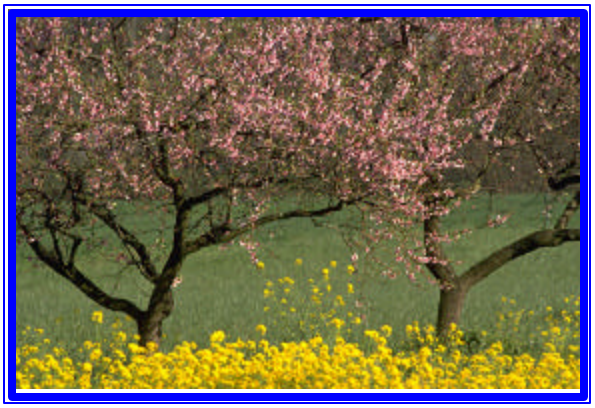
NATIONAL ENVIRONMENTAL POLICY INSTITUTE

Rolling Stewardship: *Beyond Institutional Controls*

Preparing Future Generations for Long-Term Environmental Cleanups



"HOW CLEAN IS CLEAN?" PROJECT

Phase V

December 1999

National Environmental Policy Institute

The National Environmental Policy Institute (NEPI) was founded in 1993 to promote greater environmental benefits through more effective and efficient environmental policies and management.

NEPI is a non-profit, bipartisan organization of environmental leaders from across the United States. It advances new ideas for developing environmental policies based on sound science and consideration of risks, costs and benefits.

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NEPI's projects are designed to provide a substantive basis for a realistic environmental agenda. NEPI is successful in providing a forum for discussion, evaluation and collaboration among those involved in the environmental policy process as well as facilitating public dialogue and education about the major environmental issues of our time.

The Tower Building
1401 K Street, NW
M-103
Washington, DC 20005

P/202.857.4784
F/202.833.5977
nepi@nepi.org
www.nepi.org

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EXECUTIVE SUMMARY

I. BACKGROUND AND PROJECT OVERVIEW

This Phase of the "How Clean is Clean?" (HCIC) project undertook a "big picture" approach to long-term stewardship that complements current efforts by diverse stakeholders to clean up sites, and strove to elevate stewardship activities and related research to the national policy level.

Long-term stewardship of contaminated waste sites has not received the policy discussion it deserves. There is general agreement that absolute cleanup at many contaminated sites is not possible in this generation or for generations to come due to technical, scientific, or economic reasons. Nonetheless, there has been little attention to the question of how to structure and manage continued public safety and environmental improvement for these sites. Recent attention has focused on the challenges posed by our nation's most intransigent environmental cleanup efforts. However, long-term stewardship is not limited to the "difficult" sites. Even routine site remedies commonly require either interim or long-term stewardship.

"Rolling Stewardship" focuses on planning for stewardship activities that are likely to be needed in the next generation for sites that cannot be completely cleaned up in the near-term. The Rolling Stewardship project seeks to complement significant activities in the field and research efforts on stewardship by:

- Drawing national, state and local attention to the critical nature of "stewardship" issues (e.g., public confidence in the reliability of cleanups for future generations); and
- Spurring action to address proper management and financing of long-term stewardship at contaminated waste sites.

There is general agreement that national policy attention to these issues is needed, but the scope of the problem, the types of sites involved, and nature of the solutions is controversial and the subject of debate. It is apparent that a single national stewardship solution for all sites is not likely to work. Rather, the key question for policy makers is "How to design, finance and implement an appropriately-tailored system of stewardship (if at all) for some classes of sites?"

This Issue Paper does not propose national policy solutions, but poses issues in a point-counterpoint format and suggests next steps for policy makers to consider as they formulate solutions at the national, state, and local level. Through the communications activities of the HCIC project, we hope to inform policy makers and stakeholders about the diversity of opinions on long-term stewardship issues.

The Issue Paper is organized in the following sections:

- Problem Statement and Definitions
- Key Issues

- Case Studies
- Recommendations
- Appendices and Resources

II. PROBLEM STATEMENT AND DEFINITIONS

Problem Statement: This project is premised on the assumption that our nation is creating a growing universe of contaminated sites that, post-cleanup or during cleanup, will have some remaining contamination over the long term. This residual contamination may exist for a wide variety of reasons, which are described in detail the paper.

The Issue Paper does not draw distinctions or value judgments on the reasons for residual contamination. Although there was disagreement over the types of sites that fall under the rubric of stewardship, this paper errs on the side of including all sites where residual contamination exists. This approach was chosen for the pragmatic reason that some sites will not be completely cleaned up in the near term, and the belief that it is important to implement "stewardship tools" at these sites in the near-term to ensure protection of human health and the environment.

The reasons why residual contamination may exist (and thus, the need for long-term stewardship) include:

- Technical Impracticability Of Cleaning Up All Contamination In The Near Term;
- Cleanup Decisions Predicated On A Certain Land Use; and
- Other Policy Considerations.

Stewardship is defined as "A systematic means of ensuring that future decision-makers concerned with the safety and protection, conditions of use, and potential further cleanup of sites with residual or long-term contamination have the proper knowledge, awareness, and tools passed on from previous generations of site decision-makers to make informed decisions about site management."

Rolling Stewardship builds on the concept of "stewardship" by focusing on the links needed between generations to carry long-term stewardship forward. The current generation cannot determine the actions future generations will take, but it can ensure that the next generation is aware of residual contamination and is handed the proper tools to make sound and protective decisions (including passing updated information to the next further generation).

Rolling stewardship requires a framework for stewardship decisions that can be tailored over time, and empowers each generation with greater information on stewardship tools and practices. The rational behind this approach is that there are too many imponderables, in terms of planning for conditions many decades in the future, to make decisions today that will be effective many generations from now. Rolling

stewardship allows greater flexibility, yet ensures there is an infrastructure in place to empower the next generation of decision-makers. This approach disarms the critic who harps on the infeasibility of perpetual guarantees. Instead, it focuses attention away from the imponderable future and onto practical issues that we can carry out today with some assurance of success. The test is, "Will the solution remain viable for a generation?" rather than, will it be viable for the next millennium and beyond.

Aspects of Stewardship: Stewardship has many aspects including engineering controls and land use or "institutional" controls. Within these categories, a number of issues must be considered including legal, technical, financial, organizational/administrative, research and development, and other.

Practice is Preceding Policy: Stewardship tools are widely used today at a variety of contaminated sites. However, current practices are basically a patchwork of diverse site-specific solutions. While specific programs or laws may dictate the use of stewardship, there is no national policy on the long-term stewardship of contaminated sites. In some cases there are requirements in place (on paper), but they are not being implemented as required by law or policy. However, several entities are forming initiatives for certain types of sites and some "best practices" are evolving out of first-hand experience.

National Attention Versus Local Nature of Controls: The current state of the policy debate and the diversity of site characteristics and stewardship needs suggest that a "one size fits all" policy solution is probably impractical. However, some believe that an overarching solution that provides for different "levels" of stewardship is needed. The current decentralization of stewardship efforts is evidence of insufficient national attention to stewardship issues, and the need to explore potential problems for classes of sites that require federal action and/or funding.

There is a dynamic tension between federal and state cleanup authority and capability, and local land use responsibilities. In many cases, new institutional mechanisms are needed to reconcile federal and state responsibility with local land use skills. Whatever the policy solutions, four primary activities that may fall within federal, state, and/or local jurisdictions are:

- **Information Collection & Dissemination**
- **Enforcement/Implementation/Oversight**
- **Funding**
- **Capacity to Adapt**

III. KEY ISSUES

National Infrastructure to Manage Post-Cleanup Care

Most observers would agree that there is currently no national "infrastructure" to manage and finance post-cleanup care at sites with residual or long-term contamination. What type of national infrastructure, if any, is needed; and, if appropriate, which sites should be addressed?

"Tailoring" the Federal Role

In a time of limited government resources and movement toward decentralization of authority, what type of federal "solution," if any, should be fashioned to foster stewardship of these sites? A range of tailored federal approaches might be considered where a blend of activities is implemented depending upon the class of sites. These include information-based, partnership, and oversight activities, as well as the potential for a new federal stewardship authority.

Balancing federal Mandates and Local/Private Land Use Controls

An important aspect of the stewardship debate is the unique historical role of local governments in making, keeping, and enforcing land use decisions. In situations where the federal government or a state has made a cleanup decision which has land use implications, who has (or should have) the authority, accountability, and responsibility for stewardship information?

Compiling Stewardship Sites and Tools.

A patchwork of stewardship activities is taking place all across the country. Some activities are coordinated and monitored at the national level (e.g., 5-year reviews of Superfund remedies); others do not fall into the public domain at all (e.g., some voluntary cleanups or private transactions involving self-implementing cleanups). Should information on stewardship sites and tools be compiled in a central database?

Funding

An obvious but controversial aspect of the stewardship debate is funding for each category of activities: information collection and dissemination; oversight; enforcement; and adaptability to changing conditions or technologies/knowledge in the future. Who will fund stewardship activities at a site or class of sites? What entity should hold and distribute the funds? How can the public be confident that the funds will not be squandered?

Identifying the Universe of Stewardship Sites & Matching Solutions

There is no solid national compilation or inventory of sites for which stewardship activities are ongoing or contemplated. In some instances (e.g. DOE facilities, some Superfund sites, some private sites owned by a single company) there is comprehensive information in existence or being collected on stewardship sites and needs. Many states have excellent programs to identify and mark stewardship sites. Private markets are also working to ensure the future safety of "developable" sites. But, the question remains. What is the universe of stewardship sites, and do we need different solutions for different categories of sites?

IV. POTENTIAL SOLUTIONS

Given the wide divergence of opinions on the key issues, the nature of the potential solutions range from "do nothing" to "develop an ambitious new national program." The wisest course of action probably lies somewhere in the middle; and in that vein, this section proposes recommendations that encompass the diversity of opinions. These are set forth to stimulate further debate in this important area with the understanding that not all can be realized in the near term.

- **Educate, and Engage in Dialogue at federal, State and Local levels:** Given the lack of cohesive national attention to stewardship issues, it is critical to continue (and broaden) the national dialogue.

- **Conduct Research to Characterize the "Universe" of Sites:** A lack of research characterizing the universe of sites that require stewardship is an obstacle to fashioning appropriate stewardship policy.

- **Determine Responsibility for Stewardship Activities:** Who is responsible for stewardship activities -- oversight/enforcement; information management; funding/liability; and future improvement of the site? How did these sites come to require stewardship tools?

- **Learn from Pilot Projects:** Use of pilot projects involving federal, state, local governments and private parties as partners will not only further our understanding of the problem and possible solutions, but also widen stakeholder involvement.

- **Inventory State Programs:** A survey of state programs to assess the effectiveness of certain policy solutions would help inform the national debate and raise the bar among other states.

- **Publicize "Best Practices":** State and local organizations are developing compilations of "best practices" for stewardship activities. Federal assistance could broaden their base of education and outreach, and make these best practices "tool kits" much more robust.

- **Join the Debate on federal Oversight, Funding, and "Ownership":** Begin the debate on the types of sites that merit unified federal attention and ownership, and decide who should be the federal "steward" now, before a potential catastrophe results in blame and hasty assignment of stewardship roles.

- **Promote Capacity to Adapt:** Invest in new technologies and tools to support "adaptability", the notion that cleanup decisions should be revisited and improved based upon new science or technologies coming on line, or the availability of new risk information.

