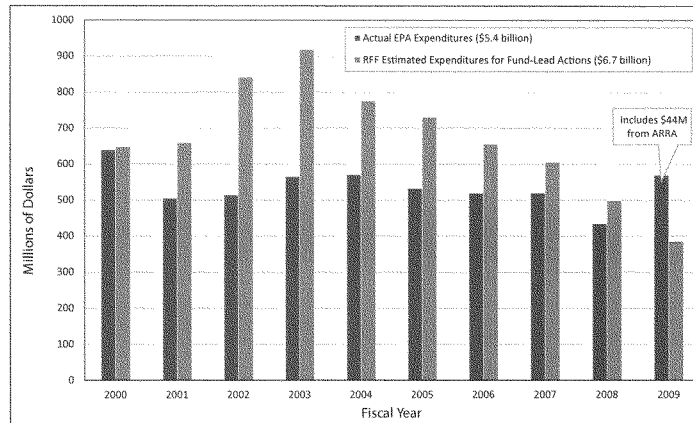
Notes: Funds from the American Recovery and Reinvestment Act (ARRA) of 2009 that were allocated to the Superfund program in FY 2009 are not included in the Superfund appropriations in this figure. Information on the remedial program budget is not available for FY 2000 and FY 2001.

for the remedial program declined as well, from a high of \$749 million in FY 2004 to a low of \$501 million in FY 2016, a decrease of 33% in constant dollars, as shown in Figure ES-2.

Due to lack of funding, EPA has had to delay the start of some cleanups for 14 out of the past 17 years. Over the past five years, the end-of-year funding shortfalls for remedial action projects have averaged \$67 million in constant dollars. Most likely, this is only the tip of the iceberg in terms of underfunding as unfunded remedial action starts are among the easiest items to track. Much more difficult to quantify are more subtle results of funding constraints: sites not added to the NPL, site study and remedial projects spread out over a longer time-period, and other less visible actions not taken or delayed due to lack of resources.

A comparison of actual EPA expenditures with the estimates developed in the RFF model presented in *Superfund's Future* shows a major shortfall. Over the period from FY 2000 through FY 2009 (the period addressed in the RFF report), EPA expenditures for the cost of all EPA-lead actions at non-federal NPL sites were almost 20% lower than the estimates in the RFF model. Actual EPA expenditures over these 10 years were \$5.4 billion in 2016 dollars while the RFF model estimated that EPA expenditures would total \$6.7 billion. (See Figure ES-3, next page.)

Figure ES-3. **Actual EPA Remedial Expenditures vs. RFF Estimated Expenditures in Constant 2016 Dollars, FY 2000–FY 2009**



Source: Actual EPA expenditures are from GAO-15-812 Report, Figure 5; RFF estimated expenditures are from *Superfund's Future*, Table H-1 (base case), p. 256, and Table H-5, (low case), p. 259, reduced by 22% to adjust for that fact that approximately 22% fewer sites were added to the NPL from FY 2000 through FY 2009 than was assumed in the low case.

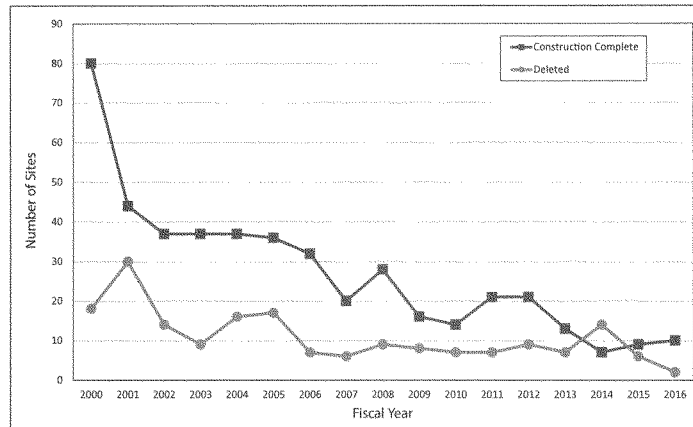
2. Cleanup progress has slowed in recent years.

Since the beginning of FY 2000, 462 non-federal NPL sites have achieved construction complete status, an average of 27 a year. The average dropped to 12 sites a year for the five years from FY 2012 through FY 2016, when only 60 sites were designated construction complete. Since the beginning of FY 2000, a total of 186 non-federal sites were deleted from the NPL, an average of just under 11 sites a year; since FY 2012, that average has decreased to eight deletions a year. (See Figure ES-4, next page.)

A comparison with the estimates in *Superfund's Future* again shows a shortfall. The actual number of non-federal NPL sites designated construction complete over the ten years from FY 2000 through FY 2009 was 367; the model in *Superfund's Future* predicted that 550 sites would achieve this measure over that same period. Thus, almost one-third fewer non-federal NPL sites achieved construction complete status from FY 2000 through FY 2009 than was predicted in the RFF model, which assumed that the remedial program was fully funded.

There is a pressing need to better understand what factors have led to the slowdown in cleanup progress and what steps could be taken to address this

Figure ES-4. Number of Non-Federal NPL Sites Construction Complete and Deleted Each Year, FY 2000–FY 2016



Source: U.S. EPA

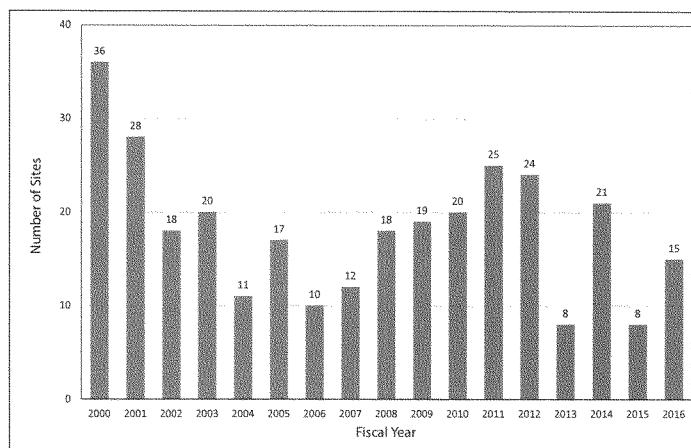
issue. While funding constraints are almost certainly a factor, there are other possible causes that should be evaluated, including whether there are more effective ways to deploy EPA staff and dollars, whether PRPs are implementing their cleanup obligations in a timely manner, and whether the technical challenges presented by certain types of sites and contamination make it impossible, at some sites, to speed action and achieve key program metrics.

3. There is still a need for the federal Superfund program. Not only is there more work to be done to complete cleanup at current non-federal NPL sites, but new sites continue to be added to the NPL each year.

There is still a sizeable amount of work to be done to complete cleanup at non-federal sites on the NPL. Four hundred and forty-one of the 1,555 non-federal sites on the NPL at the end of FY 2016 either have remedies underway that need to be completed, remedies yet to be started, or both. In addition, sites that are construction complete but not deleted from the NPL also require federal resources, which can be substantial for sites with long-term response actions.

In addition, new sites continue to be added to the NPL each year. Sites added to the NPL typically fall into one or more of the following categories: The site is complicated from a technical standpoint, cleanup is expected to be expensive, there are no financially viable or cooperating PRPs, the state does not

Figure ES-5. **Number of Non-Federal Sites Added to the NPL by Year, FY 2000–FY 2016**



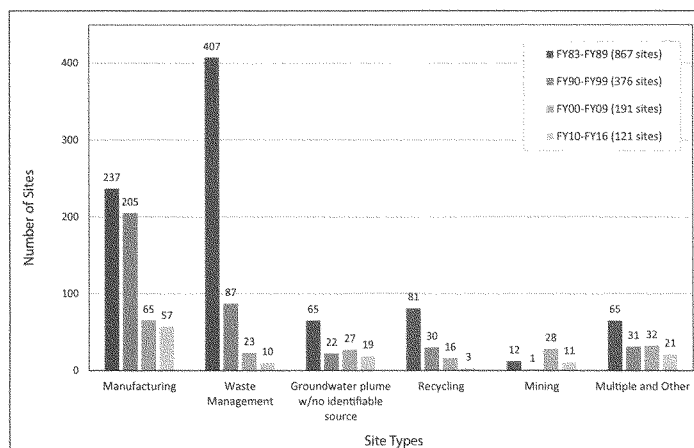
Source: U.S. EPA

have adequate funds to address the site, the site has recalcitrant PRPs and the state lacks the necessary resources and legal authority needed and seeks federal enforcement, or the site is high-profile and has hit the front page of the national newspapers.

Since FY 2000, a total of 310 non-federal sites were added to the NPL, an average of 18 per year. As shown in Figure ES-5, over the past 17 years the number of non-federal sites added to the NPL has ranged from a low of eight in FY 2013 and FY 2015 to a high of 36 in FY 2000. Over the last seven years, EPA added 121 sites to the NPL, an average of 17 sites per year. This is only a small decrease from the average number of non-federal sites (19) added to the NPL each year from FY 2000 through FY 2009.

EPA costs and workload are driven not only by the number of sites added to the NPL but also by the types of sites added, which have changed over time. As shown in Figure ES-6 (next page), before FY 1990, waste management facilities constituted the largest category of sites added to the NPL. From FY 1990 on, manufacturing sites were the largest single category of new NPL sites. Mining sites and contaminated sediment sites are among the most challenging and expensive sites to remediate. Of the 52 mining sites on the NPL at the end of FY 2016, more than half were added during the 10 years from FY 2000–FY 2009.

Figure ES-6. Number of Non-Federal Sites Added to the NPL by Type: Comparison Over Time



Source: U.S. EPA

4. Better information on the basic building blocks of the Superfund remedial program is needed.

There is a lack of publicly available information on the cost of cleanup for non-federal NPL sites, the cost and duration of each major phase of the remedial pipeline, the types of sites being added to the NPL, and many of the critical “building blocks” that would be needed to estimate EPA’s future funding and staffing needs. In some cases, it appears EPA has not analyzed its own data to develop these estimates, and in other cases, EPA has not collected the kind of consistent and reliable information that is needed.

Recommendations

Sound decisions about the future direction and funding of the Superfund remedial program require better information and data, and a commitment by EPA to analyze that data and make the results public. Below are a series of recommendations for specific studies and actions that should be implemented by EPA. In some cases, EPA should consider contracting out this work to ensure the independence and credibility of the results.

It should be noted that while the program may face staff and funding constraints, none of the recommendations below would require a large amount

of time or money to implement, and all would contribute to better-informed decisions within EPA, and a better-informed debate with Congress, states, and members of the public. More detail about each of the recommendations below can be found in the final section of this paper.

1. EPA should estimate the future cost of completing work at all non-federal sites on the NPL. This estimate, and the assumptions behind it, should be made public and should be updated on an annual basis.

2. EPA should develop credible and robust data about the critical building blocks of the Superfund remedial program. These data should include the average cost of each step of the remedial program for all sites and for individual site types, as well as the average duration of each step in the process and whether the duration differs when the action is implemented by EPA as compared to PRPs.

3. EPA should develop better information on the types of sites listed on the NPL. The agency should issue two reports describing:

- a. The types of sites that have been added to the NPL in the past five years and the specific attributes that led to these sites needing federal attention; and
- b. The types of sites most likely to be added to the NPL in the future, based on historical data, current trends, and interviews with regional EPA and state agency officials.

4. In addition to reporting program accomplishments for all NPL sites as a group, EPA should report progress for specific subsets or categories of sites and actions. For example, site progress should be reported separately for PRP-lead versus EPA-lead actions, for mega sites, and for mining and contaminated sediment sites.

5. Better Superfund metrics are needed. New metrics should be judged by whether they provide useful information that increases understanding of site progress and the obstacles to progress, not by whether they will result in a larger number of the items being counted ("more beans").

6. EPA should issue a report detailing what actions are needed to reduce possible human exposure to contamination at non-federal NPL sites where a site is characterized as having human exposure or groundwater migration that is "not under control."

7. EPA should commission an independent analysis of the financial capacity and legal authorities of state Superfund programs. This report should be conducted in coordination with the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) and potentially with the Environmental Council of the States or the National Governors Association.

All the analyses and studies that are recommended should be made public and should be updated every few years, if not annually.

Introduction

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), better known as “Superfund,” is now in its 37th year. It was signed into law by President Jimmy Carter on December 11, 1980.¹ The goal of the act was to provide funding and authority for the U.S. Environmental Protection Agency (EPA) to clean up sites contaminated with hazardous substances. The law created a two-pronged approach to site cleanup. First, CERCLA created a powerful liability scheme to compel former and current owners and operators of contaminated sites (the “potentially responsible parties” or PRPs) to pay for and clean up sites themselves. Second, it created a designated trust fund to pay for site studies and cleanups where responsible parties could not, or would not, perform the work themselves. Authorization for the taxes that were the primary source of revenue for the trust fund expired at the end of 1995; since FY 2004, the vast majority of annual appropriations for the program has come from general revenues.² Federal funds may be used to pay for remedial actions (typically referred to as “cleanups”) only at sites that are placed on EPA’s National Priorities List (NPL).

At the start of a new presidential administration it is timely, once again, to review the progress of that part of the Superfund program aimed at cleaning up sites on the NPL—the remedial program. The purpose of this paper is to provide information on the overall progress of the remedial program, looking at both the number and types of sites added to the NPL since FY 2000 as well as at key measures of program success. Information on program funding for the past 17 years is also included, as one of the questions that has plagued the program for many years is whether Congress is appropriating adequate funds to ensure the timely cleanup of NPL sites. This paper focuses on the cleanup of sites on the NPL that are not owned or operated by federal agencies (referred to as “non-federal” NPL sites) from FY 2000 through FY 2016.³

1. CERCLA was amended by the Superfund Amendments and Reauthorization Act in 1986.

2. After the funds are appropriated to EPA, no distinction is made between “trust fund monies” and “general revenues.” Funds deposited in the Superfund Trust Fund include fines, penalties, cost recoveries from responsible parties, and interest accrued on the balance of the fund. In FY 2016, 74% of the annual appropriation of \$1.09 billion came from general revenues and 26% came from the Trust Fund.

3. Federal facilities are sites that are owned or operated by a federal agency, such as the Department of Energy or Department of Defense. Cleanups at these sites are implemented and paid

The paper is organized into the following sections:

- Superfund Remedial Program Overview
- Superfund Snapshot: Status of Non-Federal NPL Sites at the End of FY 2016
- Trends in NPL Listing
- Cleanup Progress Over Time
- Funding Over Time
- Conclusions and Recommendations

Where relevant, the paper includes a comparison between actual EPA data and estimated future funding needs and program accomplishments that were forecast in Resources for the Future (RFF) report, *Superfund's Future: What Will It Cost? A Report to Congress*, which was issued in 2001.⁴ This report was requested as part of the conference report that accompanied the FY 2000 Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies appropriations bill. The request asked the authors to estimate the amount of money EPA would need in order to implement the Superfund program for the 10 years from FY 2000 through FY 2009. As part of that work, the authors estimated annual total program costs, annual costs of actions taken by EPA at non-federal NPL sites, and the number of sites where the construction of the remedy would be completed each year. These estimates provide a useful point of comparison to EPA's actual accomplishments and funding over the same time period. The author of this paper was the lead author and project director of *Superfund's Future*.

A few aspects about the approach taken in this paper are worth noting:

- All data on the program are as of the end of FY 2016 unless otherwise noted; actions implemented since then are not included.
- All data are for non-federal final and deleted NPL sites; data on federal facilities, proposed NPL sites, and Superfund alternative sites are not included.
- All data on the program were either provided by EPA (the Superfund program), obtained from the EPA website, or are from published documents.
- All appropriations, budget, and cost data have been converted to 2016 constant dollars, for ease of comparison, unless otherwise noted.⁵

Due to time and resource constraints, three important elements of the Superfund program are not addressed:

for by the agency responsible. The costs of remediating these sites are not part of the EPA Superfund budget, nor part of Congressional appropriations to EPA. The cost of EPA oversight of federal facility cleanups does come out of EPA appropriations.

4. Probst et al., *Superfund's Future: What Will It Cost? A Report to Congress* (Washington, DC: Resources for the Future, 2001).

