

SUCCESS FOR SUPERFUND: A NEW APPROACH FOR KEEPING SCORE

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Introduction

The Superfund program is one of the U.S. Environmental Protection Agency's (EPA) most controversial and most visible programs. Yet, defining success for Superfund has been extremely difficult. When the program—formally known as the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA—first began in the early 1980s, EPA set as its major goal *deleting* sites from the National Priorities List (NPL). Sites listed on the NPL are generally considered the most contaminated in the nation, and EPA funds can be spent on long-term cleanups only at these sites. In order for a site or portion of a site to be deleted from the NPL, all response actions must be complete and all cleanup goals must be achieved;¹ in other words, the site must require no additional cleanup activities.

In the early years of the Superfund program, most thought that EPA would be able to relatively quickly “clean up” contaminated sites, and that all sites on the NPL would be deleted from the list at some point in the not too distant future. Few envisioned the kind of decades-long cleanups that we have all come to accept or the fact that at some sites with groundwater contamination, cleanup goals might not be achieved for 30–40 years or longer. By the end of fiscal year 1994, 11 years after the first 400 sites were added to the NPL, only 65 sites had been deleted. And, of the 1,523 final sites that had been added to the NPL by the end of FY 2003, just 274, or 18%, had been deleted.²

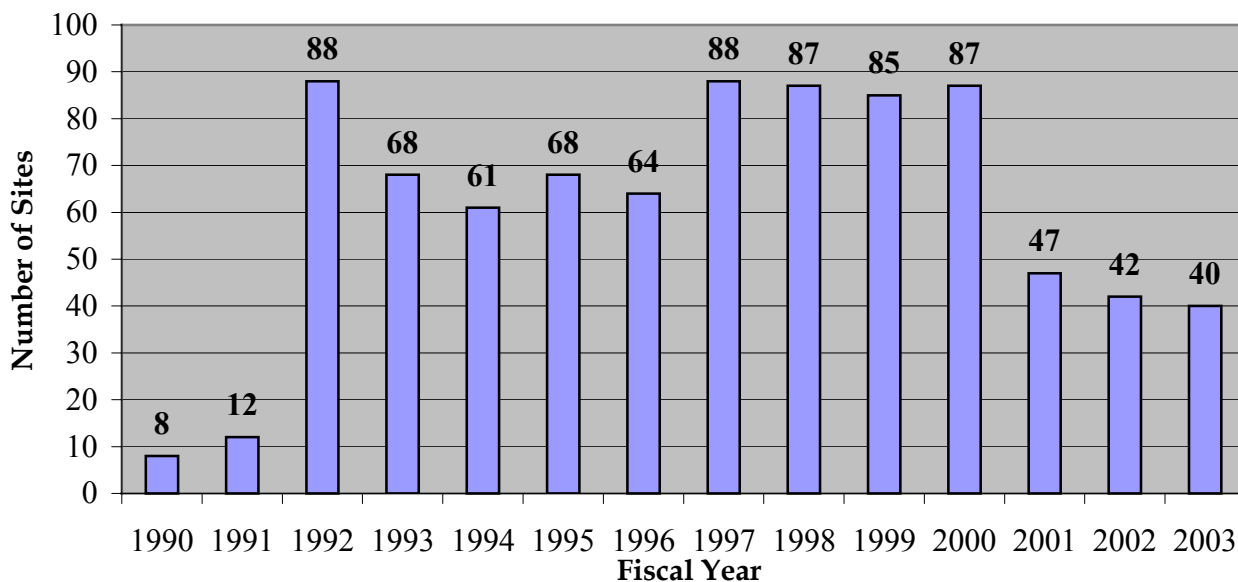
In 1990, EPA changed its main indicator of program success to one that was more readily achievable—“construction complete.” According to EPA's definition,

¹ U.S. EPA (Environmental Protection Agency), 2003. NPL Deletions. www.epa.gov/superfund/action/postconstruction/deletion.htm (accessed April 12, 2004). Additional remedial actions can be taken at a site after it is deleted and, in the rare case that EPA deems that extensive response work is needed, the site can be restored to the NPL.

² U.S. EPA, 2003. Data provided by EPA to authors.

a site is construction complete when any necessary physical construction is complete,³ even if final cleanup levels or other requirements for the site have not been met.⁴ Thus, this measure of success indicates when the engineering work has been completed, but not when cleanup goals have been achieved. The logic to developing the construction complete measure is that getting a remedy in place is something that is in EPA's control, both at sites where cleanup is implemented by EPA or one of its partners and at sites where responsible parties (RPs) have the lead and are cleaning up sites under some kind of enforceable agreement. However, once the remedy is in place, it can be years before cleanup goals are achieved at some sites.

Figure 1. Number of Construction Complete NPL Sites (by Fiscal Year)



Source: U.S. EPA, 2003.

For much of the 1990s, EPA averaged over 70 construction complete sites a year. However, the number of new construction complete sites has decreased quite dramatically in the new millennium (see Figure 1 above).⁵ In FY 2003, there were just 40 NPL sites deemed construction complete. While the question of why EPA's construction complete numbers have declined is a politically charged one, most agree that EPA's goal of achieving 70 construction completions a year created a

³ A site can also be categorized as construction complete if no physical construction is necessary, and there are in fact a number of construction complete sites where this was the case.

⁴ U.S. EPA, 2003. Construction Completions. www.epa.gov/superfund/action/process/ccl.htm (accessed April 12, 2004).

⁵ The reason for the large increase in construction complete sites in FY 1992 is simply that this measure was not introduced until 1990.

perverse incentive to clean up the least-complex sites first. In order to meet their targets, many EPA regional offices understandably focused on sites where there were fewer remedies to be implemented and where it was possible to get remedies in place relatively quickly.⁶ As a result, EPA is now left with many of the sites that require more complex, lengthy, and expensive cleanups, which take more work overall and a longer amount of time to reach construction complete status.⁷

In recent years, the notion of construction completion as a meaningful measure of success for the Superfund program has come under criticism, not only from external critics, but also from EPA itself. With the enactment of the Government Performance and Results Act (GPRA) in 1993,⁸ and increased scrutiny of the program in a time of scarce federal funding, there is mounting pressure on EPA from all quarters to show progress and to be able to document what has been accomplished with the billions of dollars appropriated to the Superfund program over the past 20 years. The construction complete measure, while one indicator of interim progress, does little to provide supporters and critics alike with information on what the program has accomplished in terms of protecting human health and the environment, reducing risk to those living and working near sites, or reducing contamination and risks to the environment. Most would agree that these are the fundamental goals of the Superfund program.

To supplement the construction complete measure, EPA's *Draft Report on the Environment 2003*⁹ for the first time included information on Superfund program performance based on two indicators that had been developed under the Resource Conservation and Recovery Action (RCRA) program¹⁰: current human exposure under control and contaminated groundwater migration under control.¹¹ These two environmental indicators are now included as part of Superfund's GPRA measures. This is the first time EPA has instituted a performance measure for Superfund that

⁶ Information from interviews conducted by Katherine Probst and Robert Hersh with directors of the Superfund program in all 10 EPA regional offices for *Superfund's Future: What Will It Cost?* by Katherine N. Probst, David Konisky, and others, RFF Press, Washington, DC, 2001. See also, presentation by Dr. Elizabeth Southerland, U.S. EPA at December 2003 the National Advisory Council for Environmental Policy and Technology (NACEPT) Superfund Subcommittee meeting, showing that construction complete NPL sites have, on average, fewer projects (operable units) than NPL sites that are not yet construction complete.

⁷ There may be other reasons as well for the decrease in the number of construction complete sites, including funding shortfalls.

⁸ U.S. OMB (Office of Management and Budget). Government Performance and Results Act of 1993. www.whitehouse.gov/omb/mgmt-gpra/gplaw2m.html (accessed April 12, 2004).

⁹ U.S. EPA, 2003. *Draft Report on the Environment 2003*.

¹⁰ The RCRA program regulates the treatment, storage and disposal of hazardous wastes. Under RCRA, any facility with a RCRA permit must conduct "corrective action" at its facility, to address contamination. These measures were developed as part of the corrective action program, which is similar in many ways to the Superfund cleanup program.

¹¹ See pages 3-18 to 3-19 of *Draft Report on the Environment 2003*.

focuses on the question of risk and of pathways of concern at a site — an important improvement. EPA has also added a fourth GPRA measure, “final remedy selected,” for the Superfund program.

Background and Approach

In accordance with this increased focus on improving the program’s performance measures, in June 2002 EPA asked the National Advisory Council for Environmental Policy and Technology’s (NACEPT) newly formed Superfund Subcommittee for its input on the additional measures that EPA staff has been developing. The NACEPT Subcommittee (of which author Katherine Probst was a member) has recently made its own recommendations regarding performance measures.¹² Their findings are completely separate from this report, which was commissioned by the Office of Solid Waste and Emergency Response (OSWER). Because this report was being developed in the same timeframe as the NACEPT Subcommittee deliberations, there is some overlap between the recommendations made here and some of the suggestions made by the Subcommittee. However, this report does *not* reflect the views of the NACEPT Subcommittee, and the recommendations included here are solely the authors’, although of course they have benefited from participation in the NACEPT discussions and deliberations. In addition, the authors have benefited greatly from the input of OSWER staff members Melanie Hoff and David Cooper, and some of the ideas here originated with them. Rather than try to specifically identify who first voiced each idea, the ideas are presented with the understanding that all of us have the common goal of improving Superfund’s performance measures.