- **Explore Private Solutions:** Private or partially private (i.e. partnership with governments) solutions to stewardship should be explored given the nation's reluctance for new federal agencies (e.g., the insurance and financial sectors engage in long-term risk management).

- **Distinguish Between Funding and Liability:** Funding issues should be reconciled with the concept of *rolling* stewardship. Closely related to funding is ownership of the contamination source. There is a distinction between the mechanisms needed to establish liability at a single site and the commitment to meet future obligations.

- **Develop National Principles to Guide Stewardship Activities:** If uniform solutions are required, the diversity of the set of contaminated sites will work against consensus. A few common principles applicable to the range of stewardship issues might be useful, without insisting that the principles be applied in an identical manner to all sites.

- **Design Future Facilities with Stewardship in Mind:** Perhaps the most proactive solution would be to promote policy to ensure that stewardship activities are considered as part of the planning process for new facilities. Then future generations would not be required to engage in the debate we are now undertaking.

I. BACKGROUND AND PROJECT OVERVIEW

A. "How Clean Is Clean?" Project Background

The National Environmental Policy Institute (NEPI) is a non-profit organization that seeks to achieve advances in environmental policy through nonpartisan, consensus-based dialogue. The "How Clean is Clean?" project has been at the forefront of developing key policy recommendations for expediting the cleanup of contaminated waste sites.

Phases I and II of the "How Clean is Clean?" (HCIC) project were led by NEPI Chairman Don Ritter, Sc.D., Project Director J. Winston Porter, former Assistant Administrator of EPA's Office of Solid Waste and Emergency Response and Project Chairwoman Lynn Scarlett of the Reason Public Policy Institute. Under their guidance, NEPI's working groups developed a series of recommendations on "what is working" and "what is not working" and an set of national cleanup principles to improve our nation's remediation programs. (See Appendix D for background information on, and recommendations of, Phases I and II).

These working groups focused on the following sectors:

- Brownfields
- Federal Facilities
- Cleanup and corrective action
- Chemical emissions

Directed by Don R. Clay, former EPA Assistant Administrator for Solid Waste and Emergency Response, Phase III of HCIC focused on implementation of the principles elucidated in Phases I and II by examining devolution of cleanup decision-making in the field. The Phase III report examined three diverse sectors--brownfields, federal facilities, and cleanup/corrective action--and provided recommendations based on common themes that would aid stakeholders in achieving safe, timely, and well-accepted cleanups of contaminated sites. (See Appendix D.)

In Phase IV of HCIC, Chairman Don Ritter and Project Director Don Clay undertook a further effort in a practical and implementation-oriented direction. The "Guidebook for Transfer of Contaminated Properties" is a "gateway" document for the transactional party interested in cleanup/reuse of an environmentally affected property. The Guidebook suggests the basic parameters of the transaction, provides education and encouragement, and points the reader in the appropriate direction for more specifics on how to make their deal "work." Copies have been

widely distributed and are available from NEPI.

B. "Rolling Stewardship" Project Background and Scope

In this Phase of the HCIC project, NEPI and Project Director Marianne Lamont Horinko of Clay Associates, Inc. undertook a "big picture" approach to long-term stewardship that complements current efforts to clean up sites, and strove to elevate stewardship activities and related research to the national policy level.

Context: Long-term stewardship of contaminated waste sites has generally not received the policy discussion that it deserves. There is general agreement that absolute cleanup of many contaminated sites is not possible in this generation, or for generations to come, due to technical, scientific, or economic reasons. Nonetheless, there has been little attention to the question of how to structure and manage a process for continued public safety and environmental improvement for these sites.

Recent attention has focused on the challenges posed by our nation's most intransigent cleanup efforts. Resources for the Future (RFF) spotlighted the lack of attention to long-term responsibilities at mixed-waste radioactive and chemical sites. The RFF report also highlighted the importance of institutional controls to assure long-term protection. In a similar vein, the Environmental Protection Agency (EPA) has held a series of stakeholder discussions on institutional controls, with a goal of providing guidance to the regional offices. Significant efforts have been launched in the Department of Energy's (DOE) Environmental Management (EM) office to provide in-depth attention and research on the meaning of multi-generational responsibility for DOE cleanups (for further information on these efforts, see Appendix A). Long-term stewardship is not limited to the "difficult" sites, however. Even the most routine site remedies commonly require interim or long-term stewardship. Exposure to contamination must be prevented at all sites where waste is left in place above levels allowing unrestricted use.

In the 1995 National Research Council study, "Improving the Environment," the Regulatory Measures Subcommittee called direct attention to the concept of "rolling stewardship" as an important option for addressing contaminated sites that pose significant cleanup problems (e.g., technology might not yet be available; size and scope of cleanup; and high institutional barriers). "Rolling stewardship" means planning for stewardship one generation ahead (its definition and implications are discussed further below). This option takes a longer-term approach to final cleanup, while managing the site along the way, and presents certain opportunities to society. The NRC committee took a proactive position and advocated rolling stewardship where feasible.

More recently, DOE's EM Office has focused on the goals and challenges of an environmental

stewardship effort. Most of these studies, while in-depth and thoughtful, have not been reviewed by the larger environmental cleanup community. Congressional and public support will be needed not only to complete cleanup activities, but also to promote the post-cleanup activities necessary to protect human health and the environment in the future.

Purpose of the Rolling Stewardship Project: In light of the significant activities taking place in the field and the research efforts on stewardship, the purpose of the project is to complement these efforts by:

- Drawing the attention of key national, state and local policy makers to the critical nature of "stewardship" issues (e.g., public confidence in the reliability of cleanups for future generations); and
- Spurring action to address these issues to assure proper management and financing of long-term stewardship at contaminated sites.

While there is general agreement that national policy attention to these issues is needed, discussions among the diverse stakeholders in the project revealed that the nature of the solutions is controversial and the subject of debate. The divergence of opinions appears to stem from many sources:

- The diverse legal authorities that govern cleanup and stewardship issues;
- A lack of characterization of the universe of sites for which long-term stewardship tools are appropriate and/or in place. The wide variety of such sites (from lightly-contaminated "brownfields" slated for further industrial uses to mixed chemical/radioactive waste sites). The varying reasons for residual contamination (from risk decisions, to land use, to technical complexity);
- A paucity of general understanding as to what stewardship tools are available under different conditions; and
- A lack of information on the costs associated with long-term stewardship

Because there is little agreement on the scope of the problem, and there are so many different types of sites and policy regimes, it is apparent that a single national stewardship solution for all sites is not likely to work. Rather, the key question for policy makers is "How to design, finance and implement an appropriately-tailored system of stewardship (if at all) for some classes of sites?" The project deliberations captured in this paper are intended to foster debate and action on the answers to this question.

This paper does not propose national policy solutions, but poses issues in a point-counterpoint format and suggests next steps for policy makers to consider as they formulate solutions at the national, state, and local level. Through the communications activities of the HCIC project, we

hope to educate stakeholders and further an understanding of the diversity of opinions on long-term stewardship issues.

C. Role of the Policy Advisory Group, Outreach Process, and Nature of Product

This Issue Paper was developed in conjunction with NEPI's HCIC Policy Advisory Group and the participants in the outreach events, which provided regular input to the project throughout Phase V.

Given the panoply of interests in sites that require long-term stewardship, NEPI believed that a multi-stakeholder project would accomplish three primary goals:

- Integrate current considerations of long-term stewardship and serve as a conduit for information exchange;
- Stimulate creative engagement and cooperative support among many of the institutions involved in defining the needs and strategies for short-and-long-term activities; and
- Create awareness of proactive developments while advancing the debate on stewardship.

Building upon the existing NEPI HCIC Working Group, with input from knowledgeable individuals and organizations engaged in stewardship efforts, NEPI convened a Policy Advisory Group (PAG) composed of a cross-section of major stakeholders. Participants included agency and corporate entities; regulatory and governing bodies (state, local and federal); real estate and financial professionals; the regulated industry; community/environment/public interest representatives; academia and independent researchers, and members of the science, risk and technology community.

These groups represent a wide array of stakeholders, including the federal Environmental Protection Agency (EPA), Department of Energy (DOE), Department of Defense (DOD), General Services Administration (GSA), and Department of Agriculture (USDA). They also include state and local government representatives (including the Environmental Council of the States, (ECOS); the Association of State and Territorial Solid Waste Management Officials, (ASTSWMO); National Governors Association (NGA); and the International City/County Managers Association (ICMA). Also included were representatives of public interest groups, environmental justice; environmental advocacy and policy organizations; and private industry (venture capital; insurance; mortgage lending; potentially responsible parties; cleanup contractors; real estate experts; and developers).

The role of the PAG was to outline a strategy for raising current stewardship activities and related research efforts to the national policy level. The PAG identified and addressed the issues, which have future implications for a viable long-term stewardship program. Participants met on a periodic basis to develop recommendations and communications and outreach activities aimed at engaging its

ideas in the national policy debate. The group reviewed and provided essential input to the paper, which we hope will serve as a basis for discussion and collaboration on rolling stewardship among policy makers, institutions and stakeholders involved.

This Issue Paper was not designed as a consensus document; however, the insights contained herein benefit from the considerable experience and expertise of the individuals and organizations in the PAG across all aspects of our nation's cleanup programs at the federal, state and local level. A list of the PAG members is attached as Appendix B.

The Issue Paper is organized in the following sections:

- Problem Statement and Definitions
- Key Issues
- Case Studies
- Recommendations
- Appendices and Resources

II PROBLEM STATEMENT AND DEFINITIONS

Before we discuss the key issues or potential policy solutions, it is important to describe the nature of the problem. This section describes the problem and defines some critical terms that are used throughout the paper.

A. Problem Statement

This project is premised on the assumption that our nation is creating a growing universe of contaminated sites that, post-cleanup or during cleanup, will have some remaining contamination over the long term. This residual contamination may exist for a wide variety of reasons, which are described in more detail below.

Broad Definition of the Problem: It is important to note that this Issue Paper does not draw distinctions or value judgments on the reasons for residual contamination. There was disagreement among the project stakeholders on the types of "residual contamination" sites that should be included in the scope of this paper. While most agreed that sites which could not be cleaned up completely in the near-term because of technical impracticability, such as radionuclear disposal sites or extensive groundwater contamination, should be included; there was less consensus over including sites where residual contamination would remain due to lack of funding (or a policy

decision that cleanup resources would be better spent elsewhere).
This paper errs on the side of including all sites where residual contamination remains, whether for perceived or valid technical or policy reasons or not. We adopted this approach for the pragmatic, if imperfect, reason that we must acknowledge that some sites will not be completely cleaned up in the near-term. As a result, without gainsaying the public's ability to press for further cleanup, we believe it is important to implement near-term safeguards or "stewardship tools" to ensure protection of human health and the environment while the debate continues.

Given this inclusive definition, the reasons for residual contamination (and thus, the need for long-term stewardship) are many. These include:

- Technical Impracticability of Cleaning up all Contamination in the Near-Term Examples of these sites include radioactive/nuclear-contaminated sites; complex chemical contamination such as non-aqueous phase liquids (NAPLs) in groundwater; and natural resource damages (i.e., sites where more damage may be done to sensitive ecosystems by remediation than by waiting for improved, less-invasive technology to develop). In these cases, stewardship tools are needed to (a) ensure the integrity of the existing measures to stabilize the site; (b) inform current and future visitors of the site conditions; and (c) empower future decision makers to improve site conditions as risk assessment, science and technology improve.