5. The GDP deflator was used to convert 1999 through 2015 nominal dollars to constant 2016 dollars; see <https://www.bea.gov/index.htm>. Appendix A includes a table of the deflators used for each year.

1. The removal program, which allows EPA to address imminent threats by, for example, providing alternative drinking water, removing leaking barrels, or fencing off a site;⁶
2. The enforcement program, whereby EPA enters into a settlement agreement with PRPs who agree to pay for and implement site cleanup activities themselves, and also seeks to compel recalcitrant parties to pay for their share of cleanup costs; and
3. The role of state and tribal governments in NPL cleanups.

Superfund Remedial Program Overview

The NPL is the list of sites where federal funds may be used to pay for remedial actions or what are referred to colloquially as long-term cleanups. The NPL has become synonymous with those sites that are the highest priority for cleanup in the country—contaminated areas warranting federal attention either for federal enforcement action, federal funding, or both. Since the beginning of FY 2001, EPA and state agencies have investigated more than 18,000 non-federal sites to assess whether they needed to be addressed either by states or by EPA.⁷ At the end of FY 2016, there were 1,555 final and deleted non-federal sites on the NPL.⁸

Sites placed on the NPL are quite diverse in terms of industrial operations, historic uses, average cleanup cost, and who pays for cleanup. The types of sites commonly found on the NPL include: chemical manufacturing, metal fabrication, mining, wood preserving operations, as well as commercial and on-site recycling and waste management facilities, among others. Not surprisingly, the types of non-federal sites added to the NPL has changed over time. In the early years of the program, the largest category of sites on the NPL was waste management sites. Since then, manufacturing sites have become the largest single category. Very few mining sites were placed on the NPL before FY 2000. Some sites are defined more by the media that is contaminated—such as sediments or groundwater—than by the industrial operation, disposal practices, or other conditions that caused the contamination.

NPL sites are typically divided into multiple projects, referred to as operable units (OUs), and most sites have more than one OU. Each OU at a site goes through the same process, referred to as the remedial pipeline: site study (the remedial investigation/feasibility study); remedial design; remedial action; and,

6. Removal actions are generally of shorter duration and lower cost than remedial actions, although this is not always the case. Many sites on the NPL are subject to removal actions before a longer-term remedial cleanup is implemented. Sites do *not* need to be on the NPL to obtain federally-funded removal actions

7. Data provided by U.S. EPA. The overwhelming majority of the sites assessed did not warrant any kind of federal action.

8. A small number of sites not on the NPL are addressed by EPA under the "Superfund Alternative" approach.

if needed, long-term response action (which is often groundwater pump and treat) as well as operation and maintenance activities. Many NPL sites have more than one OU, and thus most sites go through the remedial pipeline more than once. Only when *all* remedial actions at a site have been fully implemented is a site declared “construction complete,” which is one of the two major progress milestones for NPL sites. “Construction complete” means that all remedies at the site have been constructed. The second major milestone occurs when a site is formally deleted from the NPL.⁹ A site can only be deleted from the NPL when all the remedies have been constructed *and* all the cleanup objectives at the site have been achieved—a much more challenging metric.

The total time to reach the construction complete phase is a lengthy process. According to a 2009 U. S. Government Accountability Office (GAO) report, the median length of time from when a site was proposed to the NPL to when it was deemed construction complete was 10 years for all sites, and almost 15 years for sites with more expensive cleanups.¹⁰ It is worth noting that there are several sites that were added to the NPL in 1983, with the first set of sites listed, that are yet to achieve construction complete status. Many sites require long-term operation and maintenance after the final remedy is constructed, and it could be decades before the cleanup objectives for a site are reached and it can then be deleted from the NPL. There may, in fact, be some sites with such intractable contamination that they may never be taken off the NPL, or at least, not for many decades.

Site investigations and cleanups can be implemented either by EPA or by potentially responsible parties, referred to as PRPs, or by a combination of the two. Typically, but not always, the party that is implementing the activity is the same party that is paying for it. At any individual site, some steps in the process might be implemented and/or paid for by EPA, and other steps by PRPs. The lead for remedial program activities can—and sometimes does—go back and forth between EPA and responsible parties. While information on the cost of EPA site studies and cleanups has been made public by EPA and in independent published reports, responsible parties are not required to disclose their costs at NPL sites and there is little publicly available information on the actual cost of PRP-lead actions. Thus, all information on the average cost of site cleanups is based on the cost of EPA activities.¹¹ Who pays for each stage of the remedial process at NPL sites determines how much money is needed for EPA’s remedial program. If, for example, more of the sites added to the NPL are truly orphan sites—where the responsible parties either cannot be found or are not financially viable—then a larger share of cleanup costs will be borne by EPA; by the same token, if more sites

9. In some cases, EPA may designate a site as a “partial deletion” when a part of the site or operable unit at a site is deleted but the entire site is not deleted.

10. GAO, *Superfund: Litigation Has Decreased and EPA Needs Better Information on Site Cleanup and Cost Issues to Estimate Future Program Funding Requirements*, GAO-09-656, “Table 15, Construction Complete Nonfederal NPL by Site Type and Megasite Designation through Fiscal Year 2007,” p. 70.

11. While PRPs sometimes disclose their estimated costs at a specific site, these estimates are rarely documented, and the information is anecdotal and completely voluntary.

listed on the NPL have financially viable and cooperating PRPs, the burden on EPA will be less.

States also play a role in paying for remedial actions at NPL sites. Under Section 104 of CERCLA, states must contribute 10% of the cost of remedial actions paid for by EPA at non-federal NPL sites within their borders. States are also responsible for 100% of the operations and maintenance costs at these sites. As more and more NPL sites enter the remedial action stage, states have raised concerns about their ability to finance their share of cleanup and long-term operations and maintenance costs.

Cleanup costs vary widely depending on the type of NPL site. Superfund sites are often lumped into two cost categories: “mega sites,” that is, sites with expected total cleanup costs of \$50 million or more, and “non-mega” sites. According to *Superfund’s Future*, the average cost to clean up a mega site on the NPL was approximately \$140 million (\$195 million in constant 2016 dollars), more than ten times the average cost of a non-mega site, which had an average cleanup cost of \$12 million (\$17 million in 2016 dollars).¹² Unfortunately, more recent information on average site cleanup costs is not available.

Mining sites and contaminated sediment sites are generally considered among the most expensive to address due to the nature and extent of the contamination. Contamination at these kinds of sites is often measured in square miles rather than acres, and there can be hundreds of thousands of cubic yards of contaminated media. As an example, Tar Creek, a mining site in Oklahoma added to the NPL in 1983, is 40 square miles. The site has extensive lead contamination and has already cost EPA and the state of Oklahoma over \$300 million.¹³ Another very expensive site is the Hudson River PCB site in New York, where General Electric has spent over \$1.5 billion on the project, and the work is not yet complete.¹⁴ Most cleanups do not cost hundreds of millions of dollars, but when these costs are borne by EPA, this becomes a huge drain on limited federal cleanup funds.

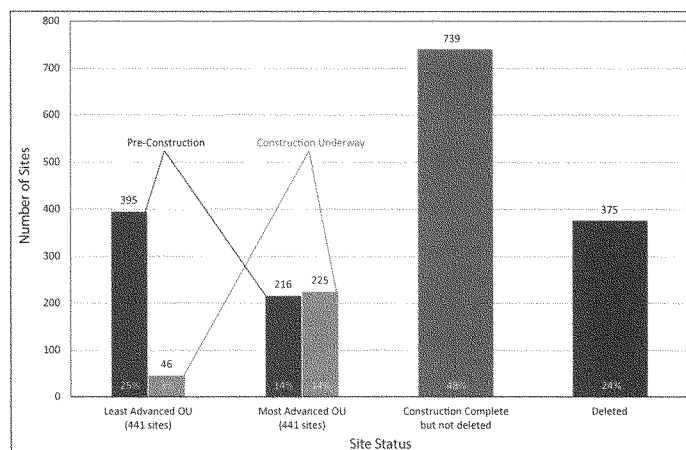
12. *Superfund’s Future*, page xxv of the Executive Summary. This appears to be the most recent public information on the cost of cleanup for specific site types on a site basis. Data included in the *Superfund: Litigation Has Decreased and EPA Needs Better Information on Site Cleanup and Cost Issues to Estimate Future Program Funding Requirements*, GAO-09-656, are not average site cleanup costs as total expenditures for all sites are averaged over the total number of sites, regardless of whether they are EPA- or PRP-lead.

13. “\$10 million Tar Creek settlement proposed,” available online at http://www.tulsaworld.com/homepagelatest/million-tar-creek-settlement-proposed/article_107629cb-4f3c-5d6a-8a56-0af354d99433.html and “NPL Site Narrative for Tar Creek (Ottawa County),” available online at <https://semspub.epa.gov/work/06/300355.pdf>.

14. See “Hudson River PCBs Superfund Site,” available online at <https://www.epa.gov/superfund/superfund-35th-anniversary-region-2#hudson>.

Superfund 2017

Figure 1. **Site Status of 1,555 Non-Federal NPL Sites at the End of FY 2016, Showing the Least Advanced and Most Advanced Operable Units (OUs)**



Source: U.S. EPA

Superfund Snapshot: Status of Non-Federal NPL Sites at the End of FY 2016

From the inception of the Superfund program through the end of FY 2016, EPA has placed 1,555 non-federal sites on the NPL.¹⁵

As shown in Figure 1, at the end of FY 2016, 24% (375) of non-federal NPL sites had been deleted from the NPL, and another 48% (739) were construction complete but not deleted.¹⁶ Thus, all elements of the cleanup remedies have been implemented at just over 70% of all non-federal sites on the NPL. The remaining 28% (441) of sites are at some stage in the remedial pipeline. Exactly how much work remains to be done at these 441 sites cannot be determined from readily available public information. At just over half (225) of these sites, construction of a remedy is underway for the most advanced operable unit. However, construction of the remedy has not yet begun at the least advanced operable unit

15. Data in this paper include only final and deleted non-federal NPL sites. Proposed NPL sites, "Superfund Alternative" sites, and federal facilities are not included.

16. Four of the deleted sites are not identified as construction complete because they were deferred to another authority for cleanup.

of 90% (395) of these sites. Thus, there are many sites that will require additional site studies and cleanup in the years to come.

In FY 2016, Congress appropriated \$1.09 billion to the Superfund program; 46% of these funds (\$501 million) were allocated to the remedial program. Funding for the remedial program covers all cleanup activities except removals¹⁷ as well as the cost of remedial program staff, program management, and technical support functions in support of site cleanups. Staff who are funded under the remedial program include the remedial project managers in EPA's ten regional offices who oversee both EPA- and PRP-lead actions at NPL sites. Just under \$300 million of the remedial program budget went to cleanup contractors and states to pay for what are called "extramural" costs, that is, the costs of pre-construction, construction, and post-construction activities at non-federal NPL sites. At the end of FY 2016, there was a shortfall in funding for remedial actions. EPA did not have the \$61 million needed to begin new construction projects that were otherwise ready to go at 12 NPL sites. The \$61 million represents only the amount of funds that would be needed to *begin* construction at these projects; EPA estimates the full cost of these construction projects to be \$200 million or more.¹⁸

Although completing cleanup is a major focus of the remedial program, perhaps even more important is the task of ensuring that contamination at a site no longer presents a risk to the public. To assess current exposure to contamination and whether contaminated groundwater is effectively contained, EPA tracks two environmental indicators at all NPL sites:

- Sites at which *current human exposure* to contamination is under control or falls within the levels specified as safe by EPA; and
- Sites where *contaminated ground water migration* has been controlled to prevent further spread of contaminants and prevent unacceptable discharge levels to surface water, sediments, or ecosystems.¹⁹

It is important to note that each of these indicators is a site-wide determination. Thus, in some cases, a site with "human exposure not under control" may mean that contamination is not under control at a small portion of a site, while at another site, it might mean that most of the site has uncontrolled contamination.²⁰

17. The budget for the removal program was \$175 million in FY 2016; data provided by U.S. EPA.

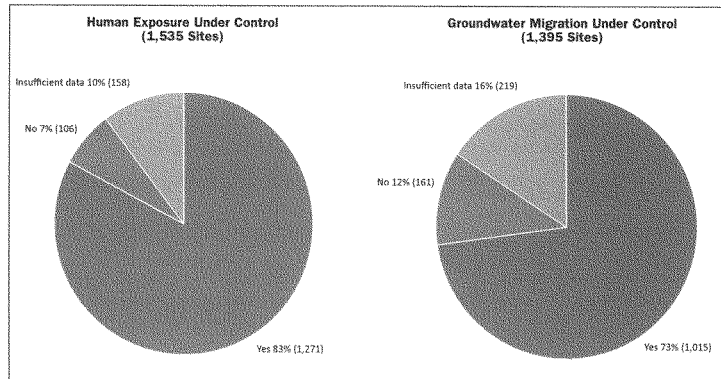
18. Information provided by U.S. EPA.

19. Definitions are taken from "Superfund Remedial Performance Measures," available online at https://www.epa.gov/superfund/superfund-remedial-performance-measures#he_anchor, accessed on March 7, 2017.

20. GAO examined the specific issues at sites where human exposure is not under control in some detail. GAO, *Superfund: EPA's Estimated Costs to Remediate Existing Sites Exceed Current Funding Levels, and More Sites Are Expected to be Added to the National Priorities List*, GAO-10-380.

Superfund 2017

Figure 2. Human Exposure and Groundwater Migration Under Control at Non-Federal NPL Sites, End of FY 2016



Source: U.S. EPA

Notes: There are fewer total sites in the groundwater data than the human exposure data because some sites are classified as "groundwater migration not applicable."

Percentages may not add to 100% due to rounding.

As shown in Figure 2, at the end of FY 2016, human exposure was under control at 83% of non-federal NPL sites; at 7% of these sites, human exposure was not under control; and there were insufficient data to determine if human exposure is or is not under control at the remaining 10% of sites. Groundwater migration was under control at 73% of the sites, was not under control at 12% of sites, and there were insufficient data to make this determination for the remaining 16% of sites.

Some of the sites where human exposure is not under control may present situations where it is in fact technically difficult or impossible to prevent exposure or limit access to the contamination, such as at large sediment sites and mining sites. If this is the case, EPA should amend its performance measures to reflect this. A critical issue is to find out why human exposure is not under control at these sites and to identify what actions, either by EPA or PRPs, would address the concern.

The fact that there are insufficient data to determine whether human exposure is under control at 158 non-federal NPL sites also suggests the need for more nuanced information about these sites. In addition, there are also insufficient data to determine whether groundwater migration is under control for 219 non-federal NPL sites.

Trends in NPL Listing

One of the most important indicators of the need for the Superfund program—and a key determinant of future funding requirements—is the number of sites that are added to the NPL annually. EPA has a statutory requirement to revise the NPL at least once each year.²¹ The decision to add a site to the NPL is usually made jointly by EPA and the state or tribal government in which a site is located. Although there are specific criteria for NPL eligibility that are articulated in EPA regulations,²² the decision to list a site (or not) is completely at EPA's discretion and the Agency has wide latitude in this matter. Thus, there is no objective way to determine whether the “right” number of sites are being added to the NPL or not.

Most states now have robust state cleanup programs. As a result, sites listed on the NPL tend to fall into one or more of the following categories: the site is complicated from a technical standpoint, cleanup is expected to be expensive, there are no financially viable or cooperating PRPs, the state does not have adequate funds to address the site, the site has recalcitrant PRPs and the state lacks the necessary resources and legal authority and seeks federal enforcement, or the site is high profile and has hit the front page of the national newspapers.