It is worth noting in brief the approach taken in developing this report. The first step was to find out what kind of information is readily available on NPL sites, which, in this day and age, meant looking at EPA websites. We examined various sources of NPL site data on EPA’s Superfund website (www.epa.gov/superfund), using the assortment of query systems available, as well as the main EPA search engine. We evaluated site-specific information for a sample of 20 final NPL sites from within all 10 EPA regions. We focused our attention on information available from the NPL site fact sheets, the content of which varied widely by region. We also examined regional EPA websites and state Superfund websites for data on our subset of NPL sites.

¹² See the Final Report of the Superfund Subcommittee of the National Advisory Council for Environmental Policy and Technology available at the EPA’s website www.epa.gov/oswer/SFsub.htm (accessed April 2004).

In a separate but parallel effort, we identified a set of information that we thought should be available for all NPL sites, focusing on what kinds of indicators of program performance might be the most meaningful. We then compared our own ideas for site-specific measures of success to what was available from the EPA website. The most obvious gaps we identified in the current performance measures related to interim cleanup progress at a site as well as how risk and contamination at a site was being or had been addressed. We also found that, while there is a lot of information available on EPA's website, it is not presented in a consistent fashion and is often woefully out of date. It was difficult to determine the source of the information presented, its reliability, and when the information had last been updated.

We queried a small but knowledgeable cross-section of experts on the Superfund program — representatives of states, environmental groups, congressional committees, academia, industry, and EPA — and asked for their input on what were the most important measures of success for the Superfund program. Perhaps predictably, each person had his or her own idea of what was most important. Somewhat surprisingly, however, there was very little overlap among the suggestions. One person thought the most important measure of success was when a site would be cleaned up; another said the most important measure was total cost; a third said that risk reduction was the sole important measure; and so on. This diversity of views on what constitutes meaningful measures of success for Superfund led us to take a different approach than we had originally anticipated. Instead of developing a few important measures of success, we decided to focus on identifying a core set of important information that would be useful to the full range of stakeholders and on developing a way to present that information in a standard and concise format. Once that core set of data was identified, we then selected what we believe to be the most important information for measuring progress at Superfund sites from a national perspective.

A draft description of this report was sent for review and comment to everyone we talked to in our information-gathering phase, as well as a few additional Superfund experts in October 2003. Again, we found that different people had quite diverse views on items they thought were extremely important and information they thought should not be included in the core set of data. The review of the draft report also yielded an interesting result: many of the comments from those in government agencies and corporations said that the set of core data that we recommended was "too detailed" for community representatives and should be greatly reduced. The community representatives who reviewed the draft report, however, said that the full complement of information was useful and did not recommend deleting any of the data elements. In fact, in a number of cases, they suggested adding information to the site report.

Based on this work, we developed recommendations for a core set of data and information that should be available in a standard format for all NPL sites, as well as a subset of this information that we believe captures the most important components for measuring success at cleaning up NPL sites. The recommendations in this report are solely those of the authors, and any criticism of this report should be directed to them.

What is Success for Superfund?

In attempting to develop meaningful indicators of success for Superfund, EPA faces an enormously difficult task. Success for Superfund cleanups is, in many ways, an elusive concept, and can be defined in multiple ways. Most discussions of success focus on what is achieved at sites on the NPL. At the most basic level, success is achieved when risks at the site are reduced to an acceptable level and when contamination is reduced or removed from land or water or other environmental media affected by contaminated sites, thus preventing future possible contamination or exposure. Success is also achieved when a cleanup is conducted in a cost-effective manner, when communities are meaningfully involved in the decisionmaking process, and when cleanup is implemented expeditiously.

While it is relatively easy to identify various attributes of success, it is much more difficult to define exactly what is meant by each of these attributes and to measure them. Some of the difficulties in defining these attributes stem from profound disagreements about what the goals of the Superfund program should be, and some stem from very real monitoring and measuring difficulties. In discussions with a small subset of stakeholders for this report, it quickly became clear that while everyone tended to define the ultimate success of Superfund in somewhat similar terms, that is, “when cleanup is completed,” what each person meant by cleanup varied, and each had their own list of additional items they considered important enough to include in Superfund’s performance measures. For some, it is that community or tribal involvement is crucial; for others, that costs are kept to a minimum; and for still others, that recovery of costs is maximized; and so on.

Because there are so many elements of Superfund that are controversial, it would seem best in developing new measures not to try and pick out one or two new indicators, but rather to create a system for providing a set of key information about sites that can be used to measure progress, and from that set of information, a subset can be selected as key indicators. People living near a site, Responsible Parties (RPs) that have financial responsibility at a site, reporters, and Members of Congress – among others – all want reliable and readily accessible site-specific

information. Based on our review of information on EPA's website, discussions with a number of stakeholders, and from RFF's own past research, we conclude that it is difficult to obtain reliable information on key attributes for sites on the National Priorities List (NPL) without querying the regional office staff directly.

This is not to say that there is too little information available on EPA's Superfund website or in individual site documents. There is in fact an abundance of information, and this is part of the problem. On the EPA's website one can obtain site-specific documents and data by querying: EPA's central data management system, the Comprehensive Environmental Compensation and Liability Information System, or CERCLIS; the Record of Decision System (RODS); and using separate query functions located in the NPL section of the main Superfund website and navigational links that lead to NPL site lists. The documents and information that can be garnered from these sources vary among NPL sites in terms of the content presented and amount of specificity. In other words, there is no one place where an interested person can go to obtain a comprehensive listing of the existing information about a specific site and be assured it is the most accurate, detailed and up-to-date available.

The NPL site fact sheets often appear to be the most complete source of information for NPL sites on the EPA website although there is little standardization among the formats used or the information provided. EPA has clearly tried to impose some structure on the site fact sheets through the use of somewhat standard data sections with headings such as site description or site background, threats and contaminants, cleanup approach, response action status, environmental progress, and current site status. However, each region employs a different set of these headings and the type and amount of information included under similarly named headings varies considerably. For example, most site fact sheets provide a list of the major chemicals existing at the site, their location, and the potential means of exposure to the contaminants. However, it is often difficult to determine the pathways of concern for each contaminant and the actions that have been taken to address current risks and contamination. For each section in a site fact sheet, the source of the information provided is often unclear, (that is, which key site documents the data is taken from, as well as if the information is based on the site at the time it was proposed for inclusion of the NPL or whether it reflects the current status at the site).

Furthermore, based on our review, it appears that a large number of the site fact sheets have not been updated during the past 12 months, and the schedule for updating the information appears to vary considerably among EPA regional offices. No current documentation of the number and dates of previous updates exists, rendering it difficult to determine how regularly they occur, although our research has shown that the time lag between updates for most site fact sheets ranges from

six months to 15 months, with some exceeding 18 months.¹³ These estimates may be conservative, however, as the “last updated on” dates may only be for the website itself, rather than substantive revisions.

The lack of overall standardization in format, of consistency in the information available, and of regular updates makes it very difficult to get a complete picture of individual sites on the NPL or to compare progress or attributes among sites. The challenge that needs to be addressed is to identify the core set of information required to document site performance that would be readily accessible on the EPA website (and in hard copy) on every NPL site to an interested person – whether a member of the local community, a RP representative, a state governmental or EPA manager, or a congressional staffer. This core set of data should include important measures of progress as well as key site attributes and should be structured in a way that meets the needs of the full panoply of stakeholders and others interested in the progress being made at sites on the NPL. This approach would also eliminate the need to choose one measure over another to assess site performance, given the cacophony of views on the subject.

One of the advantages of creating a core set of data for all NPL sites is that it can serve multiple purposes and audiences. For a member of the local community or area watchdog group, whether environmentally or business oriented, for example, it would provide an easily accessible and concise source of critical site-specific information. Because much, although not all, of the information can be aggregated to the state, regional, or national level, it also could be used to present a snapshot of how a specific state or regional office is doing – information both Congress and the public at large would likely appreciate. Specifically for EPA managers – in the regional offices and in headquarters – this core data set would provide a useful management tool for identifying sites that need additional attention or evaluating sites based on specific attributes. For example, one could look across states, or across regions, for sites with specific attributes such as all landfill sites or all sites where EPA, rather than the RPs pay for cleanup (referred to as Fund-lead) and examine progress within that set of sites.

Compiling an important core set of data on a site-specific level, and then aggregating it and analyzing it according to other attributes, is a critical means of improving program management by identifying good performance and pinpointing where performance needs to be improved. It is important, however, in developing Superfund performance indicators, to resist the temptation to include every aspect of the programs’ performance in the kind of standardized report format being proposed here.