- Cleanup Decisions Predicated on a Certain Land Use. At certain sites, the chosen cleanup technology or standards are premised upon a specified set of exposure assumptions related to expected land use. For example, property that has long been used for heavy industry and is not planned to revert to residential use may not be cleaned up to the same conditions as property used for residences, schools, or day-care centers. In these cases, stewardship tools are needed to preserve the existing land use or, should it change, modify the cleanup decision accordingly.

- Other Policy Considerations. In addition to the reasons above, a number of policy considerations may cause sites to have residual contamination post-cleanup. These include lack of funding to address further remediation, or a policy decision that funding would be more wisely applied at other sites in a given group, particularly in a case where interim measures have stabilized the spread of contamination and reduced exposures to an acceptable level. Other policy issues include unacceptable worker exposures posed by disturbing contamination, such that it is better left in place; or the impossibility of complete remediation in the near-term due to the widespread nature of the contamination (e.g., mining sites where low levels of lead may be spread over hundreds of square miles). In all of these cases, stewardship tools are needed to prevent exposure while progress on the policy front

is made.

B. Definitions

Before we turn to a discussion of the key issues affecting sites with residual contamination, it is important to define some of the terms we use in discussing "stewardship." There are a range of activities and tools that potentially fall within the rubric of stewardship; as with the universe of sites, this paper takes a broad and fairly inclusive approach.

Briefly stated, the term "stewardship" is defined as follows:

"A systematic means of ensuring that future decision-makers concerned with the safety and protection, conditions of use, and potential further cleanup of sites with residual or long-term contamination have the proper knowledge, awareness, and tools from previous generations of site decision-makers to make informed decisions about site management."

"Rolling stewardship" builds on the concept of "stewardship." Basically, it implies that any stewardship tool is like a "baton" that one relay racer passes to the next leg of the relay. The runner carrying the baton cannot ensure that future baton passes will be executed smoothly, or that the race will ultimately be won. However, the current runner does have the power to run well during the current leg and ensure that the baton passes smoothly to the next leg. Similarly, the current generation cannot alter the course of action future generations will take with respect to residual contamination; however, we can ensure that the next generation is handed the proper tools and information needed to be aware of that contamination and make sound and protective decisions (including passing these tools to the next further generation).

Why "rolling stewardship?" The term was coined by the National Research Council in a 1995 report studying the DOE weapons cleanup challenge. The Committee to Evaluate the Science, Health, and Technology Basis of DOE's Environmental Management Program recommended that DOE adopt approximately a twenty-year framework for stewardship decisions, rather than trying to make decisions today, that will be effective many generations from now. The rationale put forward by this committee is that there are too many imponderables in terms of planning for conditions many decades in the future. This approach also allows for greater flexibility and adaptability, yet ensures that there is a process in place to empower the next generation of decision-makers.

The utility of the rolling stewardship concept is that it disarms the critic who harps on the infeasibility of perpetual guarantees. Instead of concentrating on the uncertainties of the future, it focuses on practical issues that we can carry out today with some assurance of success. The test is, "Will the solution remain viable for a generation?", rather than, will it be viable for the next millennium and

beyond.

Most stakeholders would agree that, when technologies and resources permit, achieving "complete" site cleanup in the near term is desirable and when no solution is at hand, stewardship is clearly required. But, when existing remedies are less than desirable (e.g., "pump and treat" will not completely extract contamination from groundwater), it may be deemed presumptuous for the present generation either to saddle future generations with an incomplete outcome, or (when remedies are excessively costly), to deprive them of the other benefits that the excess dollars spent on cleanup could have purchased. Thus, one aspect of stewardship is to resist spending dollars unwisely and, at the same time, to make investments that will permit future generations to make their own choices among a greater number of choices.

Aspects of Stewardship: The concept of "stewardship" has many aspects. These include both engineering controls, such as physical barriers (caps, slurry walls) and extractive devices (groundwater wells, pump and treat), as well as land use or "institutional" controls (such as groundwater use restrictions, zoning, and local ordinances). Within these two categories, there are a number of issues that must be considered: Legal, technical, financial, organizational/administrative, research and development, and other. These are discussed in more detail in the following section, "Key Issues".

Practice is Preceding Policy: Stewardship tools are widely used today at a variety of contaminated sites. However, with a few exceptions, current practices are basically a patchwork of diverse solutions tailored to fit specific site circumstances. While specific programs or laws may dictate the use of stewardship tools in accordance with policies for a subset of sites, there is no national policy concerning the long-term stewardship of contaminated sites. Several entities are forming policy initiatives for certain types of sites (e.g., Superfund, DOE and mining sites) and "best practices" are evolving out of ground-level experience (both ICMA and the NGA are developing resource guidance for local governments). At the macro level, however, no "spanning" policy precepts are in place.

Furthermore, in some cases, there are requirements on paper, but they are not being implemented as required by law or policy. For example, the Superfund statute mandates that any cleanup with contamination remaining be revisited at least every five years to ensure the integrity of the cleanup decision. However, these "5 year reviews" are behind schedule for a variety of reasons which may include lack of funding, attention, oversight, jurisdiction, or simply higher priorities from the perspective of protecting human health and the environment.

National Attention Versus Local Nature of Controls: As the project deliberations progressed, it became apparent that the state of the policy debate, the diversity of site characteristics, and

stewardship needs were such that a single, "one size fits all" policy solution is likely impractical (although some believe that an overarching solution which provides for different "levels" of stewardship is needed).

At the same time, the fact that stewardship of contaminated sites is currently so decentralized means that there is insufficient attention to stewardship issues in the national debate, and a need to explore potential problems for certain types of sites that require federal action and/or funding.

Federal authority (e.g. CERCLA, RCRA, DOD/DOE)	Range of contamination, but many high	Highest need for federal funding and policy
State authority (State NPL, VCP)	Generally medium to low contamination; though some may be high	May need some federal funding or policy
Local control (brownfields)	Lightly contaminated	Local/private controls likely adequate, but may need data/disclosure

There is a dynamic tension between federal and state cleanup authority and capability, and local land use responsibilities. In many cases, new institutional mechanisms are needed to reconcile federal and state responsibility with local land use skills. These mechanisms may span a range of options including:

- New federal trust funds for state and local stewardship activities;
- A consolidated federal "home" for stewardship activities with a dedicated mission;
- Building enhanced capacity for stewardship in state and local governments;
- Best practices sharing among local governments in regard to record-keeping, land use planning and zoning; and
- Using existing institutions to share/integrate data and functions (perhaps using the Internet as a tool).

Whatever the policy solutions, the four primary activities associated with stewardship that may fall within federal, state, and/or local jurisdiction are as follows:

- **Information**: Who will be the custodian of information on stewardship at a particular site? Who will disseminate that information? Who will ensure the integrity of the information and its safe passage to future generations? Who will monitor the sites and provide reports on their conditions, and to whom?

- **Enforcement/Implementation/Oversight:** Who will monitor, oversee and enforce the groundwater use restrictions, zoning, or other stewardship restrictions? Do they have the requisite authority and funding? Will that exist in the future?

- **Funding:** Who will maintain the integrity of the cleanup, now and in the future?

- **Capacity to Adapt:** Who will act to improve the site conditions or process new information on science, technology or risk?

In the following section, we identify and discuss some of the key issues associated with these principal stewardship activities.

III KEY ISSUES

In this section, we set forth some of the key issues identified by our stakeholder group and discuss considerations associated with each issue. It is important to note that considerable debate was associated with these issues; thus, the discussions should not be construed as consensus decisions of the group.

A. National Infrastructure to Manage Post-Cleanup Care.

Most observers would agree that there is currently no national "infrastructure" to manage and finance post-cleanup care at sites with residual or long-term contamination.1 The key issue here is: What type of national infrastructure, if any, is needed; and, if appropriate, which sites should be addressed – that is, all types of sites, or just a subset?

By way of example, sites with significant remaining contamination (e.g., those not returned to unlimited use or unrestricted exposure), that have some degree of federal oversight or responsibility, may merit considerable post-cleanup management, oversight, and funding at the federal level (or by liable private parties). These sites may include former nuclear weapons facilities, some or all

1 *See* Katherine N. Probst and Michael H. McGovern, Long-Term Stewardship and the Nuclear Weapons Complex: The Challenge Ahead (Washington, D.C.: Resources for the Future, June 1998); Robert Hersh *et al*., Linking Land Use and Superfund Cleanups: Uncharted Territory (Washington, D.C.: Resources for the Future, June 1997); Robert Hersh and Kris Wernstedt, *Urban Land Use and Superfund Cleanups* Journal of Urban Affairs, v.20 n. 4 (JAI Press Inc., 1998): 459-474; Robert Hersh and Kris Wernstedt, *Land Use, Risk, and Superfund Cleanups: At the Nexus of Policy and Practice*, Public Works Management & Policy, v. 4 n.1 (Sage Publications Inc., July 1999): 31-40.

Superfund NPL sites, and some RCRA corrective action facilities. Implementing and monitoring institutional controls is also needed for some lesser-contaminated sites (such as brownfields sites cleaned up on the premise of a further industrial land use); though arguably state governments could handle this function. However, federal oversight may not be needed for stewardship activities at other sites, such as voluntary cleanups; some state-lead sites, and brownfields. State and local governments may adequately handle these.

It is important to note that there may be multiple stewards at a specific site: the property owner, the local government, and regulators or overseers at the state and federal level. They may be responsible for various aspects of institutional controls, physical controls, information management, enforcement, and adapting remedies. While consistency may appear to be a salutary goal, it may not be feasible for the wide variety of state, local and private situations and stakeholders at contaminated sites.

A further concern with significant federal or state presence is the "takings" issue. The use of information to characterize properties nationwide may inadvertently stigmatize these sites and harm their future use. The government generally cannot restrict property use without compensating the property owner (this distinction will differ between liable and non-liable parties). In the case of properties with significant residual contamination, the potential harm of future unrestricted use must be balanced against these private property rights.

B. "Tailoring" the Federal Role

In a time of limited government resources and a general bias against creating new federal bureaucracies, what type of federal "solution," if any, should be fashioned to foster stewardship of these sites? There is a range of tailored federal approaches that might be considered, wherein a blend of activities are implemented depending upon the class of site. These might be:

- **Information-based:** The federal government might provide a national "archive" of federal, state, and local stewardship activities; together with a resource database for development of new stewardship tools.

- **Partnership models:** The federal government might assist in the formation of regional partnerships with state and local governments, much like the Chesapeake Bay Commission or Delaware River Basin Commission, to coordinate stewardship activities.

- **Existing oversight:** An existing federal agency (EPA, DOE, DOD, or other) could be charged with new authorities to oversee stewardship.

- **New federal agency:** A new legislated federal stewardship authority could be and funded, with authority to (for example) collect and archive stewardship activities at the site specific level; share "best practices' and new technology and risk information; and inform the public.

Most likely, a blend of these activities should be piloted at specific sites, so that the appropriate solution can be fashioned for different types of sites.

C. Balancing Federal Mandates and Local /Private Land Use Controls

An important aspect of the stewardship debate is the unique historical role of local governments in making, keeping, and enforcing land use decisions. In situations where the federal Government or a state has made a cleanup decision which has land use implications, who has (or should have) the authority, accountability, and a repository of stewardship information? (See the matrix in section II above for examples of the range of sites and authorities.)

Cleanup decisions required under many federal statutes (Atomic Energy Act, Superfund, RCRA, Defense authorizations) may conflict with land use restrictions established by public or private sector interests at the state and local level. Proper analysis or communications do not always reveal these conflicts. In one case, a Superfund Record of Decision was signed based upon specific zoning restrictions; subsequently, it was discovered that the local authorities did not allow such restrictions.