Since FY 2000, a total of 310 non-federal sites have been added to the NPL, an average of 18 per year. As shown in Figure 3 (next page), over the past 17 years the number of non-federal sites added to the NPL has ranged from a low of eight in FY 2013 and FY 2015 to a high of 36 in FY 2000. As part of the work that was conducted to estimate future EPA funding needs in *Superfund's Future*, the authors of that report interviewed the Superfund division directors in all ten EPA regional offices and Superfund officials in nine states to help inform estimates of the likely number of sites to be added to the NPL from FY 2000 through FY 2009.²³ Based on these interviews, as well as by looking at then-recent listing trends, the authors estimated that EPA was likely to list an average of from 23 (low case) to 49 (high case) non-federal NPL sites per year from FY 2001 through FY 2009.²⁴ The actual number of non-federal sites added to the NPL in FY 2000 was known (it was 36). The “base case” estimate assumed that 35 new non-federal sites would be added each year from FY 2001 through FY 2009. In fact, an average of only 17 new NPL sites were added per year over this time period. Thus, actual listings were significantly lower than the estimated “low case.” The authors also concluded that future sites to be added were likely to be more expensive and more complicated to clean up than sites listed in the past, as many states had by this time developed their own state Superfund programs that could address the less difficult or expensive sites.

A more nuanced and robust description of what kinds of sites have been added to the NPL, and why, would be very useful for understanding the program's likely future scope and funding needs. EPA information on site types is based on what is

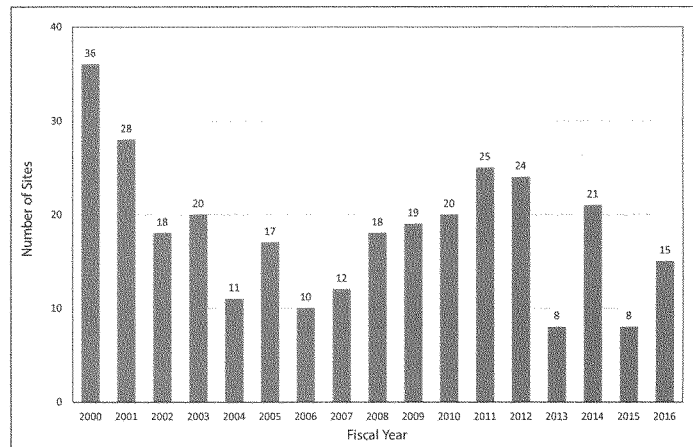
21. See Section 105(a)(8)(B) of CERCLA.

22. 40 CFR 300.425.

23. See *Superfund's Future*, Chapter 5 and Appendix E.

24. See *Superfund's Future*, p. 105, Table 5-4.

Figure 3. Number of Non-Federal Sites Added to the NPL by Year, FY 2000–FY 2016



Source: U.S. EPA

known at the time a site is proposed for the NPL and is typically not updated as more information becomes available later in the process.²⁵ Although EPA collects a great deal of information as part of the process to determine whether a site should be added to the NPL, information regarding site attributes not required for listing, such as whether a site has bankrupt PRPs or contaminated drinking water, may not be known or collected at the time of listing. EPA does maintain an internal analysis of listing trends, but the data are incomplete and not updated systematically. As a result, the data cannot be used to analyze trends over time.

It would also be useful for EPA to gather consistent information for all sites added to the NPL regarding key site attributes that relate to the nature and extent of contamination and likely cleanup costs, and to update the data as more information becomes available over time. The information should address the following questions about the attributes of each site:

- Are contaminated sediments a major issue at the site?
- Will it be difficult to control human exposure to contamination?
- Is the site likely to have cleanup costs of \$50 million or more?
- Are there bankrupt PRPs associated with the site, and is this a major factor in why the site was added to the NPL?
- Is the site being listed because the state is seeking federal enforcement?

25. See Appendix B for EPA site type categories.

- Is the contamination the result of a gap in another regulatory program?
- Is the site being listed because of failed financial assurance under another program?
- Were there any demographic or land-use changes that led to listing?

Consistent information on these types of site attributes would allow EPA, Congress, and the public to have a better understanding of why sites continue to be added to the NPL. Absent this kind of information, it is difficult to paint a clear picture of the types of sites that have been listed in recent years and what factors drove their being added. It would also be helpful if EPA tagged NPL sites that are likely to be designated mega sites early in the process, as these sites typically demand more agency resources, both for cleanup dollars and for EPA program and enforcement staff, than do less costly sites.

According to EPA's staff, recent NPL listings have included sites with bankrupt PRPs; changing demographics leading to increasing exposure and risk; failed Resource Conservation and Recovery Act (RCRA) financial assurance; truly orphan sites where the cause of contamination is unknown; sites where a state had the lead for many years but then sought NPL listing when it determined it did not have the necessary funds to complete work at the site; and sites with what is referred to as an "emerging" contaminant, that is, a contaminant that was not previously a concern at NPL sites, such as perfluorooctanoic acid (PFOA). A few examples of sites recently added to the NPL are below.

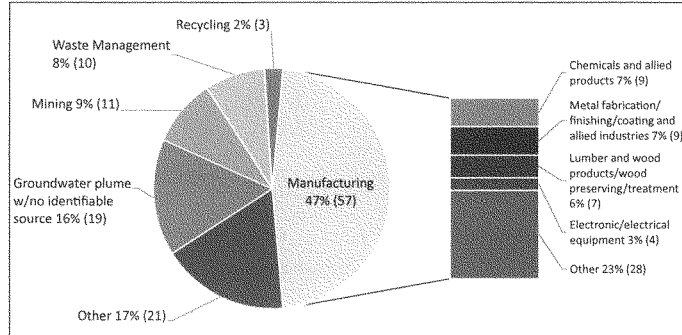
Argonaut Mine, California—Bankrupt PRPs. A former gold mining operation from the 1850s to 1942, 90 acres of the site were later sold and developed for residential use. The PRPs are bankrupt. There are arsenic, mercury, and lead in soil in the residential area. Some of the residences were built on top of or adjacent to the former mining operations.

Dorado Ground Water Contamination, Puerto Rico—Changing demographics. The site has a contaminated groundwater plume with no identifiable source of the contamination that is affecting a municipal drinking water source for over 100,000 people. The area has seen increasing numbers of residences in recent years. There is no alternative source of drinking water. Contaminants of concern include trichloroethylene (TCE), perchloroethylene (PCE or "perc"), and vinyl chloride.

Eldorado Chemical Co., Inc., Texas—Orphan site. The site was operated as a chemical manufacturer of cleaning products from 1978 to 2007, at which point it was abandoned. There are no known or viable PRPs, and there are high concentrations of volatile organic compounds, metals, and cyanide in the aquifer beneath the site that threaten 40 public supply wells serving nearly 1.5 million people.²⁶

26. For brief descriptions of each of these three sites, see the site narratives at "National Priorities List (NPL) Sites—by Site Name," at <https://www.epa.gov/superfund/national-priorities-list-npl-sites-site-name>.

Figure 4. Non-Federal Sites Added to the NPL by Type (121 sites), FY 2010–FY 2016



Source: U.S. EPA

Note: Percentages may not add to 100% due to rounding.

One of the ways to examine the future trends of the Superfund program is to look at the types of sites being listed on the NPL. At the time a site is listed on the NPL, EPA places sites in one of five major categories to reflect the type of activity that led to site contamination:

- Manufacturing
- Mining²⁷
- Recycling
- Waste management
- Other

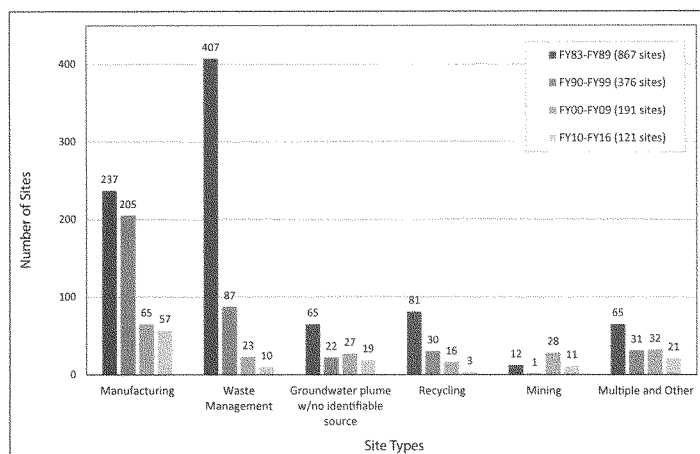
Figure 4 shows a breakdown of the 121 non-federal sites, by type, that were added to the NPL from FY 2010 through FY 2016, including the number of sites in the five major EPA categories and in the four largest sub-categories of manufacturing sites:

- Chemicals and allied products
- Electronic/electrical equipment
- Lumber and wood products/wood preserving/treatment
- Metal fabrication/finishing/coating and allied industries

Figure 4 also shows the number of sites categorized as “groundwater plume with no-identified source of contamination” (which is a subset of the “Other”

²⁷ Mining sites are those sites where mining is the primary activity. There are additional NPL sites with mining-related activities that are included in the manufacturing and waste management categories.

Figure 5. Number of Non-Federal Sites Added to the NPL by Type: Comparison Over Time



Source: U.S. EPA

Note: Appendix D includes this information presented in percentages.

category noted earlier), as they comprise a relatively large percentage of the 121 sites listed over those seven years. It is important to note that these are *not* the only sites that have groundwater contamination on the NPL. They were put into a separate category because the source of the contamination was not known at the time of listing, and as a result, they do not fall under any of the other possible site type categories.

Manufacturing sites make up the largest category of sites listed, 47 percent. The next largest category of sites (not including “Other”) are the 16% of sites with a groundwater plume with no identifiable source of contamination. Mining sites are the third largest group, with 11 sites (9%). Mining sites are of particular interest, as these sites are often among the most expensive sites to remediate.²⁸ In addition, some of the most expensive and notorious mining sites on the NPL have bankrupt PRPs, which means that the cleanup costs of these expensive sites are often borne by EPA.

Of the 121 sites added to the NPL over the last seven years, almost half (46%) are in eight states: California, Florida, Illinois, Indiana, New Jersey, New York, North Carolina, and Texas. These states have consistently had the most NPL sites

28. *Superfund's Future*, p. 203, Table F-1, and p. 216, Table F-10; and GAO-15-812, p. 24.

listed within their borders; in fact, six of them were in the “top 10” listing states for the period from October 1996 through February 2000.²⁹

In addition to the types of sites added to the NPL in recent years, it is informative to look at whether the types of sites added to the NPL have changed since the program’s inception and, if so, how? Figure 5 (see page 13) shows the number of sites in each of six categories: the five “major” EPA categories (manufacturing, mining, waste management, recycling, and other) and the subcategory of sites with groundwater plumes from an unknown source of contamination. Sites that qualify for multiple types have been grouped with “Other.”

The first aspect of the data that stands out is the large number of sites (867, or 56%) that were listed before FY 1990. At that time, waste management facilities constituted the largest category of sites added to the NPL, but from FY 1990 on, manufacturing sites were the largest category.³⁰ Mining sites represent a small number of all non-federal NPL sites, and very few mining sites were placed on the NPL prior to FY 2000. Of the 52 mining sites on the NPL at the end of FY 2016, more than half were added during the 10 years from FY 2000–FY 2009.

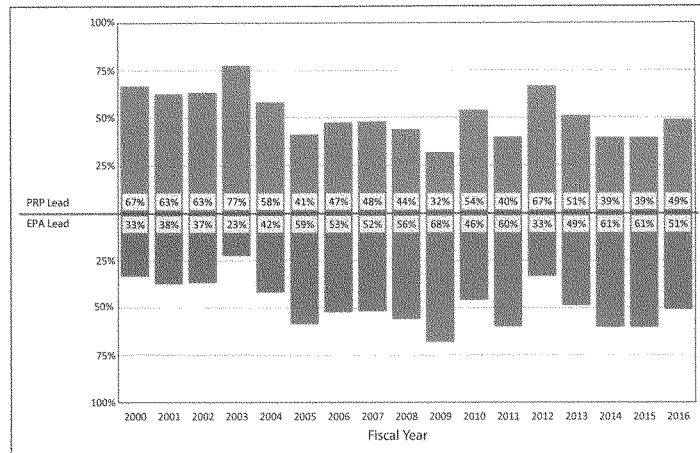
One key trend to watch in estimating future cleanup costs is who is paying for the various phases of the remedial program: PRPs or EPA?

Figure 6 (next page) shows the relative percentage of remedial action projects (the most expensive phase of the cleanup process) started each year from FY 2000 through FY 2016 that were implemented by EPA compared to remedial action projects conducted by PRPs. From FY 2000 through FY 2004, more than 50% of remedial action projects were paid for by PRPs. Since then, however, the distribution between EPA and PRPs has bounced around. Over the last 10 years, there have only been three years where PRPs paid for more than half of the remedial action project starts (FY 2010, FY 2012, and FY 2013). These percentages reflect only the *number* of actions that were initiated by either PRPs or EPA; they provide *no* information on the relative amount of *dollars* paid by PRPs and EPA for site cleanups at NPL sites. Finer-grained data, ideally the total actual cleanup costs paid for by EPA and by PRPs—or, lacking that level of detail, an estimate of the total cost paid for by PRPs and EPA based on estimated remedial action costs for PRP and EPA actions—would provide information on whether EPA’s share of cleanup costs for non-federal NPL sites has remained the same, is increasing, or is decreasing over time. There is very little information on the actual cost of PRP-implemented cleanups, because PRPs are not required to disclose their actual cleanup costs, and few voluntarily do so. In addition, EPA does not typically make public their annual cleanup expenditures. Expenditure data, rather than program budget information, provide information on how much EPA is *actually* spending as distinct from how it allocates funds at the beginning of the year.

29. These states are: CA, FL, NJ, NY, NC, and TX; see *Superfund’s Future*, Table E-1, pp. 186–187.

30. See Appendix C for a more detailed breakdown of types of manufacturing facilities added to the NPL over time.

Figure 6. **Percentage of Remedial Action Project Starts at Non-Federal NPL Sites that Were PRP and EPA Lead, FY 2000–FY 2016**



Source: U.S. EPA

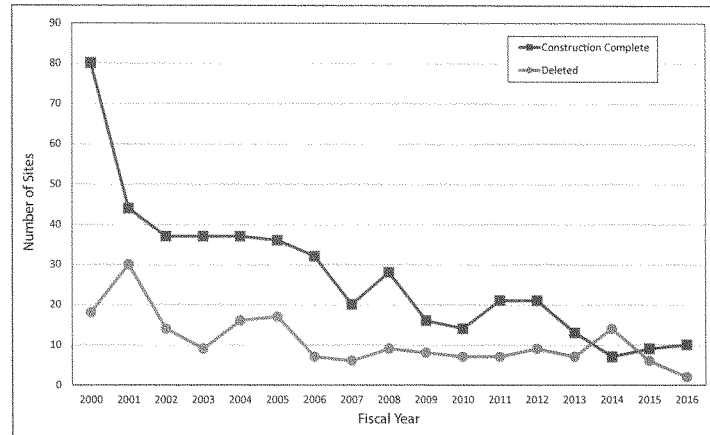
Note: Remedial actions starts are tracked at the project, not the operable unit, level.

Cleanup Progress Over Time

EPA has developed several indicators of site cleanup progress over the course of the Superfund program. The oldest metric of program accomplishments is the number of NPL sites that have been “deleted” from the NPL. According to EPA guidance, a site can be deleted from the NPL when “no further response is required at the site, all cleanup levels have been achieved, and the site is deemed protective of human health and the environment.”³¹ In the early years of the program, this was the only measure of cleanup progress. It soon became clear, however, that at some sites it could take years, or even decades, to achieve the cleanup standards called for in the remedy. For this reason, in 1993, EPA established “construction complete” as a new measure of site progress. A site is designated construction complete when the physical construction of all remedies at the site is complete even if all cleanup goals at the site have not been achieved.

31. *Close Out Procedures for National Priorities List Sites*, OSWER Directive 9320.2-22, p. 8, May 2011, U.S. EPA.