¹³ Based on review of site fact sheets from a sample of 20 final NPL sites from within all 10 EPA regions.

In addition to examining success on an individual site level, there are other important measures of program performance. These address how the program is managed overall: how resources are spent, how well the program communicates what is being accomplished, and how involved community representatives are in the cleanup and decisionmaking process, for example. Examining these types of indicators tells us something about the overall effectiveness and efficiency of the program and also helps the agency to make strategic decisions about the future of the Superfund program and target future management improvements.

Not all program performance measures can be presented in the same manner. For some of the important attributes of program performance it is possible to identify specific data that could be reported. For example, one can look at the cost of remedies over time and compare them. However, for other areas, it is much more difficult to identify clear-cut performance indicators. For example, there have been discussions for years about how to develop a meaningful indicator of successful community involvement, the definition of which is in itself disputed. Rather than developing potentially inadequate indicators for this important attribute, a more valuable goal is for the agency to commit to a mechanism—and a schedule—for evaluating these significant but more qualitative aspects of program performance. In some cases, such as community involvement, it may be important to commission periodic independent evaluations, conducted by those outside of EPA and its contractors. Similarly, evaluating how well resources are managed lends itself more to periodic evaluation than to a specific performance indicator.

Fundamentally, there are two areas where performance measures are needed: the site-specific level and the program level. In order to address these two needs, and with the plan of aggregating site-specific information to provide a national picture of Superfund progress, we recommend that EPA:

- Create a standardized **NPL Scorecard** for each NPL site that contains concise up-to-date information on site progress and key attributes (updated at least quarterly).
- Create a one-page **NPL Report Card**, which would include a subset of information from the NPL Scorecard containing the most important measures of site progress, along with a small amount of background information.
- Institute a **Web-based Superfund annual report** that would include summary information on site progress, as well as other indicators of program performance. This annual report would be similar to the formerly issued *Superfund Annual Report to Congress*. This report, which was required under Section 302(h) of CERCLA, presented information annually on response activities and accomplishments and compared remedial and enforcement

activities with those undertaken in previous fiscal years.¹⁴ As part of this new report, EPA would include an annual (or biannual) program evaluation agenda. This agenda should identify the key issues that are ripe for an in-depth qualitative or quantitative evaluation and make public the topics and schedule for these evaluations. To develop this agenda, EPA staff would regularly solicit suggestions from states, tribes, local community representatives, environmental groups, industry, external experts, and other stakeholders.

It should be noted that all of these reports should be posted to the EPA website and be publicly available.

In the sections below, we describe each of these approaches in more detail. It is important to note that while the authors have carefully considered the recommendations that follow, additional work may be required to refine some of these concepts before they are implemented.

The NPL Site Scorecard

The purpose of the Scorecard is to bring together key information about each site in an easily understandable, standard format that is the same for each and every site – something one can glance at and quickly get a sense of site progress and key attributes. The NPL Scorecard would provide enough information to quickly give the reader a sense of each site's key attributes and how cleanup is progressing, but it does not – and is not intended to – tell the whole story.¹⁵ For that, more inquiry is needed.

The Scorecard that we envision would provide the identified core data, while a one-page NPL Site Report Card (described later in this report) would include only the most important measures of progress from the full Scorecard report as well as a small amount of background information. The Scorecard would be six pages long, to correspond with six categories of information, identified below. It would have a prescribed format that would be the same for every site. If information is not available or not applicable, it should be so noted and left blank and, to be useful and reliable, the information in the Scorecard should be regularly updated, at least quarterly (see Appendix A for a mockup of the complete Scorecard). EPA is working on its own version of a similar report, referred to as the Site Performance Profile, although there are some important differences between the two approaches.

¹⁴ Go to www.epa.gov/superfund/accomp/sarc/ to access the annual Superfund progress reports from 1992 through 1998.

¹⁵ The format of what we are calling an NPL Scorecard could be used for sites in other cleanup programs.

The Scorecard that we propose is more comprehensive and includes information on planned activities at NPL sites, major contaminants of concern, and risk reduction accomplishments, for example.

Some have raised a concern about the resources that would be needed to implement and maintain the NPL Scorecard. However, the time and cost of maintaining this system on an ongoing basis should be relatively small, as one of the main goals is for the information to be simple. Also, EPA now spends millions of dollars each year maintaining its central data management system, CERCLIS, and additional dollars go to myriad efforts to characterize NPL sites and respond to congressional and other outside inquiries. In fact, if the Scorecard approach is implemented, it is likely EPA will save money overall by eliminating some of the duplicative systems and data now maintained by various offices within the Superfund program. We suspect that the cost of implementing and maintaining the Scorecard would be small compared to Superfund's current annual data management costs, as well as the costs of the many ancillary data systems the program has created, (and continues to create) as well as the costs of "one time" data calls to the regions.

The major cost would be in the start-up phase. Although much of the information we propose including in the Scorecard is already in existing EPA data systems, some is not and will need to be collected from regional staff to get the system up and running. Other data will need to be reviewed for accuracy and updated by regional and headquarters staff. While this will require some EPA staff time, if determined to be a priority for OSWER, this information collection and quality control could be handled on an expedited basis and not absorb a huge amount of staff time. If, however, this process is implemented without the backing of senior EPA management, it could bog down and take much more resources and time to implement.

There will also be a start-up cost of explaining the Scorecard to the regional staff and making sure that they understand what specific information is being requested. For this reason, it may make sense to phase in implementation of the Scorecard. EPA could implement this approach by starting with the sites most recently added to the NPL (for example, those sites made final on the NPL in FY 2000 through 2004); in a second phase, adding the remaining NPL sites that are not construction complete; and, finally, bringing construction complete sites into the system. Because the information being requested is relatively straightforward, it should not take more than a year at most to implement this approach for the entire NPL if it is done with senior management support, and in an efficient fashion.

The first step in designing a site-specific Scorecard is to identify the major categories of information needed. We have identified six basic categories of

information that the Scorecard should include: (1) background information, (2) site progress to date and expected future actions, (3) baseline contamination and population information, (4) risk reduction accomplishments, (5) post-construction activities, and (6) cost information.

The order of the six Scorecard sections is based on the timing of when information is likely to become available, not on their relative importance. Because the Scorecard would have a standard template, those interested in a particular section could quickly access that information. Thus, for example, those interested in risk reduction accomplishments – arguably the most important section – can easily find that information. In addition, as noted earlier, we are recommending a one-page Report Card that would pull together the most important indicators of site progress from the entire Scorecard. The elements of the one-page Report Card, described in a later section of this report, would represent the critical measures of success for the Superfund cleanup program.

Two additional sections for the Scorecard were recommended by some of those we talked to but we have chosen not to include them: a section on community involvement and environmental justice issues, and a section on the actual risks at the site and pathways of exposure. As noted earlier, it is the authors' belief that issues related to community involvement and environmental justice cannot be properly addressed by an "indicators" approach; they require a more qualitative assessment, at least for the time being. Regarding the suggestion to include more precise information regarding current and future risks and pathways of concern, we agree that ideally this kind of information should be included in the Scorecard but have not been able to develop a relatively simple, straightforward, and meaningful way to present this information. This remains a challenge for future analysts and EPA.

Background Information. Each Scorecard should include basic background information on the site: its name, location, and geographic description; the EPA region in which the site is located; the EPA site identification; whether the site is a federal facility; the date proposed to and made final on the NPL; the original cause of the contamination, the site type (typically but not always the type of industrial operation at the site); the current land use at the site; the name of the current owner of the site;¹⁶ the name of key contacts for the RPs being held responsible or taking the lead for cleanup activities; contact information for the EPA remedial project manager and community involvement coordinator, and the state agency contacts. In addition, this section of the Scorecard should include whether a Technical Assistance Grant (TAG) has been issued for the site, and if so, who is the main

¹⁶ While not necessary for the Scorecard, it would probably make sense for EPA to develop unique identifiers for responsible parties so that it would be possible to identify all sites that a particular entity (whether public or private) is associated with.

contact for the group that received the grant. Most, if not all, of this information is currently available either from EPA's main Superfund database, CERCLIS, or in site documents. Some of this information will need to be reviewed and verified, such as the type of site and cause of contamination. Two other site attributes that should be noted in this section of the Scorecard are whether the site is considered sacred to any tribal communities and if environmental justice is a concern in the community. If tribal governments or environmental justice groups do not want this information included, it could be eliminated. Another important piece of information – that may not now be in CERCLIS, but that should be included in the Scorecard – is whether the total cost of removal and remedial actions is expected to equal or exceed \$50 million, making the site a potential or actual “mega site.”¹⁷

Another key piece of information that should be included in the background section of the Scorecard is the total number of “operable units” (OUs) at the site. It should include short, consistent descriptions of the part of the site being addressed by each operable unit, which is defined as one element of the site cleanup – either a geographic portion of the site or one action needed to remove contamination. For example, does OU1 address groundwater and OU2 the contamination source; or does OU1 address the southwest portion of the site, and OU2 the rest of the site? It is not so important that OUs be consistently defined from site to site, but it is important for there to be brief and understandable descriptors of each OU, as this is how all the key site studies and activities in the cleanup process are organized and how EPA expenditure data is maintained. This information needs to be collected for all NPL sites that have not been deleted and should be included in the Scorecard.