In some remedy decisions, the state or local government is assigned a role or responsibility for which it is unaware, much less empowered or funded to undertake. There is a strong need to clarify relative roles and responsibilities for the three levels of government and private parties for closure and post-cleanup responsibilities, although these may not necessarily be the same for all classes of sites.

However, in some purely private cleanups (or cleanups of low-risk sites such as brownfields owned and redeveloped by local governments), deed restrictions and other transactional documents may be all that is needed to ensure proper stewardship in the future. For example, the brownfields redevelopment community strongly believes that private markets provide sufficient incentives to ensure responsible stewardship. At private cleanups, deed restrictions in a private contract are not part of any government requirement and in fact, local or state governments do not want to enforce them.

In addition, third party lenders insist on reliable plans for managing the site well into the future; thus, private sector interests assert there are adequate safeguards in property sales. However, there is some question as to whether these same safeguards exist in lease transactions. There is also the question of who protects lenders from incomplete information.

The public needs assurances that they will be informed and that a trustworthy party will be accountable for future management of the site. Consistent and reliable implementation is the key to public confidence in stewardship tools. While remedy decisions are designed to ensure a protective future for a contaminated site, the public is often influenced by the legacy of horror stories from the past (e.g., Love Canal). Some of the negative reactions citizens have to remedial decisions that leave some contamination in place arise from fears that the regulators are "walking away" and relying on stewardship tools to resolve site problems. Reliable incentives for site improvement/technology development to address the residual contamination, if properly incorporated into the stewardship measures, will help allay these fears.

Thus, one of the key questions to answer in fashioning policy solutions is how to ensure that stewardship decisions are reliable and create public confidence? For example, we have no reliable means of assuring the public that land use restrictions are working in all cases. Local governments often do not want to impose or maintain them, states do not have adequate funding or authority to enforce them, and the federal government does not always have authority to get involved. Monitoring, over-sight and enforceability are perhaps the most important of these activities in the context of assuring the public.

D. Compiling of Stewardship Sites and Tools.

A patchwork of stewardship activities is taking place all across the country. Some activities are coordinated and monitored at the national level (e.g., 5-year reviews of Superfund remedies); others do not fall into the public domain at all (some voluntary cleanups or private transactions involving self-implementing cleanups).

Some stakeholders believe that sharing information on developments in the field is needed, not only to survey the "universe" of stewardship sites, their number and types, and nature of the stewardship tools/institutional controls relied upon, but also to serve as a dissemination tool so that decision-makers can adopt innovations, share best practices, and improve cleanup decisions. If there is a consistent, reliable means of sharing information on stewardship activities, especially at the local level, there is a much higher degree of public confidence in the cleanup decision and the integrity of the stewardship tools for the future. In addition, a comprehensive survey would help inform the debate on funding and oversight mechanisms.

E. Funding

An obvious but controversial aspect of the stewardship debate is funding for each category of activities: information collection and dissemination; oversight; enforcement; and adaptability to

changing conditions or technologies/knowledge in the future. They key issues surrounding the funding debate are essentially, who will fund stewardship activities at a site or class of sites; what entities should hold and distribute the funds, and how can the public be confident that it will not be squandered? Complicating the debate over funding is the interrelationship between this issue and some of the others discussed herein: the lack of clarity regarding the roles between various levels of government and private parties; uncertainty about the universe of sites requiring stewardship; and inattention at the national level as to policy solutions.

At the federal level, stewardship funding (either for oversight and regulation, or for implementation of stewardship activities by federal site owners) is a particularly hard "sell" given the near-term focus of the congressional and administration budgeting and funding cycle. If an activity is not contemplated to occur in the next fiscal year, it is difficult to ensure funding of a future event. "Success," in terms of winning congressional attention and funding for stewardship activities that will take place over many decades in the future, must be premised on characterizing stewardship as a type of "Social Security" for contaminated sites -- that is, protecting future generations based on decisions we make today.

At the local level, stewardship needs are also immediate and ongoing. Because of the great involvement of private parties at sites with state and local oversight, there may be a role for a wide range of instruments—escrow or trust accounts, third party guarantors, insurance, or public-private partnerships—to fund stewardship activities at a site or class of sites. Again, public education is an important part of ensuring congressional attention to the need for adequate funding.

Additional research is needed on future national, state, and local needs with respect to stewardship of sites with residual contamination. That research can be used to inform the debate over funding and its adequacy, and whether additional funding should be applied to specific sectors of our nation's cleanup programs to prevent future problems.

F. Identifying the Universe of Stewardship Sites & Matching Solutions

As project deliberations proceeded, it became obvious that there is no solid national compilation or inventory of sites for ongoing or contemplated stewardship activities. In some instances (e.g. DOE facilities, some Superfund sites, some privately-owned sites by a single company), there is comprehensive information in existence or being collected with respect to stewardship sites and needs. Many states (such as Maryland) have excellent programs to identify and mark stewardship sites. Maryland is the first to make this inventory available to the public via the Internet. Some stakeholders have suggested that private markets are also working to ensure the future safety of "developable" sites.

However, there is much less information about sites that may fall through the cracks. For example, what about privately owned sites that cannot be developed? Some have suggested a national database similar to that used by insurance companies for drivers licenses and stolen cars; others have proposed a national Internet-based solution. Because of the EPA's mixed experience with publicizing the National Priorities List and CERCLIS (which were only intended to be informational tool, but became a stigma from the standpoint of some), some have suggested that we launch a number of pilot projects and capitalize on "what works."

In any event, prior to formulating large scale national policy, it would be extremely helpful to forge a national consensus on the composition of the universe of stewardship sites, the nature of these sites, and have a better idea of the number of sites involved and their relative risk in terms of residual contamination. From that standpoint, rational solutions can be piloted and tailored.

IV. POTENTIAL SOLUTIONS

Given the wide divergence of opinions on the key issues, the nature of the potential solutions ranges from "do nothing" to "develop an ambitious new national program." The wisest course of action probably lies somewhere in the middle; and in that vein, we propose a number of recommendations that encompass the diversity of the stakeholders' opinions.

It is important to note that the following are suggestions only, and do not represent consensus decisions. In addition, these recommendations are not mutually exclusive. Finally, they range from the pragmatic to the potentially unrealistic; we set these forth to stimulate further debate in this important area with the understanding that not all of them could be realized in the near-term.

- **Educate, And Engage In Dialogue At Federal, State And Local Levels.** Given the lack of cohesive national attention to stewardship issues, it is critical to continue (and broaden) the national dialogue. In particular, DOE, EPA, and the International City/Country Managers Association (ICMA, funded by DOE/EPA) have taken the lead in terms of funding research and outreach on the issue of stewardship and institutional controls. The dialogue has further been joined with Restoration Advisory Boards, community advisory panels and environmental justice groups. These efforts may be broadened and extended to involve many more stakeholders. This outreach is important not only to craft intelligent policy solutions, but also to encourage stakeholders to simply be more aware of stewardship issues at the site specific level and more inclined to preserve, and perhaps improve, cleanup decisions in the future.
- **Conduct Research to Characterize the Universe of Sites.** An obstacle to fashioning appropriate stewardship policy is the lack of research to characterize the universe of stewardship sites. It is important to determine the extent of the problem from an environmental standpoint, and

estimate funding and policy needs based on that information. Some of the questions to be posed could be: What is the universe of sites in total? What are the categories or classes?

- **Determine Responsibility for Stewardship Activities.** Who is responsible for stewardship activities -- oversight/enforcement; information management; funding/liability; and future improvement of the site? How did these sites come to require stewardship tools? Most importantly, what are the consequences if a steward does not carry out its role and responsibilities (e.g. failed remedies; increased risk misuse of land; lack of information dissemination; designated responsibility not communicated)?

- **Learn from Pilot Projects.** Given the decentralized nature of this problem, it may lend itself to the "let a thousand flowers bloom" approach to finding solutions. Use of pilot projects involving federal, state, local governments and private parties as partners will not only further our understanding of the problem and possible solutions, but also widen stakeholder involvement. One approach that has worked well in a similar decentralized arena is EPA's Brownfields Pilot Projects, where it held a competitive grant process to provide seed money to states and local governments for site assessment and redevelopment projects. These have helped characterize the universe of brownfield sites and EPA has capitalized on them by successfully translating the "lessons learned" to thousands of other stakeholders across the country. A similar grassroots endeavor may be appropriate in this case. It is important, of course, for some entity to fund and assure cross-fertilization of ideas and lessons learned from these pilots.

- **Inventory State Programs.** As mentioned previously, Maryland has the first Internet-based information dissemination program. The state of Massachusetts has a dedicated program with specified funding and systems to enforce institutional controls. A survey of state programs to assess the effectiveness of certain policy solutions would help inform the national debate and raise the bar among other states.

- **Publicize "Best Practices."** State and local government organizations such as ICMA and the National Governors Association are developing compilations of "best practices" in terms of stewardship activities. Federal assistance could help these groups broaden their base of education and outreach, and make these best practices "tool kits" much more robust.

- **Join The Debate On Federal Oversight, Funding, And "Ownership."** Although some stakeholders believe that federal "ownership" or authority, via a new federal agency or a new role for an existing agency, is not the best way to move the stewardship issue forward, the fact remains that the issue is essentially an orphan. A potentially less threatening solution could be a "coordinative" role, where the federal government would convene, mentor, and facilitate but not "dictate" state and local activities. Simply put, the consequences of failure to maintain the integrity of stewardship decisions at some classes of sites with residual contamination are too catastrophic too ignore. We should begin the debate on the types of sites which merit unified federal attention and ownership, and decide who should be the federal "steward," today, before a potential

catastrophe forces post hoc assignation of blame and hasty assignment of stewardship roles.

- **Promote Capacity to Adapt.** The notion of "adaptability" -- that cleanup decisions should be revisited and improved based upon new science or technologies coming on line or risk information becoming available -- is threatening to the notion of "finality" at a cleanup site. However, where residual contamination may exist, the tradeoff for convincing the public of the safety of that residual contamination may have been a commitment to revisit and ensure the integrity of that decision. If so, we will need more development of adaptability tools, or institutional mechanisms to prod site improvement. This is particularly important for programs such as the DOE EM program or RCRA corrective action, which have essentially been cast as interim stabilization efforts, with acknowledgments in funding that the responsible agency has put or will put in place a program for maintaining and improving the sites. Investment in new technologies and better science and risk information is critical for these agencies. They should also build in the capacity to accommodate changing community input and uses for these sites in the future.

- **Explore Private Solutions.** The notion of a private solution or at least a partially private solution to stewardship should be surfaced, given the nation's reluctance to embrace new federal agencies. Looking to the private sector, perhaps teamed with leadership from local, state, and/or federal agencies of government, as appropriate, seems to be worthy of consideration. Examples of industries that engage in long-term risk management include the insurance and financial sectors. Adopting this approach would minimize the role of bureaucracies, while insuring oversight keyed to the scope of the problem. There may be some aspects of the issue that offer sufficient economies of scale as to favor federal assignment, but jumping prematurely to federal solutions will militate against consensus.

- **Distinguish Between Funding and Liability.** Funding issues should be reconciled with the concept of *rolling* stewardship. Funding could be accomplished through current spending, through commitments to future spending, or through trust funds. Closely related to funding is ownership of the contamination source. While analysis of the various liability schemes under the environmental laws is beyond the scope of this Issue Paper, there is a distinction between the mechanisms needed to establish liability at a single local site where no single responsible agent is evident, and the commitment by the federal government to meet its future obligations.