Figure 7. Number of Non-Federal NPL Sites Construction Complete and Deleted Each Year, FY 2000–FY 2016



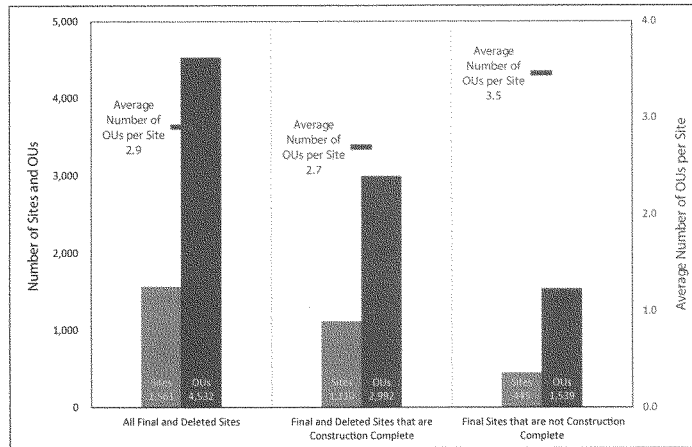
Source: U.S. EPA

One important note about data on site progress is that Superfund sites are *not* homogeneous. They can, and do, differ greatly in terms of complexity, cost, duration of cleanup, the type and extent of contamination, and who—EPA or the responsible parties—is implementing site actions. Most likely, those sites that are less complex, smaller, have fewer remedies to implement, and have contamination with proven cleanup technologies will be completed sooner than those that are more complex. EPA does not provide information on program accomplishments for different categories of sites, such as PRP and EPA remedial actions, mega sites vs. non-mega sites, large complex sites vs. smaller sites, etc. Thus, it is not possible, from public data, to determine whether certain types of sites take longer to clean up than others. Data on the duration of site cleanups do suggest that, not surprisingly, mega sites—those sites expected to cost \$50 million or more to address—take longer to reach construction completion than less expensive sites.³² Thus, it would be helpful if EPA tagged mega sites in their data systems so that progress and costs at these sites could be tracked separately from less expensive sites.

As shown in Figure 7, beginning in FY 2002, fewer than 20 non-federal sites have been deleted each year from the NPL, and for many years, that number was less than 10. From FY 2000 through FY 2016, a total of 186 non-federal sites were

32. See *Superfund's Future*, page 210, and GAO-09-656, page 70.

Figure 8. Average Number of Operable Units (OUs) at Non-Federal NPL Sites at Different Stages in the Cleanup Process



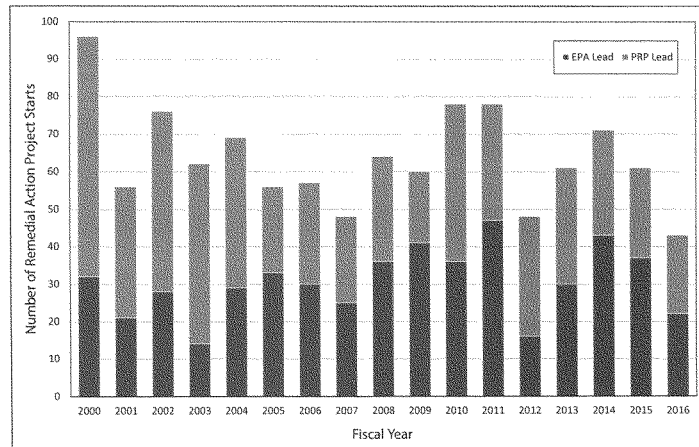
Source: U.S. EPA, data as of February 27, 2017.

deleted from the NPL, an average of 11 deletions each year. Looking at the last five years, from FY 2012 through FY 2016, this average dropped to fewer than eight deletions each year. Over this same time-period, 76 new non-federal sites were added to the NPL, an average of 15 sites a year. More sites are being added to the NPL each year than are being taken off.

From FY 2000 through FY 2016, a total of 462 non-federal NPL sites reached construction complete status, an average of 27 each year. In the five years FY 2012 through FY 2016, this number dropped by more than half, to an average of 12 sites designated as construction complete each year.

The fact that the number of sites being deleted and reaching construction complete status has decreased over time is not necessarily surprising. As noted earlier, sites that are more complex, with more remedies, are likely to take longer to reach these milestones than less complex sites. Data about the number of operable units at NPL sites that have or have not reached construction complete support this. As shown in Figure 8, sites that were construction complete at the end of FY 2016 had fewer operable units (and, therefore remedies to implement) than sites that were not designated construction complete. The average number of operable units for all final and deleted non-federal NPL sites was 2.9, but the average number of operable units for sites that were construction complete was 2.7, while

Figure 9. Number of Remedial Action Project Starts at Non-Federal NPL Sites: EPA and PRP Lead, FY 2000–FY 2016



Source: U.S. EPA

Note: Remedial actions starts are tracked at the project, not the operable unit, level.

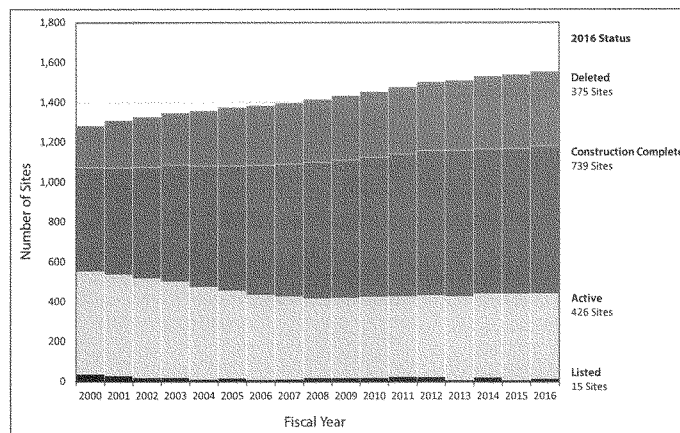
the average for sites that were not yet construction complete was 3.5. That said, it is worth noting that there are sites with only one operable unit that are extremely expensive. For example, the Portland Harbor site in Oregon has only one operable unit and is estimated to have cleanup costs of approximately \$1 billion.³³

The decreasing number of non-federal NPL sites being deleted and achieving construction complete raises two questions. First, why is this the case? Are the number of sites achieving these progress metrics decreasing because of technical challenges, funding constraints, EPA or PRP inaction, or some other reason? Second, are these, in fact, useful and important measures of program success, or would other metrics—perhaps yet to be developed—provide more useful indicators of both clean-up progress and benefits? These are important issues to address in order to identify ways to make the remedial program more successful and to better track progress.

With the slower pace of sites reaching construction complete, in FY 2011 EPA began tracking progress at the remedial project level, rather than on a site-wide or operable unit basis, tracking the number of remedial action project completions.

33. See "Portland Harbor Superfund Site," available online at <https://yosemite.epa.gov/r10/clean-up.nsf/sites/pddharbor>.

Figure 10. Cumulative Status of Non-Federal NPL Sites, FY 2000–FY 2016



Source: U.S. EPA

Sixty-five remedial action projects were completed at non-federal NPL sites in FY 2015, and another 54 were completed in FY 2016.³⁴ Unfortunately, data for non-federal sites only are not available for prior years, so it is not possible to provide an historical perspective regarding completions.³⁵

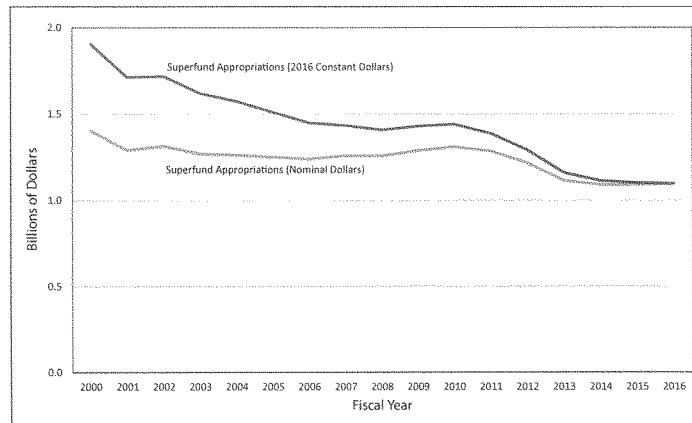
Figure 9 (page 18) shows remedial action project starts since FY 2000. The number of remedial action project starts has bounced around, with a high of 96 in FY 2000 and a low of 43 in FY 2016. Over the last five years, an average of 57 remedial action projects were started each year, which is somewhat lower than the average from FY 2000 through FY 2016, when remedial action project starts averaged 64 a year.

EPA's workload has remained relatively steady over recent years. Figure 10 shows the distribution of all non-federal NPL sites since FY 2000 among four categories: sites listed as final during that fiscal year, sites that are "active," sites that are construction complete but not deleted, and deleted sites. Together, the number of new sites added to the NPL and the number of active sites decreased from a high

34. Data provided by U.S. EPA.

35. For information on remedial project completions for all final NPL sites, both federal facilities and non-federal sites, see "Superfund Remedial Performance Measures," available online at https://www.epa.gov/superfund/superfund-remedial-performance-measures#ra_anchor. In FY 2015 and FY 2016, federal facilities accounted for 37% and 49%, respectively, of the RA project completions, according to data provided by U.S. EPA.

Figure 11. **Superfund Appropriations in Constant and Nominal Dollars, FY 2000–FY 2016**



Source: U.S. EPA

Note: Funds from ARRA that were allocated to the Superfund program in FY 2009 are not included.

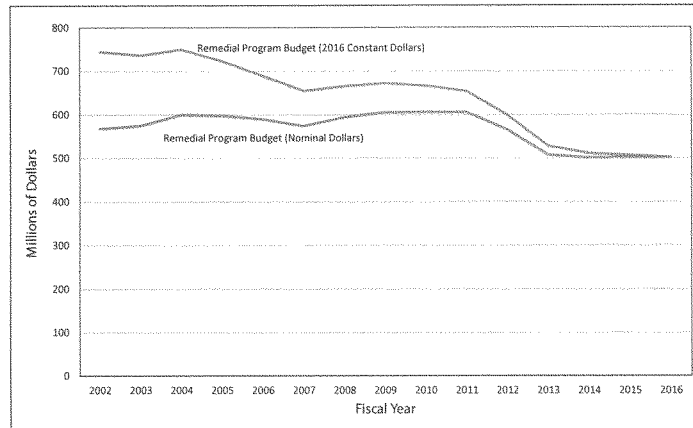
of 552 in FY 2000 to a low of 416 in FY 2008. Over the past five years, the number of sites in these two categories has hovered between 427 and 441 each year. The number of active sites in recent years has remained relatively steady, but more detailed information on the number and cost of future site actions—as well as whether the costs would be borne by EPA or PRPs—would be needed to estimate future funding needs. And it is worth noting that EPA (and PRPs and states) continue to expend staff and other resources on sites that are construction complete as well as on sites that have been deleted.

Funding Over Time

When CERCLA was first enacted, Congress created a dedicated trust fund, the “Superfund,” stocked with dedicated new taxes to generate the revenues to pay for the annual costs of the Superfund program. The authority for the Superfund taxes expired at the end of 1995, and the balance in the trust fund has dwindled over time.³⁶ Most annual Superfund appropriations now come

36. See Ramseur, Jonathan L., Reisch, Mark, and McCarthy, James E., *Superfund Taxes or General Revenues: Future Funding Issues for the Superfund Program*, CRS Report to Congress by Congressional Research Service February 4, 2008, Washington, DC.

Figure 12. Superfund Remedial Program Budget in Constant and Nominal Dollars, FY 2002–FY 2016



Source: U.S. EPA

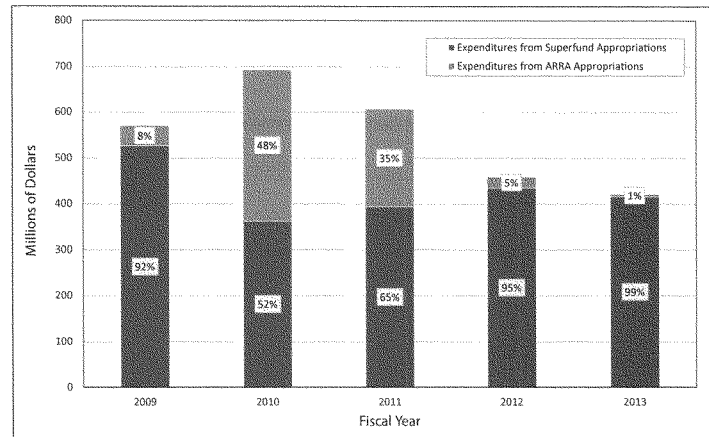
Note: Information on the remedial program budget is not available for FY 2000 and FY 2001.

from general revenues, not trust fund monies. Since then, while there have been periodic attempts to reinstate the taxes that stocked the trust fund, no administration—Democratic nor Republican—has made a serious effort to reinstate the Superfund taxes or some variation of them.

As shown in Figure 11 (previous page), in nominal terms, annual appropriations remained relatively steady from FY 2001 through FY 2011, hovering around \$1.3 billion for most of these years. In FY 2013, annual appropriations in nominal dollars fell to under \$1.2 billion for the first time. In nominal dollars, funding went from a high of \$1.4 billion in FY 2000 to a low of \$1.09 billion in FY 2014 (and FY 2015 and 2016), a decrease of 22 percent. In real terms the decrease in funding has been much more dramatic: annual funding has been cut over 40 percent. In constant 2016 dollars, appropriations dropped from a high of \$1.9 billion in FY 2000 to a low of \$1.09 billion in FY 2016, a decrease of 43 percent. In FY 2009, the program received a one-time increase in appropriations of \$600 million (\$666 million in 2016 dollars) from the American Recovery and Reinvestment Act of 2009 (ARRA), which is not shown in Figure 11.

Given the decrease in total annual Superfund appropriations, it is not surprising that funds allocated to the remedial program have declined as well, as shown in Figure 12. Expenses paid from the remedial program budget include:

Figure 13. Impact of American Recovery and Reinvestment Act (ARRA) Funds on Remedial Expenditures in Constant 2016 Dollars, FY 2009–FY 2013



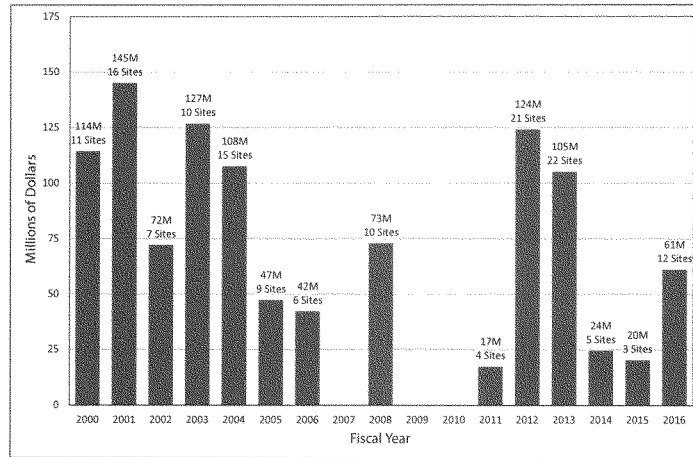
Source: GAO-15-812, Figure 5, p. 15. Actual data provided by U.S. EPA.

pre-construction, construction, and post-construction activities; associated staff (payroll) costs; and program management activities. In constant 2016 dollars, the annual budget for the remedial program has decreased by one-third from a high of \$749 million in FY 2004 to a low of \$501 million in FY 2016.

Not all funds for the program are spent in the same year they are appropriated due to the vagaries of the budget and spending process.³⁷ In their 2015 report, *Trends in Federal Funding and Cleanup of EPA's Nonfederal National Priorities List Sites*, GAO published information on actual EPA expenditures for remedial activities from FY 2009 through FY 2013 and included remedial expenditures paid for with funds from the American Recovery and Reinvestment Act (ARRA) as well as from Superfund appropriations. As shown in Figure 13 in constant 2016 dollars, overall spending on these activities decreased over this time from a high of \$693 million in FY 2010, to a low of \$421 million in FY 2013. The additional funds available from the ARRA boosted remedial spending in FY 2009, FY 2010, and FY 2011, almost doubling remedial expenditures in FY 2010 and increasing FY 2011 remedial expenditures by 54 percent. Looking only at expenditures on remedial activities paid from Superfund appropriations, there was a decrease of 21% in constant 2016

37. Program expenditures for remedial activities can differ greatly from the amount of funds allocated to the remedial program budget. For analysis of trends and costs, it is important to look at expenditure data.