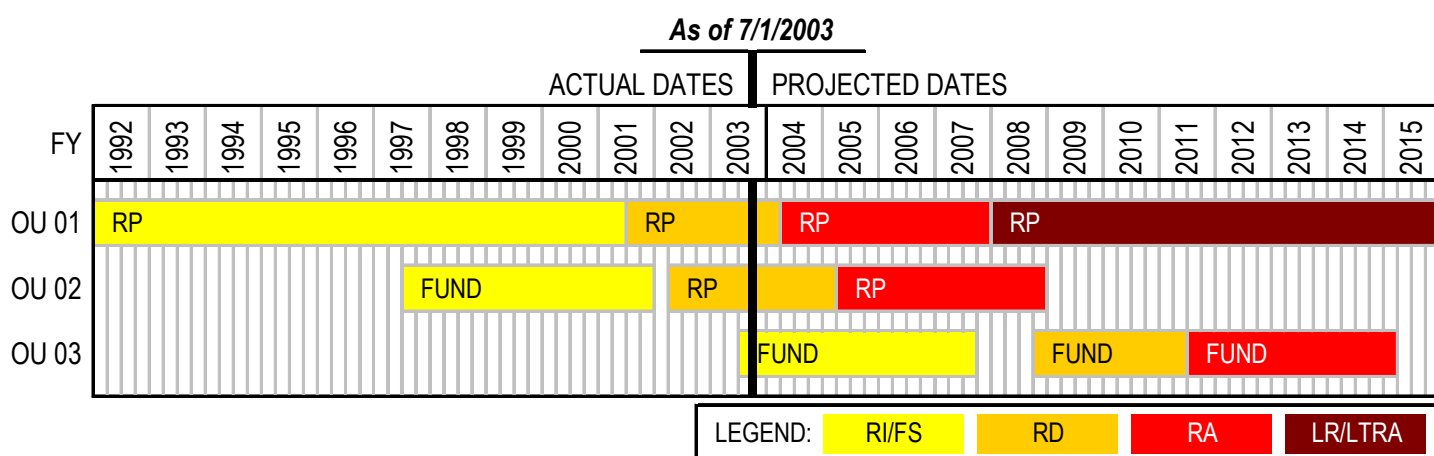
The final piece of information that needs to be included in the background section is the site-specific documents or information system that the Scorecard information is based on. This information is not always clear in the site summaries currently on EPA's website, making it difficult to tell how current and reliable the information is. In addition, each section of the Scorecard should include the date the information in that section was last updated.

Site Progress to Date and Expected Future Actions. One of the most critical pieces of information about a site that everyone wants to know is which actions have been completed, which actions are underway, and when future actions are likely to commence and be completed. This would include removal actions, as well as the major steps in the remedial pipeline. The first two pieces of information – about past and current actions – are easy to come by; the last piece is much less so. Given funding uncertainties and the fact that RPs are the lead for the majority of actions at NPL sites, it is understandable that EPA might need to caveat promises about future activities at Superfund sites. However, it still seems critical for EPA to make

¹⁷ This refers to total expected costs of both EPA and responsible parties.

public its plans for each site, while making it clear that actions might be delayed due to various factors, such as lack of EPA funds, recalcitrant RPs, or simply because of unexpected delays in the cleanup due to weather, the need to reexamine parts of the site when new standards come into play, and so on. Thus, we recommend that the Scorecard include a relatively simple but graphical portrayal of completed, ongoing, and expected future site actions, as well as how long key stages of the cleanup pipeline have taken, and are expected to take (as shown in Figure 2) and whether each of these activities are EPA- or RP-lead.

Figure 2. Completed, Ongoing, and Expected Future Actions, through FY 2003 Third Quarter, by Leading Party Type (7/1/2003)



	RI/FS			RD			RA			LR/LTRA		
OU	Start **	End	Yrs	Start	End	Yrs	Start	End	Yrs	Start	End	Yrs
01	9/31/1991	1/5/2001	9.3	3/17/2001	10/12/2003	2.6	10/12/2003	8/12/2007	3.8	8/12/2007	8/12/2038	31
02	4/26/1997	8/2/2001	4.3	1/25/2002	11/11/2004	2.8	11/11/2004	8/11/2008	3.8			
03	5/19/2003	5/12/2007	4	5/11/2008	2/9/2011	2.7	2/9/2011	11/12/2014	3.8			

* Fund = EPA lead action and RP = Responsible Party-lead action

** Future dates and estimated durations are in italics.

Note: We selected the end of the third quarter of FY 2003 arbitrarily as the date for the mockup of the Scorecard and for Figure 2. This site has not had any removal actions; if it had, they would have been included here.

Key: RI/FS= Remedial Investigation/Feasibility Study; RD =Remedial Design; RA=Remedial Action; LR/LTRA=Long-term Response Action

Providing this type of information in a visual format allows the reader to get a sense of the overall progress of a site at a glance and provides a wealth of data. While it is almost certain that the dates for future expected activities will change, it seems critical to us that members of the local community have access to

the best information they can obtain about future site activities. In order to allow members of the public to compare the duration of key cleanup phases to the average time these phases take at other NPL sites, EPA could include in the web-based version a clickable link to information on the average length of each major phase in the cleanup process for all NPL sites. This information would need to be updated every year.

In addition to displaying this information graphically, it would also be useful to provide information on completed and ongoing actions for the site in a summary form as well. For the above site, this could be shown in the following table:

Table 1. Summary of OU Progress

OUs with Remedial Investigation/ Feasibility Study (RI/FS) started: 3 (100%)
OUs with RI/FS completed and Record of Decision (ROD) signed: 2 (66%)
OUs with Remedial Design (RD) started: 2 (66%)
Current RDs being implemented by: Responsible parties - ABC Corporation Landfill Group, City of XX
OUs with RD completed: None
OUs with Remedial Action (RA) started: None
Current RAs being implemented by: Not applicable
OUs with RA completed: None
OUs with Long-term Response Action (LR/LTRA) underway: None

Information regarding whether all, some, or none of the operable units at a site are at or have completed a specific stage in the cleanup process is information that can be aggregated to the state, regional, or national level to provide a picture of overall program progress. This idea was developed by EPA staff in their work developing the site performance profile. Tabulating at the regional or national level, for example, the number (and percentage) of sites where all OUs are in the remedial action stage provides a much better picture of the true progress of sites than characterizing site progress based on “the most advanced operable unit” at each site, which is the way EPA has often documented progress addressing NPL sites in the past. In order to get a sense of overall program progress, it is important to provide information not just on what work has been accomplished at each site, but what work remains to be done. This is critical to any attempt to estimate the future cost of the program or to try and forecast future accomplishments. One can use this type of information to compare the progress of discrete subsets of sites looking, for

example, at the duration of key cleanup phases at RP-lead as compared to Fund-lead actions, or at mega sites as compared to non-mega sites, or mining sites as compared to landfills, and so on.

It would also be useful to provide a brief summary of the planned remedial action for each operable unit, once this has been determined by EPA – that is, after the Record of Decision has been signed. Additionally this section should include information on whether a site is construction complete, and if so, the date that status was achieved. If the site is not yet construction complete, the year the site is expected to reach that status should be included.

Historical information on site actions is contained in CERCLIS, although there are often anomalies in that information that would require review in order to present site progress by OU in the fashion we have recommended. Information on planned future actions is also maintained in CERCLIS, although this data would most likely need to be reviewed by the EPA regional offices and updated before being included in the Scorecard. Presenting this information clearly and concisely in a standard format will make it much easier to get a sense of the overall progress at a site.

Baseline Contamination and Population Information. Another critical component of measuring performance is reliable and consistent baseline information on contaminants at each site, as well as information on local sources of drinking water and groundwater use. While information on contamination *per se* is not sufficient to describe the current risk at a site, it is important in providing critical baseline information for evaluating the progress made in addressing contamination and reducing current and possible future risks at the sites. Ideally, one would include a section on current risks and potential future risks at each site. Determining how to do this would be a lengthy and difficult task – one that is worth pursuing, but that is beyond the scope of this project.

For baseline contamination at the site, we have developed a simple table (see Table 2 for a mockup of how this would look) to present information on the major contaminants at each site by environmental media. Obviously, decisions on whether a contaminant is major or not will be a matter of judgment on the part of each site manager. It is important to remember that the purpose of this information is not to include *all* the contaminants present at a site, but only to present the major contaminants, something that should not be resource intensive to identify for each NPL site. Again, we recommend that this information be presented by operable unit, as most site studies are done on an operable-unit basis.