- **Develop National Principles to Guide Stewardship Activities.** If uniform solutions are required, the diversity of the set of contaminated sites will work against consensus. A few common principles applicable to the range of stewardship issues, might be useful, without insisting that the principles be applied in a identical manner to sites as diverse as the DOE nuclear operations and local brownfields. These principles might, for example, include requirements for (1) site characterization, (2) site ownership, (3) funding responsibilities and mechanisms, (4) stewardship responsibilities and mechanisms, and (5) public participation/oversight. If the general nature of these requirements within the context of rolling stewardship is clear, specific actions tailored to specific

sites follow naturally. Such principles would also lead to greater acceptance of national stewarding policy

- **Design Future Facilities with Stewardship in Mind.** A final, and perhaps most proactive solution would be to promote policy at the public and private sector to ensure that stewardship activities are considered, and factored into the design phase, as part of the planning process for new facilities. By that means, future generations would not be required to engage in the debate we are now undertaking.

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Contacts: Kate Probst, probst@rff.org, (202) 328-5061; Bob Hersh, hersh@rff.org, (202) 328-5156; Kris Wernstedt, wernstedt@rff.org, (202) 328-5076

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Appendix B Policy Advisory Group

Allison Abernathy, federal Facilities Program, US EPA

George Allen, Jr., Senior Manager, Sandia National Laboratories

John Applegate, Professor of Law, University of Cincinnati College of Law

Charles Bartsch, Senior Policy Analyst, Economic Division, Northeast-Midwest Institute

Mary Brook Beatty, Executive Director, National Environmental Policy Institute

Jim Belcher, Hazardous Waste program, Missouri Dept. of Natural Resources

Michael Bellot, Office of Emergency & Remedial Response, US EPA

Dan Berkovitz, Deputy Assistant Secretary, Planning, Policy & Budget, US Department of Energy

David J. Bjornstad, Program Manager, Oak Ridge National Laboratory

Don Clay, Director, Regulatory Affairs, Koch Industries

Robert Colangelo, Executive Director, National Brownfields Association

Gordon Creed, Deputy Assistant Commissioner, General Services Administration

Sheila Dearybury, Counsel, House Committee on National Security

Bill Dickinson, Consultant, Environmental Policy Network

Timothy Fields, Assistant Administrator, Solid Waste & Emergency Response, U.S. EPA

Allyn Finegold, Senior Policy Analyst, National Governor's Association

Rebecca Flora, Executive Director, Green Building Alliance

Joe Foran, Vice President, Policy & Science, ISSI Inc.

Edmund Frost, Partner, Leonard, Hurt, Frost & Lilley/Cleansites

Christine Gaspar, Project Manager, Economic Development, International City/County Management Association

Thomas Grumbly, Group President, federal Programs, ICF Kaiser

Stephen Hess, Office of General Counsel, US EPA

Joel Hirschhorn, Director, Natural Resources Policy Studies Division, National Governor's Association

Liz Hocking, Policy Analyst, Argonne National Laboratory

Kris Hoellen, Senior Superfund Associate, ASTSWMO

Marianne Lamont Horinko, President, Clay Associates, Inc.

Harry Kelso, Attorney at Law & Environmental Consultant

David King, Executive Director, Environmental Affairs, Niagara Mohawk Power Corporation

Seth Kirshenberg, Associate, Kutak Rock Attorneys; Executive Director, Energy Communities Alliance

Stephen Luftig, Director, Office of Emergency & Remedial Response, U.S. EPA

John Lushis, Counsel, Land Department, Bethlehem Steel Corp.

J. Russell Marshall, Acting Assistant Deputy UnderSecretary , Environmental Cleanup Division, Department of Defense

John Martin, Director, Property Utilitzation and Disposal, General Services Administration

Bruce Means, Senior Process Manager for Remedies, US EPA

Paul Nadeau, Superfund Reform Advocate, Office of Emergency & Remedial Response, US EPA

Joe Nash, Vice President, ISSI Inc.

Michael Pawlukiewicz, Director, Environmental Research, Urban Land Institute

Greg Planicka, Director of Programs, National Environmental Policy Institute

Katherine Probst, Senior Fellow, Center for Risk Management, Resources for the Future

Randy Randol, Senior Environmental Advisor, Exxon Corporation

Kenneth S. Redus, Senior Scientist, Mactec Inc.

Larry Reed, Deputy Director, Office of Emergency & Remedial Response, U.S. EPA

Bernard Reilly, Environmental Group, DuPont Corporation

Don Ritter, Chairman, National Environmental Policy Institute

Robbie Roberts, Executive Director, Environmental Council of the States

Ernie Rosenberg, Vice President, Health, Environment & Safety, Occidental Petroleum Corp.

Lynn Scarlett, President, Reason Public Policy Institute

Joe Schilling, Director of Economic Development, International City/County Management Assoc.

John Selstrom, Cleanup Office (DUSDES-CL), US Air Force

Dave Shelton, Environmental Group, DuPont Corporation

Tom Shoemaker, Vice President, federal Public Affairs Group, McGuire Woods Consulting

Steven Slatten, US EPA

John R. Smith, Manager, Environmental Science & Technology Development, Aluminum Company of America

Greg Sullivan, Office of Planning, Policy & Budget Analysis, US Department of Energy

Jeff Telego, Executive Director, Environmental Bankers Association

Jim Werner, Director, Office of Strategic Planning and Analysis, Department of Energy

Edwin B. Wilson, Director, Environmental Assessment & Remediation, Bethlehem Steel

Shari Wilson, Administrator, Environmental Restoration and Redevelopment Program, State of Maryland

James Woolford, Director, federal Facilities Program, US EPA

Paul Yaroschak, Director, Environmental Compliance & Restoration Policy, Office of Asstistant Secretary of the Navy (Installations & Environment)

Appendix C "Windows on Washington" Event

Grand Hyatt Hotel, Washington, DC
April 21, 1999

Stewardship: Caring for our Land

Moderator: Jim Werner
Director, Planning, Policy & Budget, USDOE

Opening Remarks:
US Congressman Norm Dicks
Washington

Mayor Thomas R. Suozzi
Glen Cove, NY- A Brownfields "Showcase Community"
Katherine N. Probst
Sr. Fellow, Center for Risk Management, Resources For the Future
Seth D. Kirshenberg
Executive Director, Energy Communities Alliance
Robert V. Colangelo
Manager, Brownfields Development, LLC.
James D. Horsman
Q.C. Ian Murray & Associates, Inc.
(frmr. Deputy Premier, Alberta)
Jim Woolford
Dir., federal Facilities Program, USEPA

United States Congressman Norm Dicks
Washington

Congressman Dicks began by highlighting the importance of environmental stewardship. He spoke of three areas in which stewardship, particularly long-term stewardship, needs to be improved: 1) managing areas inhabited by endangered species, 2) Superfund reform, and 3) Department of Energy waste sites.

He addressed the infamous controversy between preservation of the Northern Spotted Owl and preservation of jobs that surrounds timber harvesting in national forests. To end this stalemate, the Clinton Administration called a summit in the Northwest to work with the communities involved. As a result, a plan was formulated that resulted in lifting the injunctions on timber harvesting.

Although the plan had an adverse affect on the local economy by significantly lowering the rate of timber harvesting, he emphasized that it set the stage for some very positive agreements. Corporations have begun to make voluntary environmental protection agreements. Congressman Dicks averred that the private sector would voluntarily develop plans for species conservation and reduce timber harvesting on their properties in exchange for a guaranty that they will be able to continue to use their lands in 50 to 100 years. Examples of these voluntary agreements are the Habitat Conservation Plans (HCPs) that have been developed on federal and private lands by almost all major private companies.

While we cannot allow legislation to exempt certain industry groups from compliance, Congressman Dicks stated that it is possible to both follow the law and develop private agreements for conservation. Solutions must be created that comply with state environmental laws, the Clean Water Act, and the Endangered Species Act, thus calling for creative solutions in designing a plan that is scientifically credible and legally defensible.

Additionally, Congressman Dicks noted that Superfund reform is critical to the stewardship issue. He stated that Superfund is currently operated in a way that can result in an extremely negative experience for those trying to clean-up contaminated sites. He said that legislation must be changed so clean-ups are timely and cost effective. "The matter may be addressed positively to make real progress, but in order to do so, we must have well informed local governments and companies."

Congressman Dicks also emphasized the importance of governmental stewardship in regard to nuclear disposal sites. "Congress must provide The Department of Energy with resources to cleanup waste sites, then DOE must remediate these sites." He discussed the problem his state faces in cleaning up waste that was a by-product of nuclear production during the Cold War. The state of Washington has reached an agreement with EPA and DOE regarding the clean-up of the site, and the parties involved are doing their best to effectuate a quick and inexpensive cleanup that will remove contamination to suitable levels.

Congressman Dicks concluded by saying "To have effective stewardship, we have to work within the context of existing laws and try to engage companies and communities to work together in finding creative solutions."

Mayor Thomas Suozzi
Glen Cove, NY--A Brownfields "Showcase Community"

Mayor Suozzi focused on the reuse, recycling, and future use of contaminated sites. Glen Cove has ten miles of waterfront, nine of which are beautiful and pristine, and one of which is contaminated from the city's original industrial area. Throughout history, the properties were reused multiple times until becoming an industrial center for the north shore of Long Island. The property now is home to two federal Superfund sites, three New York state inactive hazardous waste sites, and several brownfields.

The key goal of the community is to recycle and reuse these properties so they can be turned into

productive regional tourism destinations. For example, he noted that Lee Tungsten, a federal Superfund site, was once the city's largest job-producer; it paid the most taxes, gave the most money to local hospitals, and supported the local baseball team. Now, the property sits abandoned. Recycling the property will bring jobs, taxes and support back into Glen Cove by making good use of these contaminated sites.

Mayor Suozzi noted the New York Department of State has also deemed that preservation of the area is critical. The state conducted a study of the coastline of Long Island Sound and designated Glen Cove as one of three areas where there should be concentrated waterfront development. To advance the clean-up process, the city conducts meetings so that every decision-maker involved in the process can attend a one or two day conference. The agencies and others involved in the process then support and help the city achieve its goals. This program began three years ago and has attracted tens of millions of dollars from public investors, thus accelerating the cleanup process and building infrastructure. In recognition of this achievement, Vice President Al Gore recognized Glen Cove as one of the sixteen model communities for cleaning up and putting sites back into productive use. This recognition has provided the city with additional support from federal and state agencies to help redevelop contaminated areas in the community.

Mayor Suozzi described how the city has dealt with those who haven't taken remediation and stewardship seriously. In one polluted area, a condominium developer began to build on the site before it was fully remediated. After the shells of the condominiums were built, storm water retention ponds were dug out. As the chemicals from the nearby petrochemical site began to bubble up, the owner covered the site with plastic. The next morning the plastic had risen ten feet in the air due to methane gas seeping in. The owner was taken off to jail in handcuffs and development was halted. This year Glen Cove celebrated Earth Day by exploding the condominium shells in celebration of the halting of the improper development.

Mayor Suozzi announced that a Prospective Purchaser Agreement was recently signed with EPA. This is the first time that EPA has entered into an agreement with a municipality or prospective purchaser in which the municipality will recoup nine million dollars when the city sells the property. This nine million will repay the city for the money it invested in purchasing and cleaning up the properties, and building infrastructure. The city will share the remaining proceeds fifty/fifty with EPA up to a purchase price of 12.2 million dollars, and as the price goes up, the share changes on a sliding scale.