Figure 14. Number and Associated Cost of Unfunded Remedial Action Starts at Non-Federal NPL Sites in Constant 2016 Dollars, FY 2000–FY 2016



Source: U.S. EPA

dollars from FY 2009 (\$526 million) to FY 2013 (\$416 million). Remedial expenditures from Superfund appropriations were even lower in FY 2010 and 2011, when they were \$362 million and \$393 million, respectively.

Based on annual reports issued by EPA since FY 2000, there has clearly been a funding shortfall for remedial actions paid for by EPA. As shown in Figure 14, in 14 of the past 17 years EPA has closed out the year unable to fund some remedial actions that were otherwise ready to be implemented. In constant 2016 dollars, the shortfall in funding needed to start these cleanup projects has ranged from a low of \$17 million in FY 2011 to a high of \$145 million in FY 2001. Over the past five years, the funding shortfall for remedial actions at the end of the year has averaged \$67 million in constant 2016 dollars. In 2010 and 2015, GAO issued reports concluding that the cost to EPA to remediate existing sites exceeded current funding levels and documented trends in federal funding for non-federal NPL cleanups.³⁸

Two of the three years when there were no unfunded remedial actions (FY 2009 and FY 2010) are two of the years when EPA received supplemental funding for remedial activities from the ARRA.

38. GAO-10-380, *Superfund: EPA's Estimated Costs to Remediate Existing Sites Exceed Current Funding Levels and More Sites are Expected to Be Added to the National Priorities List*, and GAO-15-812, *Superfund: Trends in Federal Funding and Cleanup of Nonfederal National Priorities List Sites*.

It is likely that the actual Superfund program shortfall exceeds these amounts. Unfunded remedial actions are easy to track as these are projects where the remedy has been designed and the cost of the remedy is part of the remedial design. It is much more difficult to assess whether funding constraints resulted in some sites not being added to the NPL at all or in a slowing down of sites moving through the pre-construction stages. Delays in these earlier stages of the remedial process due to lack of funds would almost certainly lead to a lower number of completed site studies, designs and, ultimately, remedial actions. These results, however, are harder to discern.

An interesting, though certainly not typical, example of the impact of funding constraints on the speed of cleanup is the New Bedford Harbor site in Massachusetts. The 18,000-acre site, which was added to the NPL in 1983, is expected to cost over \$300 million to remediate. For many years, all site work was paid for out of Superfund appropriations, and due to budget constraints, EPA allocated approximately \$15 million a year to the site. At that rate, EPA estimated that cleanup would take 30 to 40 years to complete. In October of 2012, EPA and the Commonwealth of Massachusetts reached a settlement with AVX Corp.—the main responsible party—for \$366 million, which is estimated to cover 90% of the total cleanup costs.³⁹ At the time of the settlement, EPA estimated that with these funds in hand, the duration of cleanup could be reduced to five to seven years once the project is fully underway.⁴⁰

Another way to examine whether remedial activities are experiencing a funding shortfall is to compare actual EPA expenditures and accomplishments with the estimates found in *Superfund's Future* as shown in Figure 15 (next page). The RFF model included site-specific information on the future actions and likely costs of the 1,245 final and deleted non-federal sites on the NPL as of the end of FY 1999 as well as an estimate of the cost of sites likely to be added to the NPL from FY 2000 through FY 2009. As fewer sites were added to the NPL over this time period than was estimated in *Superfund's Future*, the estimated expenditures for future sites included in Figure 15 has been reduced accordingly.

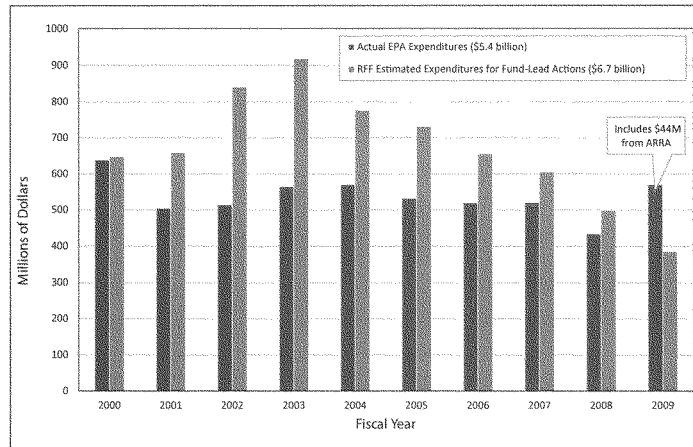
The comparison of EPA expenditures to the RFF estimates shows a funding shortfall. Over the 10-year period from FY 2000 through FY 2009, EPA expenditures for remedial activities totaled \$5.4 billion in constant 2016 dollars; the RFF model suggested that a total of \$6.7 billion would be needed, a funding gap of \$1.3 billion. If the \$44 million in ARRA dollars spent in FY 2009 is not included, this gap would be even larger. The RFF estimates assumed full funding of each phase of the remedial program when each phase was ready to begin.

A comparison of the actual number of non-federal NPL sites that were designated construction complete to the number predicted in the RFF model also reveals a dramatic shortfall as shown in Figure 16 (page 26). Actual construction comple-

39. All cost estimates for New Bedford Harbor are in nominal, not constant, dollars.

40. "Harbor Cleanup," available online at <https://www.epa.gov/new-bedford-harbor/harbor-cleanup> accessed 1/17/17; and *New Bedford Harbor Superfund Site, Supplemental Consent Decree with Defendant AVX Corporation, Additional Frequently Asked Questions*, October 25, 2012.

Figure 15. **Actual EPA Remedial Expenditures vs. RFF Estimated Expenditures**
in Constant 2016 Dollars, FY 2000–FY 2009



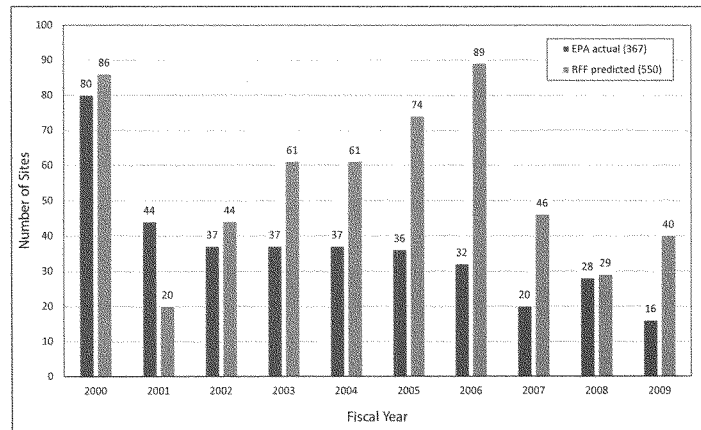
Source: Actual EPA expenditures are from GAO-15-812 Report, Figure 5; RFF estimated expenditures are from *Superfund's Future*, Table H-1 (base case), p. 256, and Table H-5 (low case), p. 259, reduced by 22% to adjust for that fact that approximately 22% fewer sites were added to the NPL from FY 2000 through FY 2009 than was assumed in the low case.

Note: Fund-lead actions are paid for by EPA.

tions over this 10-year period totaled 367; the RFF model, which assumed that all necessary funds for fund-lead (that is, EPA-financed) actions would be available and that all site activities, whether fund-lead or PRP-lead, would proceed at an "average" pace, predicted that 550 non-federal NPL sites would reach this stage. The RFF model predicted that almost 50% (183) more sites would reach construction complete than was achieved. Of course, without more detailed analysis there is no way to discern the relative role of PRP-lead actions in this discrepancy, but it is likely that lack of funding played some role. Based on this comparison, program accomplishments have clearly fallen behind what was predicted in the 2001 Report to Congress, *Superfund's Future*.

Estimating needed funding for the remedial cleanup program would require information on the Superfund program's workload, which is not publicly available. EPA has not issued an estimate of the remaining cost of cleaning up sites currently on the NPL for many years, yet this type of information is critical to evaluating whether annual appropriations are adequate. While this is a substantial undertaking, it can and should be done.

Figure 16. **Non-Federal NPL Sites Reaching Construction Complete:**
Actual EPA vs. RFF Predicted, FY 2000–FY 2009



Sources: U.S. EPA, and *Superfund's Future*, Table H-2, p. 257.

Conclusions and Recommendations

Improving the implementation of the Superfund cleanup program requires a frank assessment of its accomplishments thus far and an understanding of the challenges ahead. The conclusions and recommendations set forth below are intended to provide a starting point for that discussion.

1. Funding for the Superfund program has declined markedly since FY 2000, and it appears that the remedial program is facing a funding shortfall.

Funding for the Superfund program, in general, and the remedial program, in particular, has decreased dramatically in recent years. In constant 2016 dollars, annual Superfund appropriations declined from a high of \$1.9 billion in FY 2000 to a low of \$1.09 billion in FY 2016, a decrease of 43% in real dollars. Not surprisingly, funding for the remedial program declined as well, from a high of \$749 million in FY 2004 to a low of \$501 million in FY 2016, a decrease of 33 percent.⁴¹

Due to lack of funding, EPA has had to delay the start of some number of cleanups for 14 of the past 17 years. In FY 2016, EPA had to put 13 cleanup projects at 12 NPL

41. These figures do *not* include the additional \$666 million, in constant 2016 dollars, of ARRA funds allocated to the program in FY 2009. The amount of the remedial program budget for FY 2000 and FY 2001 was not available from U.S. EPA.

sites on hold due to lack of funding. The estimated price tag to get the 13 projects started was \$61 million. (EPA estimated the total cost of these 13 cleanup projects to be \$200 million or more.) Over the past five years, the end-of-year funding shortfall for remedial action projects has averaged \$67 million in constant 2016 dollars. Most likely, this is only the tip of the iceberg in terms of underfunding as unfunded remedial action starts are among the easiest items to track. Much more difficult to quantify are more subtle results of funding constraints: sites not added to the NPL, site study and remedial projects spread out over a longer time period, and other less visible actions not taken or delayed due to lack of resources.

A comparison of actual EPA expenditures and accomplishments with the estimates in Superfund's Future shows a major shortfall. Over the period from FY 2000 through FY 2009, EPA expenditures for the cost of all EPA-lead actions at non-federal NPL sites were almost 20% lower than the estimates in *Superfund's Future*, even after taking into account that fewer sites were added to the NPL than was assumed in the most conservative estimate. The number of sites that achieved construction complete status over this same 10-year period was almost one-third fewer than was estimated in the RFF model, which assumed that the remedial program would be fully funded. More detailed analysis is needed to confirm that the decrease in construction completions is due to fewer resources being allocated to these actions than was estimated in *Superfund's Future*, but it seems likely that lack of funding played a role.

2. Cleanup progress has slowed in recent years.

The average number of non-federal NPL sites reaching construction complete status and being deleted each year is relatively small and has decreased in the last five years. Since the beginning of FY 2000, 462 non-federal NPL sites achieved construction complete, an average of 27 a year. During the years from FY 2001 through FY 2006, the average number of sites reaching construction complete was 37 per year. However, the average dropped to 12 sites a year for the five years from FY 2012 through FY 2016, when only 60 sites were designated construction complete. Since the beginning of FY 2000, a total of 186 non-federal sites were deleted from the NPL, an average of just under 11 sites a year; since FY 2012, that average has decreased to eight deletions a year.

There is a pressing need to better understand what factors have led to the slowdown in cleanup progress and what steps could be taken to address this issue. While funding constraints are almost certainly a factor, there are other possible reasons that should be evaluated, including whether there are more effective ways to deploy EPA staff and dollars, whether PRPs are implementing their cleanup obligations in a timely manner, and whether the technical challenges presented by certain types of sites and contamination make it impossible, at some sites, to speed action.

3. There is still a need for the federal Superfund program. Not only is there more work to be done to complete cleanup at current non-federal NPL sites, but new sites continue to be added to the NPL each year.

There is still a sizable amount of work to be done to complete cleanup at non-federal sites on the NPL. Four hundred and forty-one (28%) of the 1,555 non-federal sites on

the NPL at the end of FY 2016 were “active” sites, that is sites that were neither deleted from the NPL nor construction complete. The number of active sites has remained relatively constant over the past five years, ranging from 427 to 441 active sites each year. The 441 active sites have more operable units per site than sites that have reached the construction complete stage, and thus they are likely more complex and possibly more expensive to remediate. More detailed analysis is needed to determine whether EPA’s workload—which includes implementing EPA-lead actions and overseeing PRP-lead actions—has increased, decreased, or remained relatively constant.

In addition, the 48% (739) of non-federal NPL sites that are construction complete at the end of FY 2016 will continue to require some EPA resources either to implement EPA-funded long-term response actions or to oversee PRP-lead actions as well as to conduct periodic site reviews. While these costs likely will not be very substantial in terms of total expenditures, these activities may be expensive at some sites and will require EPA staff. States, who bear the burden of 100% of operations and maintenance for remedial actions paid for by EPA, are increasingly concerned about the long-term cost burden this presents.

There are still many non-federal NPL sites where human exposure and groundwater contamination either are not “under control,” or there is insufficient information to make this determination.

More detailed information on the remaining work to be implemented at non-federal NPL sites, as well as whether EPA or PRPs are footing the bill for the various activities, is needed to determine EPA’s future workload and funding needs. EPA staff are needed for both PRP and EPA-lead actions.

New sites continue to be added to the NPL each year, and the number of non-federal sites added to the NPL in recent years has not declined much compared to earlier years. Over the past seven years, 121 non-federal sites were added to the NPL, an average of 17 sites each year. This is only a small decrease from the average number of non-federal sites (19) added to the NPL each year from FY 2000 through FY 2009. NPL listing is required to obtain federal funding for remedial actions. Typically, sites are added to the NPL to obtain federal cleanup funds, federal enforcement, federal expertise, or all three, and this is done with state concurrence. Anecdotal, some believe that the sites now being added to the NPL are more complex from a technical standpoint (such as contaminated sediment sites) and are more likely to have bankrupt PRPs, although better information is needed to confirm that this is the case. More information is needed to be able to evaluate whether the types of sites being added to the NPL in recent years are different in any meaningful way from the sites added in earlier years and if they are, the implications this might have for future EPA staff and funding needs.

4. Better information on the basic building blocks of the Superfund remedial program is needed.

There is a lack of public information on the cost of cleanup for non-federal NPL sites, the duration of each major phase of the remedial pipeline, the types of sites being added to the NPL, and many of the critical building blocks that would be needed to estimate

EPA's future funding and staffing needs. In some cases, it appears EPA has not analyzed information it already has in its own database to develop these estimates, and, in other cases, EPA has not collected the kind of consistent and reliable information that is needed.

EPA has not issued an estimate of the future cost of cleanup for all non-federal NPL sites in many years. EPA used to issue an estimate of the future cost to EPA of completing cleanups at all non-federal NPL sites, referred to as the "out-year liability model," on an annual basis. While there may have been criticisms of the assumptions used, this model provided a baseline for other estimates and a point of comparison to annual appropriations. In addition, although EPA releases information on the value of PRP settlements at NPL sites and on the amount of funds held in site-specific "special accounts," the Agency has never issued an estimate of future costs to PRPs at NPL sites.

EPA has not made public basic information regarding the major components of remedial program costs, such as: the average cost of each phase of the remedial pipeline for all sites, and by individual site type; the number of sites that are expected to have cleanup costs of \$50 million or more; what percentage of costs (rather than actions) are being paid for by PRPs, as compared to EPA; and whether PRP-lead actions take more time or less, on average, than EPA actions. These data points, as well as others, are needed to accurately forecast the future staffing and funding needs for the remedial program.

In addition, EPA does not collect consistent and reliable information on the types of sites that are added to the NPL and the attributes that may have contributed to the need for Superfund listing, such as bankrupt PRPs, complex contamination, or lack of state financial capacity. This kind of information would enable the Agency and others to examine trends in the types of sites warranting federal attention and to determine whether the nature of sites added to the NPL is changing over time. Finally, there is little or no consistent and reliable information on state financial capabilities, even though states are responsible for 10% of the cost of EPA-financed remedial actions and 100% of the operations and maintenance activities that follow.