**Table 2. Baseline Contamination: Major Contaminants
by OU and Environmental Media**

	Groundwater	Soil	Sediments	Surface Water	Air
OU 01	Metals, nitrate, VOCs, cyanide, PAHs, pesticides				
OU 02		Metals, nitrate, VOCs, cyanide, PAHs, pesticides			
OU 03		Metals, benzene, PAHs			

The Scorecard should contain information on whether off-site migration of any contaminants has occurred or is a concern at any operable unit. There should also be web links in the Scorecard that a citizen could go to for publicly available government data on the toxicology, including the major health concerns, for each contaminant.¹⁸ Information on major contaminants is currently available for some sites, but not for others. As a result, for some sites, this information would need to be collected from the regional EPA site manager or from site-specific documents.

Another key element in this section of the Scorecard relates to the local population—that is, how many people are living and working on or near a site. The Scorecard should include information on:

- the estimated size of the population living onsite, if applicable;
- the estimated size of the population working onsite, if applicable;
- the estimated size of the population living within a limited (perhaps one-mile) buffer zone around a site; and
- the current source of drinking water for people living onsite or within a limited (perhaps one-mile) buffer zone around a site and the estimated size of the population served by this drinking water source.

This section of the Scorecard should also include information about historical and current groundwater use, indicating whether it is or was used for drinking water, irrigation, industrial operations, or other uses.

¹⁸ For example, information is available on line for EPA's Integrated Risk Information System (IRIS) at www.epa.gov/iriswebp/iris/index.html.

It is also important for this section to note if there is subsistence fishing or hunting or food gathering occurring on or near the site and whether these kinds of activities occurred until the contamination was discovered and have since ceased. The reason for asking for historical information about groundwater use and subsistence fishing and hunting is because it is important to be able to document the impacts of site contamination on local activities. Finally, this section should also indicate if the site contains, or is within, sensitive ecosystems or environments.

The information presented in this section is critical to understanding the concerns at sites and would provide an important snapshot of the major contaminants of concern. This information is important not only to people living and working in the local community, but also to providing a consistent national picture of the risks at Superfund sites. Much of this information is probably known to EPA regional staff, but may not be conveniently located in one place. Consequently, this information most likely will need to be gathered for each site from regional EPA staff.

Risk Reduction Accomplishments. As noted earlier, EPA has recently instituted two risk-related performance measures for NPL sites: current human exposure under control and contaminated groundwater migration under control. This is the first time that EPA has reported measures for NPL sites directly related to risk reduction, and these measures have proved controversial with some in the environmental community, as they allow EPA to take credit for exposure and contamination being under control, rather than being permanently addressed. Given the Superfund program goal of permanent remedies, it would be useful to address both aspects of risk — *hazard* (or contamination) at the site, and *exposure* — in measuring performance — but to do so in a value-neutral way as well as include the new EPA performance measures.

The current risk at a site is a function of these two components. If contamination is eliminated, for example, one does not have to worry about reducing exposure to assure that there will be no risk at the site. And, if exposure is reduced to zero, one does not have to worry about risk from remaining contamination (at least as long as one is confident that exposure continues to be eliminated and if the contamination does not migrate.) Also, as long as some contamination remains at levels that do not allow unrestricted use of the resource (land, groundwater, or surface water), then there is potential for future exposure. To skirt the argument among different interest groups and individuals about what *are* (or should be) the goals of the Superfund program, the Scorecard should include information on the continuum of addressing risk by reducing or eliminating exposure or reducing or eliminating contamination (hazard). Specifically, the Scorecard should include information on whether exposure at a site has been

reduced, controlled, or eliminated and whether contamination at the site has been reduced, contained, or eliminated.

We have developed a simple matrix for the Scorecard (see Table 3 for a mockup) to portray this information for each of the different environmental media.

Table 3. Risk Reduction Accomplishments by Environmental Media

	Groundwater	Soils	Sediments	Surface water	Air
Exposure reduced	No	No	Not applicable	Not applicable	Not applicable
Exposure controlled	Yes	Partial	Not applicable	Not applicable	Not applicable
Exposure eliminated	No	No	Not applicable	Not applicable	Not applicable
Contamination reduced	No	No	Not applicable	Not applicable	Not applicable
Contamination contained	No	No	Not applicable	Not applicable	Not applicable
Contamination eliminated	No	No	Not applicable	Not applicable	Not applicable

In developing this kind of information, it is critical to create a standard set of definitions for each of the terms in the left-hand column – exposure reduced, controlled, and eliminated and contamination reduced, contained, and eliminated, although these are relatively straightforward terms. The terms related to exposure imply a hierarchy, with it being likely that the first step in any cleanup would be exposure reduced, then exposure controlled, and then, finally, eliminated. This is less true for the terms related to contamination – contamination reduced, contained, and eliminated. While one would expect that all sites would at some point have all exposure eliminated, it may not be the case that at all, or even a majority of sites, contamination will in fact be eliminated. The purpose of presenting this information by environmental media is so that people living near sites will have information on what pathways of concern or areas of contamination remain and which have been addressed. It may also be that an “other” category of environmental media is needed for other routes of exposure, such as ingestion of contaminated fish, for example.

It would also be useful to provide some way of distinguishing among the types of actions taken to reduce or control exposure – whether these are actions that

are perceived as quite reliable over time, such as perhaps a slurry wall, or not very reliable over time, such as private property restrictions. Absent this, we recommend including a brief description in the Scorecard of the actions taken. For example, if the summary table indicates that groundwater exposure is reduced, a brief description of how this was accomplished, such as “bottled water provided to residents,” would be noted.

Using this kind of summary information, it would be possible at a national level to identify the number of sites where current human exposure has been reduced, controlled, or eliminated as well as where contamination has been reduced, contained, or eliminated. By reporting on contamination in addition to exposure, the Scorecard would provide at least some information on protection of the environment (as distinct from human health) as well as on source control of contamination. Ideally, at some time in the future, this section of the Scorecard would include information on exposure pathways of concern and estimates of current risk, as well as possible future risks.

Almost all the information in this section of the Scorecard is included in the shorter Report Card, because of the importance of risk information in assessing progress at contaminated sites. This information will need to be collected from EPA regional staff and will probably be the most difficult to obtain, not because it is technically difficult, but because it involves making judgments — and putting down on paper — what has been accomplished in a simple manner. That said, the way we suggest presenting the information is, in fact, incredibly simple and really should not take a lot of time to accomplish.

Post-construction activities. As more sites on the NPL move through the remedy selection and remedial action phases of the cleanup process and are deemed construction complete, increasing attention is being paid to what are referred to as “post-construction” activities.¹⁹ These include the implementation and monitoring of institutional controls, as well as the tracking of “five-year reviews.” CERCLA requires five-year reviews at those sites where, after the remedy is in place, hazardous substances remain at levels that do not allow unrestricted use. EPA is required to review these sites at least every five years to verify that the selected remedy still protects human health and the environment. Since many, if not most, remedies leave some hazardous substances on site at levels that preclude unrestricted use, five-year reviews are required for the majority of NPL sites.

This section of the Scorecard should address the following questions:

¹⁹ Post-construction activities also include long-term response actions and operation and maintenance activities, but we have included these two elements under site progress.

- Are institutional controls a component of the remedy at the site?²⁰
- Have the institutional controls been implemented?
- Who is responsible (including the name and contact information) for implementing the institutional controls?
- Who is responsible (including the name and contact information) for monitoring compliance with the institutional controls?
- What is the date of last five-year review and five-year review site visit, and who conducted the review?
- When is the next five-year review is due?

This information is not now assembled by EPA in one place, but much of it is supposed to be collected for a new institutional controls tracking system that is currently being developed by EPA. Because institutional controls are critical to limiting possible exposure to contamination, we recommend that this information be gathered for all sites from the regional offices if the Scorecard system is implemented, even if the institutional controls tracking system is not yet operational.

Another key set of information for the post-construction phase comes from the five-year review reports. We recommend that the most salient information from these reports be included in the post-construction section of the Scorecard. This would include the following:

- Is the remedy complete—that is, have all elements of the remedy, including institutional controls, been implemented?
- Is the remedy functioning properly?
- Are the cleanup levels specified in the Record of Decision (ROD) still adequate to provide protection of human health and the environment?
- Is the remedy still protective of human health and the environment?
- A summary of five-year review report recommendations including: (1) Did the five-year review include recommendations for measures that need to be taken to ensure that the remedy is protective? If so, what are they (in summary form) and who is responsible for implementing them? and (2) What is the implementation status of the recommended measures?

All of the information above is included in the five-year review reports. Most likely, this information will need to be extracted from the five-year review reports and reviewed by EPA staff for use in the Scorecard.

²⁰ While we have included information on the status of institutional controls in the “post-construction” section of the Scorecard, institutional controls are often called for in the Record of Decision (ROD), and specified in the remedial design. Thus, for most sites, information on the need for, type of, and status of institutional controls will be available before the remedial action stage, and before the first five-year review is due.

Cost Information. More readily accessible information on the cost of cleanup would greatly aid in the transparency of the Superfund program. Currently, it is possible to get information on historical EPA expenditures by operable unit for some NPL sites from EPA's website. However the information is difficult to find and does not include costs incurred by responsible parties or expected future costs for either EPA or RPs.²¹ Information on how much has been spent to date on cleanup and related activities, and how much is expected to be spent in the future provides a quick and easily understandable picture of how much work has been done and how much remains to be done. We recommend that this information, for both EPA and RP costs, be included in this section of the Scorecard.