He concluded by describing a similar agreement the city also created with the Department of Environmental Conservation (DEC). The DEC allowed the city to excavate the site instead of capping the pollution. After excavation, hazardous waste and debris is shipped to the proper location and the remaining non-hazardous waste can be put back into the ground. For the first time, the New York DEC established risk-based standards, allowing the city to evaluate the waste and place low-risk waste back into the ground. This innovative approach assures that environmental standards are met, while allowing local flexibility in meeting the standards.

Panel Discussion

Mr. Jim Woolford, Director of EPA's federal Facilities Program began the discussion by describing the EPA's role in cleanup and stewardship. federal agencies have the authority to conduct clean-ups under the delegation of Executive Order 12580. The EPA's role is to set national regulations and policies as guidelines. The Superfund statute sets special requirements for the federal government. Mr. Woolford's office deals primarily with federal property transfer and sets the national policy for clean-up of federal facilities or situations unique to the federal government. The Office of Emergency and Remedial Response, also known as the Superfund office, sets policies that apply to all Superfund sites, including transfers involving the federal government.

Mr. Woolford gave several examples of federal sites in which "rolling" stewardship is a factor. One of these is the River Valley School in Marion, Ohio, built on a former defense site from WWII. At the time the school was built, there was no indication that the property was contaminated, but later examination of aerial photographs from the 1950's showed that the property owned by the city, as well as the adjacent property still owned by the federal government, was extensively contaminated. These photos led to the discovery that the property was built on a former disposal area.

Mr. Woolford addressed new policy regarding the transfer of federal property. The policy will establish criteria for EPA to evaluate the effectiveness of institutional controls. He stated that expectations will be laid out: EPA will need a legal description of the property, including the location of the contamination, and an analysis of what is required to maintain the effectiveness of the institutional control. EPA also wants local and state governments who receive transferred property to be fully aware of these expectations and their responsibilities. He stated that there is a general void in regard to long-term stewardship within the federal government, and that action must be taken beyond five-year reviews.

Beyond EPA's role, **Ms. Kate Probst of Resources for the Future** directed her comments to general matters of stewardship, providing a definition and several recommendations. Acknowledging that there is no uniform definition of stewardship, she offered a four-part definition: site monitoring and maintenance, enforcement of institutional controls, information management, and environmental monitoring.

She elaborated further on these topics. Site monitoring and maintenance involves very practical, physical matters such as cap maintenance and site awareness. The enforceability of institutional controls is key to stewardship, and information management is important to let the community know the status of activity at the site. Lastly, environmental monitoring involves long-term environmental maintenance. An example is continuous groundwater monitoring to track contamination movement.

Ms. Probst identified institutional controls as a critical element of long-term protection, but stated that key issues associated with them have largely ignored in the federal policy debate. She pointed out that there is nothing in regulations to help a property owner or local government insure institutional controls are implemented, monitored, or complied with. There is also reason to be concerned with the long-term viability of institutional controls. Deed restrictions and zoning changes are intended to make long-term

changes, and therefore the effects the restrictions will have on future development should be considered.

Ms. Probst proposed that a more appropriate term for stewardship may be "post clean-up care**."** Both federal and private sites require long-term, updated maintenance. For example, under the Resource Conservation and Recovery Act there are several sites that need this type of post-clean up care. Even brownfields and decommissioned nuclear power plants will probably require post closure care, institutional controls, and stewardship.

She emphasized the benefits of a national stewardship program. Once a stewardship program is established, there are several administrative steps that can be taken without legislation, including internal policies and executive orders. An example of such a step is the National Contingency Plan instituted under Superfund. "This plan is reasonable, practical, and has the force of law without waiting for congressional action." Since it seems unlikely that any legislative action on Superfund reauthorization or stewardship legislation will pass in the near future, issues of stewardship could be implemented through regulations. She expressed a need for coordination between federal, state, and local government to make sure that these stewardship activities are still taking place when a Superfund site is long forgotten.

Mr. Seth Kirshenberg focused on one aspect of stewardship: brownfields, specifically Department of Defense military base closure sites and Department of Energy facilities, all of which require different approaches to the institutional controls mentioned by Ms. Probst. While institutional controls work, we continually hear about the large failures, frightening people because of their potential health impacts.

Mr. Kirshenberg addressed policy issues involved with institutional controls and how his view of that policy is affected by his work with federal agencies. Since Congress has not identified this as an important issue, upper level employees at EPA are not concerned with institutional controls. EPA gets funding from cleaning up sites, determined only at closure, not including maintenance. Institutional controls are placed in the background and are given low priority. Both DOE and EPA acknowledge that their top issue is to get clean-up dollars for sites; however, they are not dealing with the issue of long-term stewardship which should be incorporated in the definition of cleanup.

He noted there is also a need for institutional controls in Department of Defense military closures. There are communities willing to purchase land before the contamination is completely removed and pay for cleanup themselves. Putting money at the forefront of such developmental issues ignores health and safety. There is a need to decide if local governments should have "buy-in" to these types of remedy decisions. At federal facility sites, the federal polluter is the one who makes the decision for the cleanup with input from EPA at Superfund sites. If the remedy says that institutional controls are needed, then we must decide who is going to implement the controls.

Mr. Bob Colangelo continued the discussion of brownfields by defining a brownfield as a contaminated piece of property that is "dirty" in two ways. The first way is a "dirty" title, meaning that there are tax, legal, and financial issues, and market conditions that affect that land; and the second way is its environmental impairment. The brownfields market, one of the fastest emerging marketplaces, is a union of three markets: capital markets, real estate industry, and the environmental markets.

Professionals from these three disciplines are migrating from their respective fields and entering into this emerging marketplace of brownfields development.

Mr. Colangelo discussed the democratization of environmental policy and its affect on brownfields. There are two trillion dollars of property now devalued by environmental hazards, and, depending on your definition of brownfields, currently between 100,000 and 600,000 brownfield sites. The two trillion dollars of devalued property may be broken down into three discrete subsectors of positive, neutral, and negative valued properties. The first of these subsectors, positive-valued sites, have much lower clean up costs than the value of the property, allowing property clean up and sale for profit. Tens of thousands of positive-valued properties exist in the United States today. Secondly, there are hundreds of thousands of neutral-valued properties. These properties are defined as having equal costs for acquiring and cleaning a site and the site's unimpaired value.

Negative-valued properties are those for which the cost to clean-up both title and the property is greater than the unimpaired value. For example, a site that would cost 30 million dollars to clean up but would only sell for one million dollars is a negative-valued property. There are thousands of these negative-valued properties. Mr. Colangelo has found positive-valued properties are being handled by the private sector in general. Neutral-valued properties are being developed by community development corporations and municipalities, while negative-valued properties are being handled by large corporations and the government.

Mr. Colangelo stressed that democratizing environmental policy involves working in the brownfields market, a melting pot of professionals from a diverse socio-economic range. The work being done in the brownfields market can serve as a model to get communities working together with the private sector. It is the private sector working with other subsectors that will successfully redevelop a brownfield.

Mr. James Horsman moved into another aspect of stewardship, that of international land conservation stewardship, by introducing Y2Y. An idea that originated in Alberta, Y2Y proposes that three quarters of a million acres in the United States and Canada be allocated as a wildlife preserve. The plan has the support of over 100 American and Canadian companies. The land stretches through Wyoming, Montana, Idaho, Alberta, and British Columbia. He noted this area is prime wildlife habitat and contains roadways, railways, large towns, mines, ski resorts, golf courses, parks and reservations. Those who are in favor of the Y2Y plan wish to curtail the large amount of commercial activity that takes place in the area. However, human activity of gradually rising intensity will occur in stages. Low intensity oil and gas wells, livestock raising, selective logging and roadless mining, hunting, and fishing would be allowed close to the corridor. The wildlife corridor will also include buffer zones to insure that protection for these areas doesn't end at their boundary. The older sections of the buffer would be used for more intensive tasks such as large scale mining, motorized recreation, and processing oil and gas.

He explained that natural resources in Canada are controlled by the provinces rather than federal government. This creates a great difference between Canada and the United States when we are

dealing with these matters. This Y2Y proposal is significantly an international issue which could have a serious impact on resource development and upgrading of natural resources within the region.

Mr. Horsman explained that in Alberta the plan has become a highly charged issue that is politicized along party lines. This politicization has extended to British Columbia. With the concept of conservation being promoted by over one-hundred organizations, there is a chance political activity will be focused on this proposal. He concluded by stating that such instances of international cooperation on stewardship issues will most likely become more prevalent in the future as conservation becomes more international in character.

Appendix D HCIC Phases I-III

Phase I Recommendations

In the Phase I *How Clean is Clean?* report (September, 1995) a number of recommendations were made for each of the three sectors investigated. These recommendations are repeated below for reference.

Cleanup and Corrective Action

Before discussing recommendations for dealing with the *how clean is clean* issue, some key aspects of waste site remediation are first outlined below.

- While there are certainly common features, each site cleanup decision is essentially one-of-a-kind. Even if, for example, the contaminants are similar at two sites, they are usually not identical, nor are local environmental conditions, demography, land use, and economic factors.
- On the other hand, possible remedial actions are limited with usually only about three to five real technical options available at a particular contaminated site.
- Who makes the decision is probably as important as the process used. For example, local officials concerned with local environmental, economic, and land use issues may view the situation very differently than federal personnel who may be more concerned about "national consistency."
- Contaminated sites are, in fact, usually very local problems. Unlike air and surface water pollution, which may affect huge regions of the country, contaminated sites usually impact a matter of acres. The predominant site problems are contaminants in the soils and groundwaters, neither of which usually "moves" rapidly.

With the above factors in mind, the following are recommendations for improving the *how clean is clean* situation with respect to cleanup and corrective actions.

- Ensure that the *how clean is clean* decision-maker (e.g., remedy selection person) is as close to the problem as possible. A specific method to do this would be to designate cleanup decision-makers at the state or local level.
- Make more use of EPA's presumptive remedies where available.
- Make better use of risk assessment and cost-benefit tools to compare alternative remedies and site cleanup criteria.
- Enhance the involvement of "at risk" stakeholders in site decisions in order to better understand risks, economic factors, timeliness, land use, and other issues impacting local communities.
- Significantly increase the role of expected land use as a key factor in cleanup planning.
- Develop procedures to encourage voluntary cleanups.
- Place more emphasis on early actions at sites specifically addressed to reducing risks, with longer-term cleanup dependent on later land uses, available technology, and other factors.
- Do away with the ARAR process, as well as the preference for "treatment" and "permanence"

in the Superfund program. The goal should be safe remedies.