Recommendations

Sound decisions about the future direction and funding of the Superfund remedial program require better information and data and a commitment to analyzing that data and making it public. It will be very difficult to identify effective reforms to speed cleanup and to develop better metrics of program accomplishments for the Superfund program without analyzing data EPA already has and filling in critical data gaps. Below are recommendations for specific studies and actions EPA should implement and should make public. It should be noted that, although the program may face staff and funding constraints, none of the recommendations below would require a large amount of time or money.

1. EPA should estimate the future cost of completing work at all non-federal sites on the NPL. This estimate, and the assumptions behind it, should be made public and should be updated on an annual basis. Absent an annual estimate of the future cost of cleaning up non-federal sites on the NPL, it is difficult, if not impossible, to evaluate whether annual funding levels are adequate. To ensure the credibility of the effort, EPA should commission a small advisory panel of outside experts to review the approach, data used, assumptions, and results. This work does not have to be an expensive or time-consuming exercise, as the goal is to have a reasonable ballpark estimate of future costs, not a precise figure. A simple model with site-specific costs for all mega sites (cleanup cost of \$50 million or more) and average unit costs by site type for all other sites, based on the total number of operable units at each site, would be sufficient as a starting point. Over time, the estimate can become more precise. The model should include the cost of future EPA actions and activities at all non-federal NPL sites and of long-term response actions paid for by EPA. The estimate should include both extramural (contract) and intramural (staff) costs and the staff costs to oversee PRP-lead actions.

2. EPA should develop credible and robust data about the critical building blocks of the Superfund remedial program. As noted repeatedly, there is a lack of robust data and information about the building blocks of the Superfund remedial program. EPA should analyze its own data and develop and make public information regarding: the range and average cost of cleanup at different types of sites, the range and average duration of the major steps in the remedial process for different types of sites, and the relative financial contribution of PRPs and EPA to cleanup costs. Without robust information on these critical building blocks of the program, it is difficult to assess whether current funding is adequate and how much future funding is needed, much less to hold EPA accountable for any lack of progress. Looking at the patterns among sites and examining trends and averages in site costs and cleanup duration could help senior management pinpoint anomalies, develop better metrics, evaluate progress, hold regions and PRPs accountable, and lead to a much more informed public debate about how to improve the Superfund program. This information should be updated at least every five years, if not annually.

3. EPA should develop better information on the types of sites listed on the NPL. Any effort to estimate future remedial program staff and funding needs requires a deeper understanding of the kind of sites that have been added to the NPL in recent years, what factors have led to the need for NPL listing, and what kinds of sites are likely to be added in the future. To fill this data gap, EPA should conduct or commission two studies, described below.

- **Analysis of NPL site types:** EPA should analyze the types of sites that have been added to the NPL over the past five years. This analysis should include information on the industrial operations at the site (if appropriate), the media contaminated, the extent or volume of contamination, the factors that led to its listing on the NPL (such as bankrupt PRPs, or lack of state funding or legal authority), whether each site is likely to cost \$50 million or more to remediate (qualifying as a mega site), and whether the remedial actions are

likely to be paid for by EPA or PRPs, among other attributes. This analysis should be based on current information about the sites, not information collected at the time of listing.

- **Estimate of sites to be added to the NPL:** EPA should issue a report estimating the number and types of non-federal sites likely to be added to the NPL in the future. This report should be based on interviews with EPA's 10 regional offices and with state agency officials to find out what kinds of sites they think are likely to be added to the NPL over the next five years, and why. This analysis should focus on identifying emerging types of sites, contaminants, and situations that are likely to warrant federal enforcement, federal funding, or both.

Both studies should be updated every five years.

4. In addition to reporting program accomplishments for all NPL sites as a group, EPA should report progress for specific subsets or categories of sites and actions. Providing information only for all sites on the NPL as a group, as EPA now does, obscures the very real challenges presented by complex sites. EPA should amend the coding in its central data management system to enable it to easily cull different subsets of sites, such as mega sites, contaminated waterways, properties ripe for redevelopment, and sites where it is known that it will be 10 years or more before cleanup objectives are likely to be achieved. These categories of sites each present different challenges and opportunities, making it helpful to be able to examine cost and progress at each of these different types of sites as a group. For example, it is likely that it is difficult, if not impossible, to bring human exposure under control at a contaminated waterway such as the Hudson River or New Bedford sites. If the EPA data management system coded all contaminated waterways, then it would be easy to determine how many of the sites where human exposure is not under control are contaminated waterways, where this goal may not be achievable for many years. Similarly, some look to Superfund as an engine for redevelopment. Identifying that subset of NPL sites where the property is valuable and ripe for redevelopment, such as the Industri-Plex site in Woburn, Massachusetts, would provide a better gauge of the program's success in this area than tracking redevelopment at all NPL sites. These are just a few examples of ways in which the data management system could be improved to provide more nuanced information about the remedial program, its challenges, and successes.

In addition, EPA should present all program metrics and accomplishments separately for EPA- and PRP-lead actions and for non-federal and federal facility sites.

5. Better Superfund metrics are needed. The fact that so few non-federal NPL sites are being deleted and reaching construction complete each year suggests that the current array of metrics are no longer providing much useful information. As the Superfund program again faces external pressure to speed cleanup and show progress, it is likely EPA will seek to develop new metrics for documenting achievements. The incentive is to adopt measures that show larger numbers of program accomplishments. As an example, the original cleanup accomplishment measure

for the program was the number of sites deleted from the NPL, but when it became clear this was taking a long time, the program came up with the construction completion measure, then partial deletions, and more recently remedial action project starts and completions. Without a context—such as the number of total remedial actions that will be undertaken at all sites—the number of remedial actions started or completed is meaningless. Simply dividing site activities into smaller and smaller units does not show progress. Moreover, these kinds of measures may not even provide useful information about the real accomplishments at the site in terms of protecting public health and the environment.

The measures that are intended to document risks at the site—those indicating whether human exposure and groundwater contamination are under control—need improvement. These measures provide no indication of the severity of the risk, the likelihood of human exposure, or how long contamination has been uncontrolled. EPA should report each quarter the number of non-federal NPL sites that (1) were categorized as not under control in the previous quarter but are now under control, and (2) were categorized as under control in the previous quarter but are now not under control. While some of this information is available on a site-by-site basis, the rationale for program metrics is to provide comparable information across all sites.

New metrics should be judged by whether they provide useful information that increases understanding of site progress and the obstacles to progress, not by whether they will result in a larger number of the items being counted (“more beans”). EPA should seek to develop metrics that convey information about real program accomplishments, not simply steps in the remedial pipeline. The metrics should provide EPA senior management, Congress, and the public a more robust understanding of both the program's accomplishments and the challenges that lie ahead.

6. EPA should issue a report detailing what actions are needed to reduce possible human exposure to contamination at non-federal NPL sites where a site is characterized as having human exposure or groundwater migration that is “not under control.” EPA should review all non-federal NPL sites where human exposure and groundwater migration (1) is not under control, or (2) where there are insufficient data to determine if it is under control, to determine what steps would be needed to resolve these issues. This assessment should identify the specific steps that are needed to bring human exposure and groundwater migration under control, as well as whether these actions would be paid for by PRPs or EPA and, if EPA, the associated cost. For those sites with insufficient data, the report should detail why this is the case, and what steps would be needed to make this determination. In addition, the assessment should examine whether there are technical obstacles to addressing these concerns and identify those specific sites where it is not technically possible to bring the measure under control in the next decade, and why. Based on this analysis, EPA should revise the current performance measures to make them more meaningful and create a new code for both metrics that indicates those sites where it is not technically feasible to bring

(1) human exposure, or (2) groundwater migration under control in the next 10 years (or some specified time period to be decided by EPA).

7. EPA should commission an independent analysis of the financial capacity and legal authorities of state Superfund programs. This report should be conducted in coordination with the Association of State and Territorial Solid Waste Management Officials, and potentially with the Environmental Council of the States or the National Governors Association. Some have suggested there is little or no need for a federal cleanup program and that the program should be delegated to the states. Yet few (if any) states have the financial resources to pay for the cleanup of an NPL-caliber site, much less a mega site. Under Section 104 of CERCLA, states must contribute to the cost of cleanup at non-federal NPL sites when the remedial action is paid for by EPA. At these sites, the law requires states to pay for 10% of the cost of the remedial action and 100% of all operation and maintenance costs. The report on state capacity should include information for all 50 states⁴² on the number of non-federal NPL sites where the state is currently responsible for 10% of government-performed remedial actions and the associated cost burden, as well as the estimated annual cost of operation and maintenance for these sites. In addition, the study should include information on the total amount of monies, if any, in each state's cleanup fund (that is, funds that could be used to clean up contaminated sites similar to those listed on the NPL), whether these funds are replenished on an on-going basis, the average cost of any state-funded cleanups implemented over the past 10 years, and whether state Superfund laws have the same liability provisions as CERCLA. This kind of information was previously available for a number of years when EPA commissioned an in-depth analysis of state Superfund programs that was conducted by the Environmental Law Institute. The last of these reports was issued in 2002.⁴³

42. Because of OMB information collection budget requirements, this might have to be limited to nine states, in which case we recommend that information on the nine states with the most non-federal sites added to the NPL in the last five years be included.

43. Go to <https://www.eli.org/research-report/analysis-state-superfund-programs-50-state-study-2001-update> to download *An Analysis of State Superfund Programs: 50-State Study, 2001 Update*, November 2002, Environmental Law Institute, Washington, DC.

Appendix A

Deflator Source and Factors Used to Convert Nominal
1999 Through 2015 Dollars to Constant 2016 Dollars

Year	Deflator
1999	1.39
2000	1.36
2001	1.33
2002	1.31
2003	1.28
2004	1.25
2005	1.21
2006	1.17
2007	1.14
2008	1.12
2009	1.11
2010	1.1
2011	1.08
2012	1.06
2013	1.04
2014	1.02
2015	1.01
2016	1

Source: The deflator used to convert 1999 through 2015 nominal dollars to constant 2016 dollars is from <https://www.bea.gov/index.htm>.

Calculator: http://stats.areppim.com/calc/calc_usdlrxdeflator.php

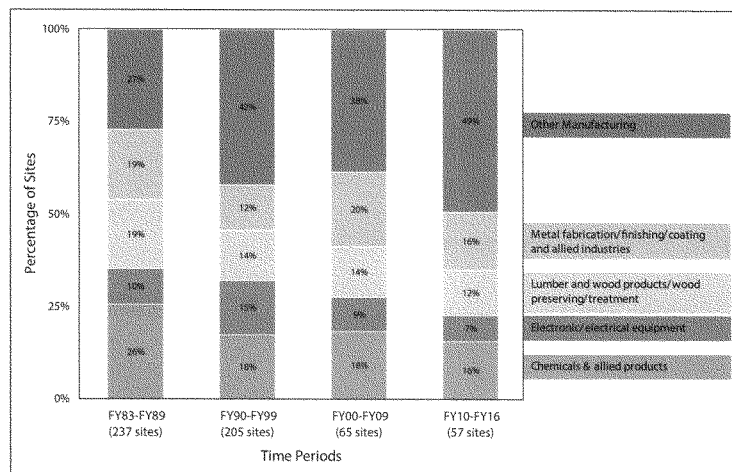
Appendix B

U.S. EPA Matrix of Site Type Categories

Site Type/Site Sub-Type Combinations	
Site Type: Mining Coal Metals Mineral processing/smeltering only Mining only Mining and mineral processing/smeltering Multiple Non-metal minerals Oil and gas Uranium mining Uranium processing Other (enter other category name) Unknown	Site Type: Waste Management Co-disposal landfill (municipal and industrial) Illegal disposal/open dump Industrial waste facility (non-generator) Industrial waste landfill Mine tailings disposal Multiple Municipal solid waste landfill Radioactive waste treatment, storage, disposal (non-generator) Other (enter other category name) Unknown
Site Type: Manufacturing/Processing/Maintenance Chemicals and allied products Coal gasification Coke production Electric power generation and distribution Electronic/electrical equipment Fabrics/textiles Lumber and wood products—pulp and paper Lumber and wood products—wood preserving / treatment Metal fabrication, finishing, coating and allied industries Multiple Oil and gas refining Ordnance production Plastics and rubber products Primary metals/mineral processing Radioactive products Tanneries Trucks, ships, trains, aircraft and related components Other (enter other category name) Unknown	Site Type: Other Agricultural (e.g., grain elevator) Contaminated sediment site with no identifiable source Dry-cleaning operations Dust control Ground water plume site with no identifiable source Lighthouse Military—other ordinance Multiple Product storage / distribution Ranger station Research, development, and testing facility Residential Retail/commercial School or daycare Spill or other one-time event Transportation (e.g., railroad yards, airport, barge docking site) Treatment works, septic tanks, other sewage treatment Unknown Other (enter other category name) Work Center
Site Type: Recycling Automobiles and tires Batteries, scrap metals, secondary smelting, precious metal recovery Chemicals and chemical waste (e.g., solvent recovery) Drums and tanks Multiple Waste, used oil Other (enter other category name) Unknown	

Appendix C

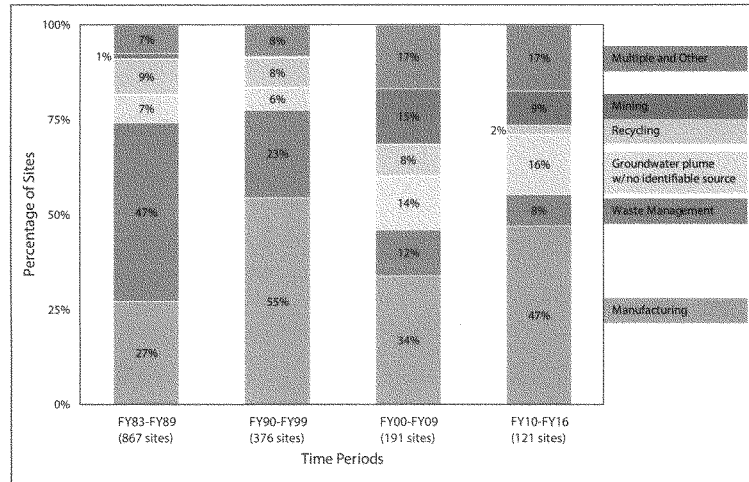
Comparison of Different Types of Manufacturing Sites Added to the NPL Over Time by Percentage of Sites Listed



Source: U.S. EPA

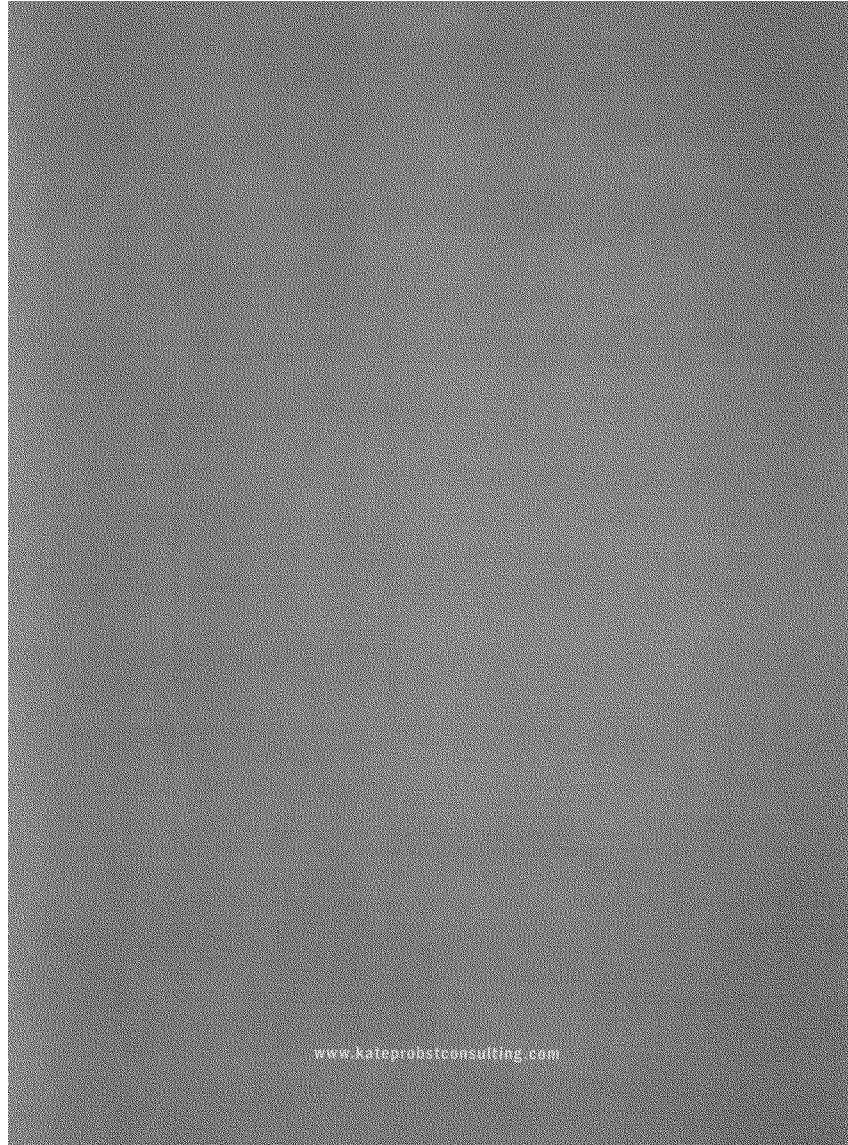
Note: Percentages may not add to 100% due to rounding.