Obtaining information on the cost of cleanup is complicated for a number of reasons. First of all, from an analytical perspective, it matters in what year costs are incurred. Absent this information, it is not possible to control for inflation and truly compare costs among sites and among remedies, or over time. This level of detail, however, is probably not appropriate for the NPL Scorecard. To make this relatively easy, we recommend that the cost information be presented in nominal dollars for each of the major components of the site cleanup process, by operable unit, as shown in a mockup in Table 4.

Table 4. Past, Expected Future, and Expected Total Costs for One OU

	Costs to date		Expected future costs		Expected total costs	
	EPA costs	RP Costs	EPA costs	RP Costs	EPA costs	RP Costs
Removal	\$0	\$0	\$0	\$0	\$0	\$0
RI/FS	\$0	\$1,950,000	\$0	\$0	\$0	\$1,950,000
RD	\$0	\$190,000	\$0	<i>\$780,000</i>	\$0	<i>\$970,000</i>
RA	\$0	\$0	\$0	<i>\$6,940,000</i>	\$0	<i>\$6,940,000</i>
LR/LTRA	\$0	\$0	\$0	<i>\$12,400,000</i>	\$0	<i>\$12,400,000</i>
Total	\$0	\$2,140,000	\$0	<i>\$20,120,000</i>	\$0	<i>\$22,260,000</i>

Note: Future expenditures shown in italics.

Key: RI/FS= Remedial Investigation/Feasibility Study; RD =Remedial Design; RA=Remedial Action; LR/LTRA=Long-term Response Action

²¹ For example, see <http://cfpub.epa.gov/supercpad/cursites/cacostinfo.cfm?requesttimeout=180&id=0100743> (accessed April 2004) for what EPA terms "actual costs" for the New Bedford site in Massachusetts.

Getting data on past EPA expenditures should not be a problem. EPA has information on these expenditures in its integrated financial management system. To make the information relatively easy to provide, we recommend this information be reported only for removal actions and the major remedial pipeline stages, and only for what are called “extramural expenditures,” that is, the cost that EPA spends on contracting for site studies and cleanups to be implemented, whether the work is done by EPA contractors, other federal agencies, or by states. While it is true there are other costs involved in each of these major cleanup activities—referred to as “intramural costs,” which include the cost of EPA staff time, staff travel, and laboratory work—in general these costs are relatively small in comparison to the extramural cost.²²

However, obtaining information on future expected EPA costs is a much more controversial suggestion. EPA has been reluctant to disclose information on needed future EPA expenditures for specific sites. This situation may well be changing, as there are now quite a few reports from the Office of the Inspector General that include this data for a specific subset of sites.²³ Also, the Department of Defense in its annual report does disclose estimated future costs (referred to as costs to completion). As funding constraints become ever more pressing, it is critical to have public and credible information on the expected future and total costs of site cleanup activities, as well as on what has been spent to date. Clearly, for sites early in the process, it may not be appropriate to provide even ballpark estimates of future costs. However, once the ROD has been signed, EPA should be able to provide an initial estimate of future estimated cleanup costs. This information, like much of the other information in the Scorecard, will need to be updated periodically in order to remain current.

Getting cost information from RPs will almost certainly be difficult. In general, RPs have not provided this information on a site-specific basis, nor is there any legal requirement that they do so. As a result, where responsible parties have the lead for implementing any of the key site study or cleanup activities, there is typically no information on how much they have spent on these activities. RPs should be asked to provide this information, and, most likely, some will and some won't. If RPs do not provide information on past costs and expected future costs, they could be encouraged, at a minimum, to provide their best estimate of the total estimated costs of each major cleanup action for each operable unit at NPL sites.

²² See Table 3-3, page 45, of *Superfund's Future: What Will It Cost?*

²³ The most recent such report is *Special Report: Congressional Request on Funding Needs for Non-Federal Superfund Sites*, Report 2004-P-00001, January 7, 2004, Office of the Inspector General, U.S. EPA, Washington, DC.

NPL Report Card

The NPL Report Card should include a subset of the information in the NPL Scorecard. The Report Card would include the most important information from each of the six sections of the NPL Scorecard, as shown in a mockup (Figure 3) on the next page. The Report Card would include some descriptive background information up front, as well as information on the site's construction completion status. Information on the status of the two recently adopted environmental indicators for Superfund: current human exposure under control and contaminated groundwater under control would be included.

The Report Card would also include a summary of the current status of each operable unit at a site, as well as which organization (EPA, the state, or a specific RP) has the lead for each activity. A list of the major contaminants would be included, as well as the population living and working onsite and in a limited buffer zone around a site. The current source of drinking water for the local population living onsite and within the buffer zone would also be included. Another key element that would be included is information about whether exposure and contamination have been reduced, controlled or contained, or eliminated for each environmental media. In addition, the Report Card would include summary information about whether institutional controls are part of the remedy and their implementation status, and whether the remedy was found to be functioning properly, as well as the date of the last and next five-year review reports. Finally, the Report Card would include summary information on total cleanup costs to date, expected future cleanup costs, and expected total cleanup costs for both EPA and RPs.

Superfund Annual Report

Up until FY 1998, EPA issued the *Superfund Annual Report to Congress* each year, which provided summary information on program accomplishments, estimates of the future cleanup costs to EPA (called "out-year liabilities") as well as information on other key aspects of the program. One could quibble over whether the annual reports were focused on the most important issues, whether the data was as objective as it should be, and whether EPA may have made the reports more lengthy (and therefore more expensive) than necessary, but they provided a single source of program information that anyone could go to for basic program

NPL Site Report Card - Mockup

Information last updated: 7/1/2003

Site name: ABC Corporation Landfill EPA region: 3 ID: XYZ123456789 Mega site? No Federal facility? No National Priority List (NPL) proposal date: 2/25/1990 NPL final listing date: 1/5/1991	Type of industrial operation (if applicable) Landfill Site in environmental justice community? Yes Site sacred to tribal community? No Sensitive ecosystem? No				
Current human exposure under control? Yes Contaminated groundwater migration under control? Insufficient data					
Current status of each Operable Unit (OU) OU 01 - Remedial investigation/ feasibility study finished (responsible parties-lead: ABC Corporation Landfill Group, City of XX), Remedial design underway (responsible parties-lead: ABC Corporation Landfill Group, City of XX) OU 02 - Remedial investigation/ feasibility study finished (EPA-lead), Remedial design underway (responsible parties-lead: ABC Corporation Landfill Group, City of XX) OU 03 - Remedial investigation/ feasibility study underway (EPA-lead) Construction complete status: Not construction complete Construction complete date or estimated date: <i>Estimated 2015</i>					
Major contaminants Metals (arsenic, lead, chromium); nitrate; Volatile Organic Compounds - VOCs (benzene, toluene, ethyl benzene, xylene), cyanide, Polycyclic Aromatic Hydrocarbons - PAHs, pesticides Estimated size of population living on-site: 0 Estimated size of population working on-site: 25 Estimated size of population within 1 mile site buffer zone: 1,500 Source of drinking water for population living on-site or within site buffer zone: Previously municipal water supply, but currently bottled water					
Risk reduction accomplishments	Groundwater	Soils	Sediments	Surface water	Air
Exposure reduced	No	No	Not applicable	Not applicable	Not applicable
Exposure controlled	Yes	Partial	Not applicable	Not applicable	Not applicable
Exposure eliminated	No	No	Not applicable	Not applicable	Not applicable
Contamination reduced	No	No	Not applicable	Not applicable	Not applicable
Contamination contained	No	No	Not applicable	Not applicable	Not applicable
Contamination eliminated	No	No	Not applicable	Not applicable	Not applicable
Are institutional controls a component of remedy at site? Yes Have institutional controls been implemented? Yes Date of last five-year review: Not applicable Date of next five-year review: Not applicable Is remedy functioning properly? Not applicable					
Total cleanup costs to date: \$3,151,000 Total expected future cleanup costs: \$32,259,000 Expected total costs of cleanup: \$35,410,000					

accomplishment data, for the prior fiscal year and over the life of the Superfund program. For example, the FY 1991 Report had chapters on these topics:²⁴

- major program accomplishments, which included accomplishments in the removal, remedial, and enforcement programs;
- response initiatives, which included information on site assessment, NPL updates, and special programs;
- estimate of resources required to implement Superfund, which included estimates of the future resource needs to complete cleanup, as well as information on RP contributions to cleanup efforts;
- federal facilities program; and
- program implementation and support activities, which discussed community involvement and state and tribal relations.

One criticism of the reports was that they were often issued a year or more after the year they were to describe. This, according to EPA staff, was the result of the many government sign-offs needed because they were official reports to Congress. Still, many relied on the reports for basic historical program information.