- Develop a much more results-oriented approach to cleanup as opposed to the current process-driven activities. Included should be early development of realistic site remediation options with studies then used to assist in tradeoff-type comparisons of options. Shorter project time frames could then be the expectation.

federal Facilities

- Ensure that the *how clean is clean* decision-maker (e.g., remedy selection person) is as close to the problem as possible. A specific method to do this would be to designate the cleanup decision-maker as the senior regulator involved with the site.
- Greatly reduce the role of regulators in day-to-day project direction. Also, move toward a system where only one regulatory agency is in the key role, as opposed to the current two-regulator (EPA/state) approach. The state probably is the preferred choice.
- Focus cleanup programs much more on results, not process. For example, make more use of EPA's presumptive remedies where available.
- Make better use of risk assessment and cost-benefit tools to compare alternative remedies and site cleanup criteria.
- Enhance the involvement of "at risk" stakeholders in site decisions in order to better understand risks, economic factors, timeliness, land use, and other issues impacting local communities.
- Significantly increase the role of expected land use as a key factor in cleanup planning. While retaining strong community input, have the federal site owner provide more leadership in land use selection, particularly for the near-term.
- Develop procedures to encourage voluntary cleanups and innovative technologies.
- Do away with the ARAR process, or at least the "relevant and appropriate" portion, as well as the preference for treatment in the Superfund program.
- Make it clear that, as the lead federal agency, DOE and DOD can undertake "obvious" cleanups, or removals, in a much less complex fashion.
- Consider legislation which would eventually allow DOE and DOD to undertake overall site cleanups without the artificial separation of RCRA/CERCLA sites from the "rest of the facility." In other words, let the agency view the facility as one problem and prioritize work accordingly.

Brownfields

- First, a prime opportunity exists at the national level during the current Superfund reauthorization process. Some Superfund fixes that would be helpful regarding brownfields include:
    - Allow as many states as are willing and able to operate their own waste site cleanup programs. Removing the threat of dual/overlapping enforcement by federal and state agencies will also remove considerable regulatory uncertainty from brownfield sites.
    - Require state nomination prior to placement on the Superfund National Priority List. This will also reduce "double jeopardy" for brownfields.

- Remove the preference for treatment and the use of ARARs from the federal Superfund statute.
- For site remedy selection, place much more emphasis on expected land use as well as the relationship between cleanup costs and risk reduction.

- With respect to the RCRA program, several changes would greatly assist in brownfields remediation, including:
  - Change of the point of compliance for RCRA corrective action from SWMU boundaries to site-specific compliance points, based on potential human exposure.
  - Modification of the trigger for corrective action from a permit-based to a risk-based process.
  - Potential movement away from a SWMU-based process to a facility-wide analysis.

3. The trend toward innovative state and local initiatives to expedite brownfields reuse should be strongly encouraged. A "model" approach to such initiatives might include the following:
   - A strong program for voluntary cleanups where those involved with brownfields are encouraged to deal with contamination through a set of incentives, such as reduced transaction costs, tax benefits, etc.
   - Risk-based cleanup levels based upon land use which will allow brownfield participants to move ahead with remediation.
   - Relief from liability for those who have completed appropriate cleanups, and for prospective purchasers and lenders.
   - A clear, understandable procedural path through the state or local regulatory system to allow expedited brownfields cleanup.

Phase II National Cleanup Principles

The following section describes the national cleanup principles. In addition, this section identifies up front some common themes across the sectors. When one looks across the three sectors outlined in the previous section, it becomes apparent that they have many issues in common. Some of these issues are outlined below.

- Who makes the *how clean is clean* (or remedy selection) decision is important. For Superfund, it is the EPA; for federal facilities, it is two regulators, with EPA somewhat "more equal" than the state; and for brownfields, it tends to be state or local officials.

- Timeliness of cleanup results is a major issue with the process-driven national Superfund program the most problematic.

- Overlap of regulatory agencies is particularly egregious for federal facilities cleanups but is also a

problem oftentimes in private Superfund cleanups, as well as in brownfields.

- Funding and cost-effectiveness are major issues for all three sectors.

- *How clean is clean* is a major issue for all sectors. In other words, at what point is a contaminated site cleaned up enough to move on to some beneficial use.

Principle No. 1: The cleanup decision-maker should be at the lowest relevant level of government.

A major finding of this project is that who makes the decision is probably as important as the process used. For example, local officials concerned with local environmental, economic, and land use issues may view the situation very differently than federal personnel who may be more concerned about "national consistency."

Also, it is now apparent that, because of more crisp and simpler decision-making processes, many state Superfund-type programs have the ability to cleanup sites faster than the federal Superfund program.

With respect to brownfields, these are "even more local" problems than Superfund, with many states already operating brownfields programs.

Finally, regarding federal facilities the level of the cleanup decision-maker is a tougher call. For example, some are concerned about the states having cleanup authority, with the funding for cleanup coming from the federal government. The concern is that the states might opt for the most expensive remedies since it is someone else's money.

However, there at least two items which mitigate this concern. First, this "someone else pays" argument has not played out for private party cleanups under state remediation programs in that state cleanups tend to be much less costly and complex than federal ones. Second, the fact is that Congress has to appropriate the money for federal facilities cleanups, and in effect, has the final say over cleanup costs. Indeed, congressional funding for federal facilities remediation work is moderating, or even dropping, in some cases.

In general, the states should become the key regulators and thus, the cleanup decision-makers for all contaminated site cleanup programs. In the case of brownfields, states probably should delegate cleanup decisions further down to local officials.

Principle No. 2: Results should trump process.

A major fault of the national Superfund and federal facilities cleanup programs is the reliance on

elaborate processes as opposed to achieving cleanup results. Enormous amounts of time and money have been spent on regulatory review of process documents such as work plans and sampling plans.

This second principle would have regulators set cleanup objectives and overall time frames, and then allowing the federal agency or private cleanup firm to manage the cleanup activities on a day-to-day basis. Perhaps the most straightforward way to accomplish such results is to set an overarching deadline for project completion with incentives or disincentives for not reaching the deadline. It should be "OK to cleanup."

Principle No. 3: Cleanup goals should be site specific.

The *how clean is clean* decision at contaminated waste sites is not an exact science. Also, while there are certainly common features, each site cleanup decision is essentially one-of-a-kind. Even if, for example, the contaminants are similar at two sites, they are usually not identical, nor are local environmental conditions, demography, land use, and economic factors.

This does not mean that the operative regulatory agency should not make use of related federal, state, and local standards. An example is the maximum contaminant limits (MCLs) under the Safe Drinking Water Act. However, the actual cleanup criteria for a site should be set based primarily on local land use, environmental, and risk considerations.

Principle No. 4: Seek safe, not permanent cleanups.

Another major issue in the federal Superfund statute is the achievement of "permanent" site remedies. In practice, this has led to setting cleanup standards for the highest possible end use of the land (usually residential).

A better approach would be to ensure that the subject site is always safe from public health and environmental standpoints, for whatever near-term use is contemplated. This puts a premium on land use considerations. Thus a site might be cleaned up for its intended land use and more work done later if the land use changes. The point is, it is always safe.

This approach also makes it imperative that through deed restriction, or other means, someone is always responsible for any future cleanup required. The level of cleanup and future responsibilities can also be points for negotiation between buyers and sellers of the land.

Principle No. 5: Ensure meaningful public participation as part of the cleanup process.

In terms of risk communication and obtaining acceptance of final cleanup plans by the communities living near the facilities in question, public participation is an important and often underestimated part

of the cleanup process. Communities today desire an active role in decisions about the cleanup and future development and its land use. Neighborhoods raise concerns about the cleanup process and question whether the cleanup itself will threaten their health and environment.

Although a few may still view public participation as a potential bottleneck in the cleanup process, a growing number of environmental professionals understand the need to bring together a wide array of affected stakeholders in the cleanup and redevelopment decision-making process. They recognize the benefits of devoting sufficient resources early in the process to minimize subsequent vetoes and possible litigation by the community at the end of the process.

Phase III PRINCIPAL FINDINGS AND RECOMMENDATIONS

Given the diversity of the three sectors -- brownfields, federal facilities, and cleanup and corrective action -- it was surprising how common issues arose across all three programs. The nature of the problems associated with devolution generally differed by degree, given the different universe of cleanup problems presented by each sector. Nonetheless, because of the unique challenges posed by each sector, as well as the fact that the forum for resolution of the problems identified may differ for each sector, this report will set forth its findings in manner that takes a cross-cutting view of the sectors, and then a series of recommendations as they relate to each individual sector. In addressing these issues, this report aims at a moderate and centrist approach, with a focus on practical and implementable recommendations that can be used to improve our nation's cleanup programs whether or not legislation is enacted.

A. Principal Findings

Clearly, our nation's cleanup programs have matured from the "toxic emergencies" of the 1980s -- such as Love Canal -- to the "next generation" of remediations. These remediations typically present some of the toughest questions. For example, once the immediate risk to human health and the environment has been abated, how should the long-term remediation proceed? Who should oversee the remediation and with what level of oversight? What is the role of the public in cleanup and land use decision-making? What type of cleanup technology is appropriate?

As we address the next generation of cleanups, some principal findings have emerged which relate to all three sectors of our nation's cleanup programs -- brownfields, federal facilities, and cleanup and corrective action. These are set forth in the following paragraphs.

1. Defining an Acceptable Endpoint is Critical to Successful Remediation.

Previous phases of the "How Clean is Clean?" project have emphasized the need for "finality" in making cleanup decisions. Now that the immediate threats to human health and the environment have largely been addressed at our nation's contaminated sites, the definition of an acceptable

endpoint is even more complex -- and critical. Does it mean complete restoration of the site as a natural resource? Or does it mean remediation of the site so that it is fit for human exposure subject to certain conditions, e.g. residential or industrial use; non-use of groundwater for drinking water? How should the emerging concept of bioavailability (e.g., the notion that certain metals and organics become less available to cause harm in organisms as they are adsorbed in soil) be factored into the exposure equation? In some cases, is complete restoration an appropriate goal at this point in time (e.g. high-level radionuclide-containing sites)? In all of these situations, clarifying expectations and timing is essential to a successful remediation effort.

The role of standards in defining "how clean is clean" is important -- but not determinative. federal cleanup standards are useful as a baseline; but, the default assumptions inherent in these standards, more often than not prevent stakeholders from recalculating these assumptions with risk-based information at sites. federal standards should be administered by regulators as part of a flexible framework for cleanup goals that leaves room for site-specific risk analysis. Over 30 states have developed their own cleanup standards; in addition, the unique land use and exposure scenarios at a specific site may dictate more tailored, risk based standards.

Thus, new federal legislation or regulations mandating across-the-board standards is not appropriate at this point. Rather, what is needed is a "cultural change" which empowers stakeholders with the information needed to determine acceptable endpoints and move forward with cleanup as quickly as possible.

2. We Need Incentives for Innovation.

While EPA and other federal facilities have achieved real success in fostering some innovative technologies, we need to do more to encourage implementation and risk-taking for innovation in the field (particularly at the Remedial Project Manager and community levels). Many incentives have been put in place: Over 300 innovative projects are in deployment at NPL sites; EPA has reopened records of decision to encourage innovation; and public-private partnerships have been piloted to evaluate technologies at the full-scale level. In addition, field analytic screening techniques are just beginning to show progress in speeding characterization of brownfields as well as monitoring progress toward all types of cleanups.

Nontheless, the obstacles to innovation are numerous. In the case of voluntary cleanups or brownfields, the potential for unknown costs may scare developers and investors. At Superfund, RCRA, or federal facilities sites, the need to show demonstrable progress over the near term, as well as budget constraints and bureaucratic aversion to taking risks, dampens the enthusiasm for innovation. In many cases, the cost of the innovative technology itself is the main disinentive.

Technology transfer to the real decision-makers in the field -- e.g., remedial project managers (RPMs) and community leaders -- is a key to success. Proper, ongoing education and training will enable RPMs and community stakeholders to take the risks needed to make innovation happen. What is needed are "technology champions" at the site level; coupled with some pilot projects for incentivizing innovation at the national level, such as cost-sharing and return of savings

to site cleanup funds. If this is done, a critical mass will form for new technology implementation.