Appendix D

Non-Federal Sites Added to the NPL by Type:
Comparison Over Time, by Percentage

Source: U.S. EPA

Note: Percentages may not add to 100% due to rounding.



**Senate Environment and Public Works Committee
Subcommittee on Superfund, Waste Management, and Regulatory Oversight
Hearing entitled, “Oversight of the U.S. Environmental Protection Agency’s Superfund
Program.”
August 1, 2017
Response to Questions for the Record for Katherine Probst**

Senator Inhofe:

Oversight Costs

1. Can EPA establish guidelines for presumptively reasonable levels of oversight on a percentage basis? Specifically, is there a percentage of overall remedial costs that ought to apply to EPA and other agency oversight of PRPs? EPA oversight bills for major Superfund sites now amount to millions of dollars per year per site. What controls can EPA put in place to reduce oversight costs?

Unfortunately, this question is outside my area of expertise.

Cost of Risk Reduction

2. How can EPA better weigh costs for risk reduction in the Superfund process? For example, if two remedies with dramatically different costs result in the same level of overall risk reduction, EPA ought to pick the more cost effective remedy.

As you know, CERCLA Section 121 and the National Contingency Plan identify the five main criteria to be used for remedy selection at sites on the NPL:

1. *Protect human health and the environment,*
2. *Comply with applicable or relevant and appropriate requirements (ARARs) unless a waiver is justified,*
3. *Be cost-effective,*
4. *Utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable, and*
5. *Satisfy a preference for treatment as a principle element of the remedy.*

Cost-effectiveness is just one of the five criteria, and, given the multiple criteria, identifying remedies that are “equally effective” is not a straight-forward endeavor.

Remedy Implementation Risk

3. How does EPA address risks associated with remedy implementation? How does EPA balance long term residual risk associated with waste remaining in place against short term risk to workers arising from remedy implementation?

Unfortunately, this question is outside my area of expertise.

Senator ROUNDS. Thank you for your testimony, Ms. Probst.

Senators will now each have 5 minutes for questions. I will begin our questioning.

This one I would like to ask the panel, and I most certainly appreciate all of your backgrounds in this. I am just curious. There is a process, Risk-Based Corrective Action, or RBCA. It is a method of managing contaminant release sites in which the amount of environmental management to protect human health and the environment is based on a scientific assessment of the risks posed by contaminants.

Now, in South Dakota this was a management technique that we have used successfully for cleanup of petroleum sites.

I am just curious, does EPA currently use the RBCA process as a means of managing Superfund cleanups, or is this something that could potentially be utilized by the EPA to manage cleanups more effectively and efficiently? Just curious if any of you are familiar with this particular process and what your thoughts are.

Mr. Nadeau.

Mr. NADEAU. Yes. Thank you, Senator Rounds. The RBCA program was very, very successful and is successful because it focuses on the risk based approach. The Federal Superfund statute and all of its regulations, the national contingency plan, and the case of contaminated sediments are all risk based as well, and I think a lot of the RBCA concept were reflected. The problem we are seeing is we are getting bogged down on the study phase, and the risk based approach falls by the wayside when a conservatism factor is applied to the remedy selection. This is why an adaptive management approach would allow us to deal with the worst issues first and monitor. These sites would get cleaned up more efficiently. And people who come to the table, companies that are involved want to get this done. So the RBCA approach, if we follow it as written already in our Federal program, would really help things accelerate, and we would get better cleanups and earlier cleanups.

Senator ROUNDS. Director Steers.

Mr. STEERS. I would agree with my colleague. Again, we get bogged down with looking at risk and what is the appropriate risk in the use of the property, especially if it is trying to be redeveloped. So a RBCA model—especially on large mega-sites, we have one in Virginia—would help when you look at the adaptive management and being able to assure that you have the appropriate level of risk, because you can take risk assessment to an extreme level, and I think it needs to be tempered with what is the appropriate risk for that site and those conditions.

Senator ROUNDS. Ms. Probst.

Ms. PROBST. I don't think I have the right expertise to answer that question.

Senator ROUNDS. OK, thanks.

Mr. Nadeau, how would expanding the role of the National Remedy Review Board, or the NRRB, and the Contaminated Sediments Technical Advisory Group, CSTAG, in remedy decisions improve EPA decisionmaking at sediment sites?

Mr. NADEAU. The CSTAG organization was founded because contaminated sediment sites are far more complex than anything we have ever had to address in the past. You can't get your arms

around them easily. By having the Agency's most experienced practitioners from the regions, you have basically a peer review of the best and the brightest. If you have that kind of input, this will even out the disparity we see in how the guidance is applied.

It is a unique situation. The guidance is a terrific document. If we follow the guidance, we can make this work. So we are encouraged that we are taking a separate look at this through the task force and the actions that follow.

The NRRB and CSTAG review, by making it part of the decision-making process where a recommendation of a remedy will allow for a second look at whether we are complying with the sediment guidance, which is a risk based program, it has all the ingredients we need to make this work, and it will really change the decision-making landscape so we can get these sites underway, which I think everyone is looking forward to doing.

Senator ROUNDS. Director Steers, in your testimony you say there is an opportunity to modernize certain aspects of CERCLA without making a legislative change to the statute. Can you elaborate on what you believe are some of the improvements that can be made to CERCLA that EPA can undertake with its current statutory authority?

Mr. STEERS. I think, generally, one of the problems that we have seen is the level of involvement with States and contractors that are working for EPA. Oftentimes they work directly with their contractor, and cost control isn't necessarily on the top of the list as it maybe should be, and working with the States, especially on fund lead sites, we want to be able to look at where the expertise is and making sure that people that understand how to control the costs are involved.

If you look at the removals actions program, where you have emergency removals, and you have project managers at EPA that do that for a living, they are very much in tune with trying to control costs; not so much on the remedial project managers on long-term Superfund cleanups. So there needs to be a dialogue and a work-together on how contractors and EPA and the States can work in looking at reducing costs for the construction of the remedy and the long-term O&M, as an example.

Senator ROUNDS. Thank you.

Senator Harris.

Senator HARRIS. Thank you, Chairman.

And before my questions, Mr. Chairman, Ranking Member Carper had to leave for another hearing, but asked me to ask for unanimous consent that his statement be made part of the record.

Senator ROUNDS. Without objection.

Senator HARRIS. Thank you.

[The referenced statement follows:]

STATEMENT OF HON. THOMAS R. CARPER,
U.S. SENATOR FROM THE STATE OF DELAWARE

Thank you, Chairman Rounds and Ranking Member Harris, for holding this hearing today.

Mr. Chairman, I appreciate your continuing leadership of this Subcommittee and the important oversight work it does.

Ranking Member Harris, I want to congratulate you in your new role, and I know your experience as a former Attorney General for the State of California will benefit

all of our understanding of the challenges—the legal and remediation challenges—that States face as they clean up contaminated sites.

EPA's Superfund program is vitally important in my home State of Delaware, as I am sure it is important to most all members.

Delaware is a small State, but we have 21 sites on the National Priorities List and one proposed in Newark just this week. Like all of you, I want to see those sites cleaned up as quickly as possible.

We also want to make sure they're done right. That means ensuring that remediation actions will permanently protect the public against exposure to toxic and hazardous materials. It means making sure that the communities in which these sites are located have a seat at the table and a say in how cleanups get done.

It means making sure that the financial resources needed to do these cleanups are available to communities. And finally, it means that decisionmaking with regard to cleanups is driven by science and public health considerations, not political considerations.

I hope that the cleanup priorities I've just outlined are ones to which the members on both sides—and the Administration—would also agree.

Mr. Chairman, I hope that in the near future we will have the opportunity—either at the Subcommittee or perhaps even at the full Committee—to hear from EPA officials directly about the Superfund program.

It is important that we understand how the Administration plans to accelerate cleanups without cutting corners or shutting out community input.

I hope our witnesses today will speak to all these things, and I look forward to hearing their testimonies and thank them all for their willingness to be here today and share their perspectives.

Senator HARRIS. This is a question for each of you. What do you believe will be the impact of the Trump Administration's proposed 30 percent budget cut to the EPA's Superfund program from \$1 billion to \$762 million? And as part of your response, if you could tell me if you believe it would be helpful, and I am assuming it would, that Congress would appropriate money to help close that gap, but also what else could be done to address what will be perhaps a shortfall in terms of the resources that are available.

I will start with you, Mr. Nadeau.

Mr. NADEAU. Yes. The folks at EPA have been working very diligently on these issues. By streamlining a lot of the steps of the review, we can accelerate our progress, but it would still be helpful for the Agency to have the resources necessary, especially at the senior levels, to bring experience to bear on these important issues.

We do think that the other changes that we are recommending will also help the process, too, and we can get from A to Z in half the time and start cleaning up the sites with early actions, and this will, I think, take some of the burden off these 15-year studies. We don't need 15 years to study the problem. Study for 3 or 4 years, identify the areas to be addressed, and it will take the pressure off the staff, and it will mean that all of our resources are applied to clean up and not excessive study, so it all will fit hand in glove.

Senator HARRIS. So does that mean that you think there will be no change to the ability to address the issue, the budget cut won't have an impact?

Mr. NADEAU. I think there will be pressures, there is no doubt, but I think that if there is more funding available to provide review on the key issues like contaminated sediment sites or mining sites, that would be helpful. We think that it is important to have staffing. But we feel that whatever happens, we can make it better, and we will all just have to live with it.

Senator HARRIS. Thank you.

Mr. Steers, again, what do you believe this 30 percent budget cut will do in terms of the ability to address the cleanup that is necessary?

Mr. STEERS. I believe the States are concerned about that. Obviously, we work as partners with them. The cuts in both staff and/or in construction of projects could end up causing certain additional delays, but also looking at remedies that maybe aren't the best remedies that we need for some of these sites, especially ones where the State needs to take them and carry them through their long-term monitoring and operation.

We also feel that, even if you have some cuts, we still need to look at efficiency. And you can absorb some cuts if you are also being efficient and working with your partners and being able to streamline the process, as we mentioned this morning, because in lieu of having any ideal budget, you also have to be able to effectively use that money, and I think there are opportunities, especially when we talk about how project managers consistently apply guidance across EPA regions; that can escalate costs easily. So we understand it is not an unlimited budget, there is not unlimited funds to address these sites, but we do need to work together, and you know, States need to be at the table when we are talking about budget cuts.

Senator HARRIS. Have the States, as a group, discussed or even addressed this potential 30 percent cut to the budget?

Mr. STEERS. We are still trying to understand what the impacts of that might be.

Senator HARRIS. Can you follow up with this Committee when you have some sense of that? I am very interested, as I am sure my colleagues are, to know what the impact to the States will be of this 30 percent cut.

Mr. STEERS. Sure, we can do that.

Senator HARRIS. Thank you. This proposed 30 percent cut.

And Ms. Probst.

Ms. PROBST. Thank you. First of all, having worked at EPA in my past life, a 30 percent cut in 1 year is huge. I mean, that is going to really hurt the program, regardless of how one feels about the Superfund program. It is just very hard to absorb huge cuts quickly. The easiest way is to take it out of what are called extramural dollars, which are the same dollars that fund cleanups, whether removal or remedial. It is very hard to cut staff quickly and have that payoff, so, one, forgetting this program, a 30 percent cut to any program in 1 year is probably going to shut down a lot in the program. I think that is just a reality.

The second thing is the Superfund appropriations have different pockets. There is the money that goes out of the Agency for cleanups, the money that goes out of the Agency for removal actions, and then there is staff and other things. We know that the remedial program budget has declined in real dollars. It is very hard to see how you can accelerate cleanup and cut the budget without basically becoming a removals only program, where you are basically going in and addressing current risk, immediate risk. But it is hard to imagine that you can continue to do long-term cleanups with that kind of a Draconian cut.

The second point, which I have made 100 times for 20 years, it would be really good to know how much money they need. This is not a Republican or a Democratic issue. I have to say I don't understand it, but ever since the report that we issued in 2001, they have stopped estimating what is called their out year liability. I don't know why, but it is very hard to say what the impact of a cut is if you don't actually know, well, OK, to clean up the 1,555 sites on the NPL, this is what we need for the Fund lead actions, this is what we need for enforcement, this is what we need for oversight. That is doable. EPA will tell you, maybe, that it is hard. It is actually not hard as long as we are not trying to go to the Moon. We are just trying to get a ballpark estimate of the funding they need.

So I would argue the first thing somebody needs to do is tell you how much money they need and what the implication of the cuts are.

I can't remember if there was something else you wanted to know.

Senator HARRIS. I think our time is up, but Mr. Chairman, I would urge that we follow up on this point. I think it is a very important and valid point that we should have an estimate of the costs, if our budget is actually going to be relevant to the task at hand. So perhaps we can figure out how to follow up with Ms. Probst and other expert suggestions on how exactly we would create a process for evaluating the cost estimate for cleanup.

Thank you.

Senator ROUNDS. A bipartisan recommendation.

Senator HARRIS. Absolutely. Fantastic.

Senator ROUNDS. Thank you.

Senator Boozman.

Senator BOOZMAN. Thank you, Mr. Chairman, and thank you and the Ranking Member for having this hearing.

Director Steers, Administrator Pruitt frequently mentions cooperative federalism and the desire to have the EPA work together with the States, specifically in the Superfund process. How can States partner with the EPA to better leverage Superfund funding to stretch money to more sites?

Mr. STEERS. I think States are positioned to be able to help in working with EPA through cooperative federalism, as Administrator Pruitt has defined that. The Environmental Council of States, which represents all the State regulatory environmental agencies, has helped in defining how our role as States can be in doing that. To leverage the resources that are needed to address these sites, as was mentioned earlier, I think first we really do need to understand what is the needed cost and prioritizing. We have a lot of sites on the NPL. Virginia has 31 of them, I believe, that are NPL sites. We need to look at how do we prioritize and manage that risk.

I think working with EPA and each region, so we work in Virginia with Region 3, in helping to define how do we prioritize and what is the budget we have to deal with the universe that we are dealing with in our State, and how can we maximize that. States don't have the funds to be able to fund a full Superfund program. Some States have a Superfund program, but it is not on the level,

obviously, of what EPA does. But States are there to be able to—there is some assistance that we can provide in looking at the remedy, where there is a Responsible Party, helping to leverage a working agreement where we get the Responsible Party to help pay the cost in an efficient way and doing it timely, because one of the issues is that time value of money and how long things take. And even if you are a Responsible Party, you want certainty with getting a cleanup done.

Senator BOOZMAN. Right. Tell me, a lot of times you have EPA and States duplicating studies and things. Perhaps you could give an example of that duplication and describe how it can delay the remediation cleanup and at cost.

Mr. STEERS. I think sometimes there is duplication in characterizing a site, for example, where we have, you know, EPA has done some studies, the States have studies, and we keep looking at collecting data. And collecting data for characterizing the hazards on a site can be very expensive, and we have State resources that will review the data, EPA has contractors and project managers that review the data. So you have a lot of people wanting to look at data, create more data, and there needs to be a point where there is an agreement between the Federal and State agencies on what is the appropriate level of characterization of a site to get what we need for looking at it, and the future use of that site.