Another key report that was issued annually up until FY 1994, was the *ROD Annual Report*, which included summary information on remedies for NPL sites, as reflected in the ROD documents. Again, there were concerns about the accuracy and completeness of the information in the records of decision, but these reports provided an important and widely available source of information on remedies on an annual basis. The FY 1995 ROD annual report was held up somewhere within the administration, and since then, none has been issued.

The demise of these two important source documents – especially the *Annual Report to Congress* – has made oversight and evaluation of the Superfund program more difficult. As discussed earlier, it is time-consuming just to get basic program data from EPA's website, and the summary program information presented on the EPA website is often confusing. Information on specific NPL sites on the EPA website is often inconsistent, incomplete, or out-of-date. At a time when there is increasing concern about what the program has accomplished, how much funding is needed, and how to better portray the program's accomplishments, it would

²⁴ *Progress Toward Implementing Superfund, FY 1991, Report to Congress*, Office of Emergency and Remedial Response, U.S. EPA, Publication 9200. 2-17, 1993.

seem appropriate for EPA to reinstate a Superfund annual report of its own volition, albeit perhaps with some improvements.

The key pieces of information that should be included in the web-based Superfund Annual Report for all NPL sites, including federal facilities, are:

- Information on accomplishments in the removal, remedial, and enforcement programs from the inception of the program through the current fiscal year, by fiscal year and in summary form. These accomplishments should be compared to predictions of program accomplishments made before the start of the fiscal year.
- Summary information on the key components related to risk reduction and other measures outlined in the Scorecard.
- Estimates of likely future accomplishments in the next fiscal year.
- Information on work that remains to be done at final sites on the NPL and the estimated cost to EPA of these actions.
- Financial information on the program, including information on the past fiscal year's expenditures by major program functions, as well as the average cost of key site-related activities based on expenditures over the past five years, and the range and distribution of costs over this same time period for each of the major remedial pipeline activities and removal actions; data on actual expenditures should be compared to the beginning of the year budget allocations, and to the prior year's expenditures.
- Summary information on the types of remedies selected by major site type as well as the use of institutional controls at sites, and the types of institutional controls employed.
- Summary information on the findings and recommendations of the five-year reviews for NPL sites.
- Summary information on program accomplishments at NPL alternative sites.
- A summary of key challenges facing the program, including areas where program management improvements are needed, and a schedule of current and future major program studies and evaluations that will be conducted.
- An overview of major community involvement activities and initiatives and environmental justice activities and initiatives, as well as the results of community involvement surveys conducted by EPA.
- An overview of major state and tribal partnership initiatives.
- A description of the Superfund program evaluation agenda, with information on ongoing studies or evaluations of program performance and accomplishments, what office is funding them within the agency, and who is conducting them, as well as a key contact for further information.

It should be noted that this is already a somewhat lengthy list, and many of the people who provided input on a draft of this report had additional topics that

they suggested be included. It is important that this report be relatively concise and focused on the key areas where annual reporting is truly needed; it cannot and should not include every item of information that all would like to see. It is also important, in preparing the Superfund annual report, that it be an honest assessment of the program, presenting data and information on accomplishments, challenges, and important areas of the program. It should not become a tool for public relations. If this is not the case, then Congress may need to require an independent assessment of the program to ensure the release of credible information regarding the Superfund program's accomplishments and the future challenges the program faces.

The Superfund annual report should be posted on EPA's website no later than the end of the first quarter of the year following the fiscal year the report covers. All of the information should be updated annually. Most likely, much of this information is now being collected on an ad hoc basis in preparation for congressional hearings, and the total cost of implementing this report would not be substantial. Ideally, all of the information in the Superfund annual report would in fact be the kind of information of interest not only to the public, but also to EPA senior management as they face the difficult challenge of managing an ambitious program in a time of limited resources.

The Superfund program is now in its third decade, and, while it appears less frequently on the front pages of the national newspapers than in its early years, it continues to be an extremely controversial program, eliciting deeply felt and diverse beliefs among its various stakeholders. It is unlikely that there will ever be agreement about the key features of this program: What do we mean by risk? What kind of cleanup is right? How much money should be spent on contaminated sites, and how much of the program should be publicly funded? It seems possible, however, that if EPA provided more reliable, consistent, accessible, and transparent information about many aspects of the Superfund program, it might then be possible to accomplish two very important goals: first, create more realistic expectations about what the Superfund program can and cannot achieve and, second, help assure that the debate about the full range of controversial issues might at least take place in the context of facts, not a war of anecdotes. We hope that this report and our recommendations contribute to this end.

List of Acronyms

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

GPRA Government Performance and Results Act

LR/LTRA Long-term Response Action

NACEPT National Advisory Council for Environmental Policy and Technology

NPL National Priorities List

OSWER Office of Solid Waste and Emergency Response

OU Operable Unit

PAH Polycyclic Aromatic Hydrocarbons

RA Remedial Action

RCRA Resource Conservation and Recovery Act

RD Remedial Design

RI/FS Remedial Investigation/Feasibility Study

ROD Record of Decision

RP Responsible Party

TAG Technical Assistance Grant

VOCs Volatile Organic Compounds

Appendix A

This appendix shows a mockup of an NPL Scorecard. While this mockup is based on a stylized contaminated site, actual sites were used to determine what types of information should be included. In order to compile information for a real site, at least four different online locations had to be consulted and not all the needed information was readily available. The main sources we consulted for this mockup were the Site Fact Sheet and other documents available in the CERCLIS database including the record of decision. We also used various documents within EPA's Superfund website.

NPL Site Scorecard: Background Information

Information last updated: 7/1/2003

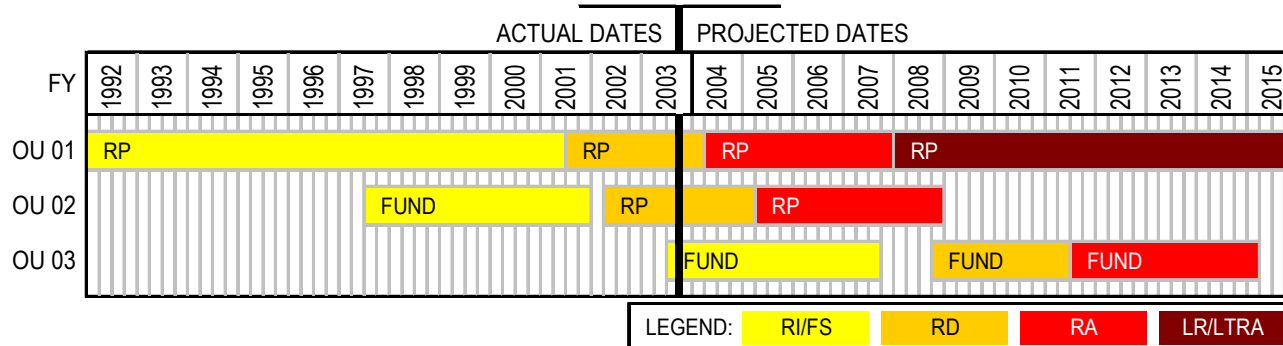
Site name, location, and description ABC Landfill First Avenue and Second Street City, ST 22222 Area above and inclusive of the XX aquifer bounded by First and Third Avenues to north and south and Second and Fifth Streets to east and west, covering 5 square miles total, and including the now-closed ABC Landfill, multiple local businesses, and residential areas within the City of XX	EPA Region: 3 ID: XYZ123456789 Mega site? No Federal facility? No NPL proposal date: 2/25/1990 NPL final listing date: 1/5/1991 Site in environmental justice community? Yes Site sacred to tribal community? No		
Cause of contamination Landfill leaked toxic and hazardous materials that bypassed faulty leachate collection system and were released directly into soil and have contaminated local aquifer			
Type of industrial operation (if applicable) Landfill			
Name of current owner and land use at site ABC Corporation - owns all local businesses (grocery store, liquor store, department store, video store, and drug store), City of XX - residential uses			
Parties being held responsible/ taking the lead on cleanup activities (RPs) and contacts <table style="width: 100%;"> <tr> <td style="width: 50%;"> ABC Corporation Landfill Group W. White 375 Second Street, City, ST 22222 777.777.7777, w.white@yyynet.com </td> <td style="width: 50%;"> City of XX R. Green 456 Third Avenue, City, ST 22222 101.010.1010, r.green@xx.gov </td> </tr> </table>		ABC Corporation Landfill Group W. White 375 Second Street, City, ST 22222 777.777.7777, w.white@yyynet.com	City of XX R. Green 456 Third Avenue, City, ST 22222 101.010.1010, r.green@xx.gov
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<table style="width: 100%;"> <tr> <td style="width: 50%;"> Technical Assistance Grant (TAG) None </td> <td style="width: 50%;"> TAG main applicant Not applicable </td> </tr> </table>		Technical Assistance Grant (TAG) None	TAG main applicant Not applicable
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<table style="width: 100%;"> <tr> <td style="width: 50%;"> EPA Remedial Project Manager J. Jones 25 First Avenue, City, ST 22222 999.999.9999, j.jones@epa.gov </td> <td style="width: 50%;"> EPA Community Involvement Coordinator D. Smith 25 First Avenue, City, ST 22222 888.888.8888, d.smith@epa.gov </td> </tr> </table>		EPA Remedial Project Manager J. Jones 25 First Avenue, City, ST 22222 999.999.9999, j.jones@epa.gov	EPA Community Involvement Coordinator D. Smith 25 First Avenue, City, ST 22222 888.888.8888, d.smith@epa.gov
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State agency contacts B. Johnson, Superfund Liaison 651 Fourth Street, City, ST 22222 444.444.4444, b.johnson@deq.st.gov			
Number of Operable Units (OUs): 3 Description of what area of site each OU addresses OU 01 - Groundwater OU 02 - Soils OU 03 - Above ground areas near XX aquifer			
Sources of information: ABC Landfill Site Fact Sheet, CERCLIS database, Record of Decisions, Superfund: Cleanup Process website			

NPL Site Scorecard: Site Progress to Date and Expected Future Actions

Information last updated: 7/1/2003

Completed, ongoing, and expected future actions, through FY 2003 3rd Quarter, by leading party type *

As of 7/1/2003



OU	RI/FS			RD			RA			LR/LTRA		
	Start **	End	Yrs	Start	End	Yrs	Start	End	Yrs	Start	End	Yrs
01	9/31/1991	1/5/2001	9.3	3/17/2001	10/12/2003	2.6	10/12/2003	8/12/2007	3.8	8/12/2007	8/12/2038	31
02	4/26/1997	8/2/2001	4.3	1/25/2002	11/11/2004	2.8	11/11/2004	8/11/2008	3.8			
03	5/19/2003	5/12/2007	4	5/11/2008	2/9/2011	2.7	2/9/2011	11/12/2014	3.8			

* FUND = EPA-lead action and RP = Responsible Party-lead action

** Future projected dates and estimated durations are in *italics*.

OUs with Remedial Investigation/ Feasibility Study (RI/FS) started: 3 (100%)

OUs with RI/FS completed and Record of Decision (ROD) signed: 2 (66%)

OUs with Remedial Design (RD) started: 2 (66%)

Current RDs being implemented by: Responsible parties - ABC Corporation Landfill Group, City of XX

OUs with RD completed: None

OUs with Remedial Action (RA) started: None

Current RAs being implemented by: Not applicable

OUs with RA completed: None

OUs with Long-term Response Action (LR/LTRA) underway: None

Summary of RA and LR/LTRA plans for each OU

OU 01 - Alternative municipal water supply will be provided to residents whose current drinking water supply is fed by the contaminated aquifer and contaminants will be monitored for migration; contaminated aquifer will be cleaned and eventually returned to original use as a source of drinking water

OU 02 - Landfill leachate will be drained and removed and soil vapor extraction will be used to remove contaminated soil and sludge in conjunction with bioremediation techniques

OU 03 - Not yet determined

Construction complete status: Not construction complete

Construction complete date or estimated date: *Estimated 2015*

NPL Site Scorecard: Baseline Contamination and Population Information

Information last update: 7/1/2003

Major contaminants

Metals (arsenic, lead, chromium); nitrate; Volatile Organic Compounds - VOCs (benzene, toluene, ethyl benzene, xylene), cyanide, Polycyclic Aromatic Hydrocarbons - PAHs, pesticides

	Groundwater	Soil	Sediments	Surface Water	Air
OU 01	Metals, nitrate, VOCs, cyanide, PAHs, pesticides				
OU 02		Metals, nitrate, VOCs, cyanide, PAHs, pesticides			
OU 03		Metals, benzene, PAHs			

Has off-site contamination occurred?

No

Is off-site migration a concern at any OU for any contaminant?

Yes - contaminants at OU 01 may migrate into groundwater outside of the XX aquifer

Sources of information on chemical toxicity

EPA's Integrated Risk Information System (IRIS); <http://www.epa.gov/iriswebp/iris/index.html>

Agency for Toxic Substances and Disease Registry (ATSDR) - Toxicological Profiles; <http://www.atsdr.cdc.gov/toxpro2.html>

Estimated size of population living on-site: 0

Estimated size of population working on-site: 25

Estimated size of population within 1 mile site buffer zone: 1,500

Current source of drinking water for population living on-site or within site buffer zone:

Temporarily bottled water

Estimated size of population served by this drinking water source: 1,500

Historical groundwater use: ☒ drinking water ☐ irrigation ☐ industrial operations ☐ other?

Specify other:

Current groundwater use: ☐ drinking water ☐ irrigation ☐ industrial operations ☐ other?

Specify other:

Subsistence fishing current and/or historical? Neither

Subsistence hunting/food gathering current and/or historical? Neither

Sensitive ecosystem? No

NPL Site Scorecard: Risk Reduction Accomplishments

Information last updated: 7/1/2003

	Groundwater	Soils	Sediments	Surface water	Air
Exposure reduced	No	No	Not applicable	Not applicable	Not applicable
Exposure controlled	Yes	Partial	Not applicable	Not applicable	Not applicable
Exposure eliminated	No	No	Not applicable	Not applicable	Not applicable
Contamination reduced	No	No	Not applicable	Not applicable	Not applicable
Contamination contained	No	No	Not applicable	Not applicable	Not applicable
Contamination eliminated	No	No	Not applicable	Not applicable	Not applicable

Summary of actions taken

Media: Groundwater

Exposure controlled Bottled water provided to residents while alternative municipal water supply sought

Media: Soils

Exposure controlled Area containing levels of contaminated soils which may be hazardous to humans fenced off and securely covered to prevent public access; animal deterrents put in place

Media: Sediments

Not applicable

Media: Surface Water

Not applicable

Media: Air

Not applicable

Current human exposure under control: Yes

Contaminated groundwater migration under control: Insufficient data

NPL Site Scorecard: Post-Construction Activities

Information last updated: 7/1/2003

Are institutional controls a component of remedy at site? Yes

Have institutional controls been implemented? Yes

Party responsible for implementing institutional controls

Insufficient data

Party responsible for monitoring compliance of institutional controls

Insufficient data

Date of last five-year review: Not yet completed

Date of site visit for five-year review: Not applicable

Party who conducted five-year review

Not applicable

Date of next five-year review: Not applicable

Five-year review findings

Is remedy complete - have all elements of the remedy been implemented? Not applicable

Is remedy functioning properly? Not applicable

Are cleanup levels as specified in the ROD still adequate to provide protection of human health and environment? Not applicable

Is remedy still protective of human health and environment? Not applicable

Five-year review recommendations

Measures that need to be taken to ensure that the remedy is protective

Not applicable

Party responsible for implementing five-year review recommendations

Not applicable

Implementation status of five-year review recommendations

Not applicable

NPL Site Scorecard: Cost Information

Information last updated: 7/1/2003

		Costs to date		Expected future costs		Expected total costs	
		EPA costs *	RP costs	EPA costs	RP costs	EPA costs	RP costs
OU 01	Removal	\$0	\$0	\$0	\$0	\$0	\$0
	RI/FS	\$0	\$1,950,000	\$0	\$0	\$0	\$1,950,000
	RD	\$0	\$190,000	\$0	\$780,000	\$0	\$970,000
	RA	\$0	\$0	\$0	\$6,940,000	\$0	\$6,940,000
	LR/LTRA	\$0	\$0	\$0	\$12,400,000	\$0	\$12,400,000
	Total	\$0	\$2,140,000	\$0	\$20,120,000	\$0	\$22,260,000
OU 02	Removal	\$0	\$0	\$0	\$0	\$0	\$0
	RI/FS	\$600,000	\$0	\$0	\$0	\$600,000	\$0
	RD	\$0	\$400,000	\$0	\$480,000	\$0	\$880,000
	RA	\$0	\$0	\$0	\$5,900,000	\$0	\$5,900,000
	LR/LTRA	\$0	\$0	\$0	\$0	\$0	\$0
	Total	\$600,000	\$400,000	\$0	\$6,380,000	\$600,000	\$6,780,000
OU 03	Removal	\$0	\$0	\$0	\$0	\$0	\$0
	RI/FS	\$11,000	\$0	\$409,000	\$0	\$420,000	\$0
	RD	\$0	\$0	\$790,000	\$0	\$790,000	\$0
	RA	\$0	\$0	\$4,560,000	\$0	\$4,560,000	\$0
	LR/LTRA	\$0	\$0	\$0	\$0	\$0	\$0
	Total	\$11,000	\$0	\$5,759,000	\$0	\$5,770,000	\$0
TOTALS		\$611,000	\$2,540,000	\$5,759,000	\$26,500,000	\$6,370,000	\$29,040,000
		Costs to date:		Expected future costs:		Expected total costs:	
		\$3,151,000		\$32,259,000		\$35,410,000	

* Note: EPA costs include only extramural costs. The costs of staff time, travel and other intramural expenses are not included.

Key to acronyms

RI/FS	Remedial Investigation/ Feasibility Study
RD	Remedial Design
RA	Remedial Action
LR/LTRA	Long-term Response Action

INDEPENDENT. BALANCED. OBJECTIVE.



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