I think, you know, we are encouraged that EPA is trying to redevelop some of these sites, and they talk about wanting to do that. We have opportunities in Virginia, too, where they can be reused if you have the appropriate cleanup being done where you have some long-term Responsible Party that is able to step in with some certainty and do things to monitor the site and restrict certain aspects of the property, for example, if you are leaving some type of a risk in place. So there is duplication there that I think we should be able to work closer with.

Senator BOOZMAN. Very good.

Mr. Nadeau, can you give an example of a successful public-private partnership where sites have been able to be remediated quickly?

Mr. NADEAU. Absolutely. One of the great success stories, as I mentioned, was the Great Lakes Legacy Act, and it is a program which is completely public-private partnership driven. So here you add the Federal aspect, the State aspect, and the industry aspect. Folks start off on the same page as partners, and these sites are getting cleaned up. There is a funding component, too, that is helpful, but the key is everyone is trying to problem solve from day one, and the atmosphere is so different. We can get through a complex site, not maybe the biggest ones around, but still hundreds of thousands or millions upon millions, \$60 million remedy, we can do that in a couple years, and it is such an improvement, and it will save on the budget, will save on resources because all those factors of the cooperation and the unified purpose of reducing risk in a timely manner would change the entire Superfund landscape. And it is the most successful cleanup program I think we have ever seen. If we can borrow some of those concepts and add and expand the public partnership and private partnership, we can really, really get things done.

Senator BOOZMAN. Thank you, Mr. Chairman.

Senator ROUNDS. Senator Booker.

Senator BOOKER. Thank you very much, to the Chairman and Ranking Member, for holding this important Committee hearing.

It has been said already that there are Superfund sites in every single State. New Jersey, unfortunately, has the most. About 50 percent of all New Jerseyans live within 3 miles of a Superfund site, and unfortunately, when I was mayor of Newark, I saw this in my own city, Superfund sites, where these poisonous chemicals were having real effects. People with hazmat suits walking into neighborhoods where there were playgrounds, sitting in meetings with parents and children worrying, telling stories about cancers, about respiratory problems.

This is an incredible crisis, and I don't think we really understand the gravity of it all and the urgency of it all. I really don't. And now we have longitudinal data about what effects it actually has on people that live within a mile of Superfund sites. About 11 million Americans live within a mile and 3 million to 4 million of our children, the most precious asset this country has, and we now know that babies born to mothers living within 1 mile of a Superfund site prior to clean up had a 20 percent higher, greater incidence of kids being born with birth defects. Twenty percent higher.

So this should be an alarm, alarming to everyone. It is absolutely utterly unacceptable that, as Senator Harris said, this is the job of government, to protect people. But yet we seem to have a declining sense of urgency to deal with this crisis.

Now, I held a hearing on this topic in 2014 and was told by the Region 2 administrator that there were many sites in New Jersey that were ready to be cleaned up, but stalled for the simple reason of lack of funding. And then in 2015 Senator Boxer and I requested from the Government Accountability Office a report on the state of the Superfund sites, and they pointed out that the annual Superfund site, as was said by Ms. Probst, had declined from about \$2 billion to \$1.1 billion between 1999 and 2013. And because the EPA prioritizes funding work that is ongoing, the decline in funding led the EPA to delay the start on about a third of the projects, again, due to funding.

So, for me, the question that was asked earlier, it is unconscionable to me that President Trump's budget calls for a 30 percent reduction, which, as Ms. Probst said, will cripple these programs. And what is incredibly irresponsible about that is that this is a time that we should be trying to figure out how to expedite clean-up, do more to do it.

Mr. Nadeau, I don't mean to take personal offense to what you said, but your answer was, you know, we will just have to live with this. Now, I live in Newark, New Jersey. I live about a mile from a Superfund site. My 10-year-old niece lives with me. She was born in that community. And for us to have this resignation, what I consider a hateful hypocrisy, because if everybody in Congress lived within a mile of a Superfund site, had their children being born there, there might be a sense of urgency and outrage that we are debilitating our ability to clean these up.

So it is hard for me to sit comfortably, having just come from my house last night in a poor community, in an inner city community,

in a black and brown community, and have to tell my neighbors who still pack community meetings, concerned about the Superfunds within our city.

So you have already answered my question, Ms. Probst, about the problem, but I just want to ask simply this. I am going to reintroduce in this Congress a Superfund Polluters Pay Act, which would reinstate a small tax, a tax that Reagan reauthorized, that some Senators here now, on both sides of the aisle, voted for. And this would put a small tax on polluting industries, petrochemical industries that I visited in places like Cancer Alley, Louisiana, where they are plowing more toxins into the air.

Paying for Superfund cleanups cannot be a partisan issue. So my question is, to Ms. Probst, a reliable source of funding at a greater rate than now, not cutting—I am introducing legislation that we should spend 5 percent of a trillion dollar infrastructure plan, just 5 percent could satisfy all the funding needs of the current priority list. Just 5 percent of our infrastructure needs.

Would that take care of the problem, as you see it?

Ms. PROBST. I don't know about the exact number. It is certainly true that congressional appropriations to the Superfund program were higher when there were dedicated taxes and there was a balance in the trust fund. I mean, in theory, Congress can do whatever it wants. There is nothing precluding Congress from saying we want to appropriate \$1.6 billion a year. But you know, history shows us that where there was a dedicated tax and where there was a balance in the trust fund, the EPA was given more money.

Senator BOOKER. And the sites were being cleaned up.

Ms. PROBST. There weren't the same concerns about funding shortfalls. Although when we did this report in 2001, Tim Fields, whom I adore, who was the Assistant Administrator, said, you know, we are not putting mega-sites on the list because we don't have the funds. So, again, it gets back—I mean, there are lots of different issues. What you are talking about—where we have sites where there are real risks now, and in the report I show how many sites don't have human exposure under control, and even more disturbing is where we don't know if it is under control or not, which, to me, I am kind of horrified by that latter beast. And then we have sediment sites and mining sites.

So Superfund sites are not all unique, but they are not homogeneous. So one of the things I think is to pull out these subset of sites and figure how do we go at them. So there are inner city sites where there really are people being at risk, right? And then we have New Bedford Harbor and the Hudson River and the Passaic, and those are very different kinds of sites.

But as I say, history shows that where there is money in the trust fund, EPA gets more money. But again, there is nothing that precludes the appropriations committees from saying we are going to give them more money. So that is kind of a—sorry.

Senator BOOKER. Thank you, Mr. Chairman.

Senator ROUNDS. Senator Markey.

Senator MARKEY. Thank you, Mr. Chairman, very much.

I was an original coauthor of the Superfund law in 1980 on the Committee, and one of the issues that, of course, came right to me was when Anne Anderson, a mother with a young son, Jimmy An-

derson, visited me in my office and told me that the boy had leukemia and that she had organized other mothers in Woburn, Massachusetts, to go door to door to find other children who had leukemia in this part of Woburn.

Along with Love Canal and a couple of other sites, that became the motivating force for the creation of Superfund. In fact, it became the movie *A Civil Action*, the book *A Civil Action*. And the mothers were the ones who identified this problem, not the experts, not the city officials; it was the mothers. In the movie, they make the lawyer the hero. It was the mothers. Now, Jimmy died from leukemia, and on that site now is a huge development, industrial development, and the Jimmy Anderson Transportation Center as well. So we have actually converted it.

But the first and most important goal we had was just to make sure that kids didn't die, that they weren't drinking the water, that they weren't put in situations that could lead to these human tragedies.

So as I look at what we are talking about right now, I see the EPA making a decision that they have to choose between the sites that have an impact just on the health of families and those that actually could be redeveloped. And then this limited budget would kind of prioritize those that could also be redeveloped for commercial purposes.

And that is the kind of triaging that is absolutely unacceptable. I mean, this program is there in order to make sure that you don't have to make that kind of a choice; that families that have kids who are exposed to these toxins are not ever exposed, regardless of whether or not the property can be redeveloped.

So as you, Ms. Probst, look at this kind of dramatic downsizing of the Superfund program, what are the implications for those families that have kids in areas that will never be redeveloped?

Ms. PROBST. Well, I am not a scientist or health professional, so I am not sure I can totally answer your question, but I think you raise a really good point. I mean, the thing that I think concerned me most about the task force report is that over a third of the 42 recommendations are about redevelopment and reuse, and last time I read the statute, there is nothing in the statute about redevelopment and reuse. And while it may be a good thing, I am not a local government official, I did spend time with Mayor Rabbitt, who was at the Industri-plex Site near Woburn, and what he was very happy about were the tax revenues to his city.

And I think that the idea that redevelopment and reuse is more important than cleaning up sites or reducing human exposure is wrong and not consistent with the statute. So it is fine to be happy about redevelopment and reuse, but to place that first seems to me really bad public policy.

Senator MARKEY. Exactly. And so, yes, there was a wonderful side benefit to Woburn that they got to redevelop the site, but the first and foremost goal that we had to have was just to make sure that all these children didn't have other equivalents around the United States, and we used it as the example.

And what we are seeing here is, once again, kind of a denial of what this program means to families. In fact, in 1984, when Anne Gorsuch was the head of the EPA, Rita Lavelle, who was in charge

of the Superfund program, actually went to prison for lying to our Committee over on the House side about that program. She actually had to do time.

So this has been very controversial right from the beginning. It was slow rolled by the Reagan administration. It has never been a program, obviously, now that the Trump administration is in, that they really embrace, that they will give the hug to and say I understand why this funding has to be there in order to help children, in order to help families avoid the kinds of catastrophes which we have seen in the past.

In Massachusetts, if you could, if you are expert, if you know Mayor Rabbitt in Woburn, that is great, and he was a big ally of mine at that time, and it took a lot of courage for him to stand up. How could this impact the remaining Superfund sites in Massachusetts? We have a lot of them. What's the consequence in Massachusetts if this kind of funding cut occurs?

Ms. PROBST. I think there is no way to know exactly what the consequence is right now because we haven't seen how the cuts would be taken at EPA, but obviously it could slow down cleanup, it could cut staff, it could affect the enforcement program. I mean, again, a 30 percent cut is just a huge cut in one fiscal year to a Federal program, so I think that it would cause just a lot of disarray, and having to figure out how to deal with the cut, just like when there is a threatened furlough and everything shuts down. But I can't—I must admit, I can't tell you exactly in Massachusetts, but it is fair to say that a 30 percent cut is—

Senator MARKEY. Is it fair to say that even if the EPA task force comes back with constructive recommendations, that if there is a 30 percent cut in the funding for the remediation of these sites, that there is going to be great harm because the triaging will have to in fact occur, and that a vision without funding is a hallucination? You know, saying that you care, here is the vision, but then cutting the funding by 30 percent only results in more kids being exposed around the country.

Ms. PROBST. Again, nobody has said this to me, and I am not—the concern is that you end up with a program where all you have is the removals program. That when you have a huge cut and you can't really fully fund remedial actions under the law, that what you end up—and the removals program is considered very successful, it is just a different program.

But the concern of somebody like me or various people is that you basically move away from the NPL cleanup remedial action program and you end up with removals only, which are not really short-term, but in theory less money and less time, and addressing immediate risk but not addressing long-term hazard. And that is the thing to watch out for, is if you took a huge cut, if I were the AA or the office director, that is what I would do. I mean, again, you only have certain choices. So that is the thing to sort of watch out for, is are you really choking off the long-term cleanup program or not.

There is nothing in their report that says that. I could be completely wrong, but over the past 25 years that is what one has concerns about, is are you gutting the long-term cleanup program or

not. Again, there is nothing that says they are, but that is kind of what you want to watch.

Senator MARKEY. I got it. A 30 percent cut is like moving kryptonite over toward Superfund, and it will really significantly harm its strength in its ability to be able to help.

Ms. PROBST. But I want to be Wonder Woman instead.

[Laughter.]

Senator MARKEY. I thank you so much for all your work.

Thank you, Mr. Chairman.

Senator ROUNDS. Thank you.

In listening to the testimony, and I most certainly appreciate what all of you bring to the table here, it seems to me that part of the challenge for us as we look at oversight of the Superfund and the Superfund activities is to begin to restore and to confirm trust in the process itself, give confidence in the system of being able to show successes where they are at.

And in doing that we also have to have, as Ranking Member Harris has indicated, the accurate assessment of the costs to come yet, where the costs are at in the future so that as we look at the planning for the trust fund and so forth, and as we ask questions of the officials at the Environmental Protection Agency, to be able to have a straightforward assessment to be able to share with the American people these are the anticipated costs for this program in the future.

And then along with that comes a responsibility to efficiently deliver that program, to use these entrusted dollars as efficiently as we can in order to actually address the goals of the program in the first place, which is life and safety for individuals who are impacted. But that side benefit, as indicated here today, of being able to reutilize those properties, as well, and to bring them back in, neither of which is a bad goal to have.

So let me just end by just once again thanking Ranking Member Harris and the members of the Committee for their participation, to our guests for your participation. As I indicated earlier, your full statements will be included for the record. I would also like to thank, once again, everybody here who has attended.

The record will be open for 2 weeks on this hearing, which will bring us to Tuesday, August 15th.

With that, once again, Senator Harris, thank you for your participation in this, and without further ado, this hearing is adjourned.

[Whereupon, at 11:09 a.m. the Committee was adjourned.]

[Additional material submitted for the record follows:]



PRESS RELEASE

FOR IMMEDIATE RELEASE – Thursday, March 16, 2017, 11:00 a.m. Eastern
 Contact: Alexandra Dunn, (202) 230-4247 or adunn@ecos.org
 Environmental Council of the States (ECOS)

President's Proposed EPA Budget Cuts Will Adversely Affect State EABs

Washington, DC – The White House's dramatic cuts proposed this morning to the U.S. Environmental Protection Agency (EPA), if enacted, affect grants that support an average of 27 percent of state environmental agency budgets (EABs). While EPA's overall budget is reduced 31 percent, the proposed FY18 reduction of \$482M is a 44.5% cut to state Categorical Grants from the \$1.082B annualized FY17 level. The Superfund proposed FY18 reduction of \$330M is a 30% cut from the \$1.092B annualized FY17 level. The proposed FY18 reduction of \$233M is a 48% cut to the EPA Office of Research and Development from the \$483M annualized FY17 level.

Last night, ECOS released its [Green Report - Status of State Environmental Agency Budgets, FY2013-15](#), showing that average federal funding to state EABs already has experienced a decline. "Frankly, language in the President's budget blueprint that 'EPA would primarily support States and Tribes in their important role protecting air, land, and water in the 21st Century' is wholly inconsistent with the Categorical Grant cuts," says ECOS Executive Director & General Counsel Alexandra Dunn. "States need these federal funds to carry out their critical functions of advancing human health and protecting the environment, and to issue permits that keep local economies moving. States operate 96 percent of federally delegated and authorized environmental programs and manage funds to implement environmental regulations and are an important link to the local regulated community and local governments."

"We appreciate that the important state revolving loan funds are proposed for a less than one percent increase, and not a decrease," said ECOS President John Linc Stine, Commissioner of the Minnesota Pollution Control Agency. "However, the cuts to the core state programmatic grants are untenable. States welcome renewed confidence in our work and ability to protect human health and the environment. However, as ECOS' report shows, the federal government supports this function at an average of 27 percent. A cut of nearly 45 percent – while state legislatures are in session – is frankly unworkable."

ECOS' March 15 report analyzed budget information from 46 state environmental agencies, the District of Columbia, and Puerto Rico, finding state EABs increased 7% over three years, with the average state EAB being \$203M over three years. The report looks at three primary funding sources – state EAB general fund support, federal government funding, and fees and other funding. The findings over three years are that: state EAB general fund support increased by \$335M (35%); federal government funding support to state EABs decreased by \$64M (3%); and fee and other fund support – the largest major funding source for state EABs – grew by \$403M (10%).

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ECOS is the national nonprofit, nonpartisan association of state and territorial environmental commissioners. For more information, visit www.ecos.org.