3. Clear Differentiation of federal and State Roles is Needed for Different Sites.

The universe of remediation sites has expanded dramatically since the 1980s, and the heterogeneous nature of that universe has also increased significantly. As a result, it is clear that a "one size fits all" approach to devolution will not work across the board. Rather, the nature of the federal and state role should be well-defined depending upon the risks posed by the site; the capabilities and needs of the state, and the resources available for remediation.

In some cases, who takes the lead is not as important as the division of labor. Already, many EPA regions and states have divided the workload of sites in their jurisdiction so that there is essentially a "lead regulator" at many sites. EPA has also adopted a policy whereby the Agency will no longer list federal facilities subject to RCRA on the National Priorities List (NPL), and some EPA Regions have begun parceling the workload between EPA and the states at federal facilities such as Hanford and Rocky Flats. These efforts should be applauded and encouraged in a time of limited resources.

4. We Must Make the Affected Community an Integral Part of the Decision-Making Process.

After many years of painful lessons, the need for meaningful public involvement (as opposed to public relations) is more evident than ever. EPA has made progress in this regard, and some federal facilities (particularly closing military bases with the Remediation Advisory Boards) have developed cooperative relationships with the affected communities.

At many other sites in the federal remediation universe, however, the public role in remediation decisions is limited or non-existant. At best, they are informed after the fact or "consulted," but have little decision-making authority. Because communities do in fact have the well-demonstrated ability to alter final decisions by exercising their political power, it makes sense to empower them as a regulatory and statutory matter.

These are, after all, in many cases local land use decisions; local governments in particular should be recognized as important governmental entities and not simply "outsiders" to the regulatory regime. Similarly, local governments should not be confused with community activists; both are important stakeholders. Clear procedural opportunities for community activists to make their concerns heard and addressed as part of the land use planning process is essential. Even at voluntary cleanups or brownfields sites, smart developers recognize that community acceptance is critical to successful reuse of the site.

B. Recommendations

While the principal findings are applicable across all three sectors, the nature of the

recommended solutions differs given the types of challenges and degree of potential risks posed by each sector. For example, one might define the federal/state roles differently at a lightly-contaminated brownfields site than one would at a highly-contaminated radionuclide-containing federal facility site. Therefore, the recommendations for each sector of our nation's cleanup programs are set forth in the following individual sections.

1. Brownfields and/or Voluntary Cleanups

Brownfields programs are largely the province of states and local governments. While federal seed funding and technical assistance is appropriate, the principal assistance that the federal government might provide at a state-led cleanup is no action at all: In fact, the greatest need at these sites is some type of assurance that the federal government will not second-guess state and local cleanup decisions.

As a result of this and other observations (see the "Analysis" section for more detail), the following solutions are recommended:

- **EPA and/or Congress should develop a consistent policy, either through administrative reforms or, if necessary, legislation that voluntary cleanups or brownfields remediations conducted in accordance with state oversight and programs will not be subject to federal enforcement action, absent very limited and specified circumstances** (e.g., true public health emergencies; request from a state that the site be placed on the National Priorities List). Legislation may be necessary to effect this change, particularly as it applies to protection from liability for third-party cost recovery or contribution claims. Deep-pocket sellers will have little incentive to remediate and sell contaminated properties without assurances that they will have some liability protection, not only stemming from state and federal governments but also subsequent purchasers. At federal NPL or NPL-caliber sites, EPA's releases from liability should be predicated upon the state's certification that it has met certain criteria for a quality program; at non-NPL sites, EPA should simply provide liability relief with limited reopeners. (It is noteworthy that EPA and the Department of Justice recently held a conference on the topic of the federal role in state voluntary cleanup programs, which share some overlap with brownfields; this is an important outreach initiative.)
- **EPA should continue its current, non-bureaucratic approach to fostering brownfields programs in which the federal role is largely technical support** to states and local governments; financial assistance through loans and grants to states and local governments; and information transfer (both technical and procedural) so that states and local governments can share success stories. Both procedural and technical information transfer is helpful. EPA currently has an active program of transferring information on brownfields, in particular. EPA and other federal agencies already provide funding and assistance to state and local efforts as well. EPA's attitude that brownfields are inherently local, but need federal and state support, is commendable.

- **All stakeholders should advance a national agenda publicizing the desirability of redeveloping brownfields** vis-a-vis greenfield properties (close to transportation networks, locating new jobs in urban areas, reduction in urban blight). However, exhortation is not enough; expedited review of documents and permits by local and state officials is also helpful.

- **Congress should recognize the success of EPA's, states, and local governments' brownfields programs and provide further financial assistance (for example, block grants, tax incentives, and revolving loan funds), but few statutory restrictions**. Grants should be available to states, local governments, and local non-profit redevelopment authorities. Some type of federal trust fund or government assurance program to help stimulate the development of necessary out-year private insurance programs would also be desirable; this would help stakeholders reduce the uncertainty and fear over who would pay for remedy failures or later problems.2

- **Other federal agencies should continue their supporting and coordinating roles**. In particular, the Departments of Housing and Urban Development and Commerce have important roles to play; brownfields issues are as much social and economic problems as they are environmental challenges, and should be addressed holistically by governments at all levels.

In short, concerning brownfields, federal policy seems currently well-directed; the only significant change to be urged is greater comfort and finality to voluntary cleanup and brownfields stakeholders, as well as additional financial assistance to states, local governments, and non-profit redevelopment agencies.

2. federal Facilities

federal facilities represent a different range of environmental and stakeholder issues than either brownfields, or cleanup and corrective action. Some federal facilities, such as lightly-contaminated closing military bases or Department of Energy sites that have remained untouched (and served essentially as nature preserves) for years, represent little environmental risk and great opportunity for return to productive use. Others, such as sites contaminated with high-level radionuclide containing waste, may not be remediated for decades or centuries.

As a result, no single cookbook approach is appropriate. However, some general recommendations apply to all federal facilities:

- **DOE should use the introduction of the ten year plans as an excellent focal point for federal, state, and local involvement in the determination of acceptable risk endpoints and expectations**. In some cases, remediation and redevelopment are possible and appropriate within ten years; those sites should be targeted for completion.

2(Insert cite to ICMA, Northeast-Midwest reports.)

In others, the remediation process will necessarily be more complex and time-intensive; in those cases, the planning process should provide an ongoing procedural mechanism for a dialogue among stakeholders so that all participants are comfortable with the remediation goals and timeline.

- **federal agencies should have some incentive to recoup savings.** Particularly in the case of DOE facilities, mortgage reduction over many years will require some initial investments. Congress should provide some mechanism where the ultimate savings realized by these investments will ultimately go towards site cleanups.

- As one of its Superfund Administrative Reforms, EPA announced a plan to promote a "lead regulator" at federal facilities. EPA Regions 8 and 10 have already begun such efforts with success. **EPA should pursue these efforts, even in the absence of guidance, to help streamline federal facility remediations**.

- The need for innovation and technological development is particularly keen at federal facilities, which often represent the most challenging remediation problems (particularly in the case of mixed chemical and radionuclide-containing waste). Yet, at the same time, budgetary pressures as well as temporal pressures from local communities, states, and Congress for immediate action, have steered federal remediation authorities away from innovation, for fear of delays and cost overruns. Similarly, federal contractors are now moving toward fixed price contracts, and are understandably reluctant to assume the risk that a newer unproven technology will not work. Although demonstration projects occur, there are many technologies in the "gray area" between demonstration and field use that need promotion. **Congress and the Administration should work to change these incentives so that innovation is rewarded, not feared (in particular, by ensuring that cost savings are reprogrammed toward cleanup and not lost). In addition, education and training of remedial project managers, local government officials, and community leaders on a dynamic, ongoing basis is needed so that site-level individuals become "advocates" for innovation and cost savings**.

- The Department of Energy's National Laboratories, in particular, could be a vital asset in incubating and pioneering new technologies. However, incentives are needed to make the national laboratories less "academic" and more production-oriented. Such incentives could include financial rewards for successful technology transfer, rather than rewards for additional research. In addition, national laboratories could target their efforts more effectively by increasing their interactions with the "end users" (e.g. site managers, local officials, industry). Working through a national consortium type approach, such as that developed at McClelland Air Force Base and by the Western Governors Association, **the national laboratories should form partnerships with contractors, private vendors, and federal facilities to pilot innovative technologies**. The auspices of the Department of Commerce and other agencies could be used to publicize successes and create world markets for environmental innovations developed at DOE sites.

At this time, federal facilities present both an enormous liability, and opportunity; however, proper skill and care will help ensure that these challenges are met in a fair, open, and understandable way for all stakeholders; and creative leadership will enable the United States to capitalize on the entrepreneurial opportunities presented by these sites in world markets.

3. Cleanup and Corrective Action

EPA's programs under Superfund and the Resource Conservation and Recovery Act (RCRA) are also subject to the tremendous change across all of the sectors. Originally launched as massive federal programs, they have taken on more of a federal-state partnership as more states become authorized for RCRA corrective action or assume the lead at Superfund sites.

Today's programs and policies should reflect that reality. EPA's regional offices have already taken a significant step in that direction by recommending that states take the lead at most Superfund sites; EPA headquarters has recognized this sea-change in policy by forming a workgroup to act on the Region's recommendations. The Office of Solid Waste, through the Hazardous Waste Identification Rule for contaminated media, has also proposed to streamline federal requirements for remediation wastes managed pursuant to state protocols and oversight. Thus, these recommendations build and extend those policy directions:

- **EPA should formally provide qualified states and tribes the opportunity to take the lead at new sites introduced into the Superfund or RCRA corrective action universe (even if the state is not formally authorized)**. federal oversight through NPL listing or RCRA enforcement should only occur in limited circumstances (e.g. true public health emergencies, state request or inability to take the lead). (Note that many states have already applied for, and received, federal RCRA corrective action authorization.)
- **Congress should work with EPA to streamline the treatment requirements and cleanup processes applicable to all contaminated sites**. In particular, states should be empowered to utilize approved remedial action plans in lieu of federal RCRA permits through a formal state authorization or deferral process. While the treatment requirements under the two statutes differ in many important respects under Superfund and RCRA, both the Superfund preferences for permanance and treatment and the RCRA land ban requirements should be modified to apply only to highly toxic, mobile, or contaminated materials.
- **At federal NPL and RCRA corrective action sites, EPA should revise its policies to provide stakeholders (the affected community) with a meaningful voice in cleanup decision-making, rather than a consultative role as currently envisioned in the National Contingency Plan (NCP)**. EPA is doing much more in this area than in the past, but more progress remains to be achieved. While public participation is a formal part of the NCP and RCRA corrective action process, early and

informal interaction should also be encouraged.

- **EPA, States, and Congress should continue to advance the state of knowledge and understanding on innovative technologies and the scientific underpinnings (both research and risk assessment) of cleanups**. A good example of such an opportunity is the area of bioavailability, wherein researchers are coming to understand the processes by which certain metals and organics become entrained in soils over time such that they are not available to cause harm to living organisms. This debate should proceed at all levels -- technical, political, and grassroots education -- as well as in the lender and developer communities. A continued national dialogue will help further the debate on acceptable endpoints and ensure that expectations are clarified on all parts.

- **Congress and EPA should explore innovative mechanisms to ensure the future integrity and safety of remedies.** Ultimate restoration and reuse of contaminated sites cannot occur without some comfort to local citizens, buyers, and sellers that precautions and safeguards are in place for the future. These elements could include special site land trusts, escrows, federal guarantees, or financial assurances similar to those required under RCRA. An endowment for the future will increase the level of current activity and risk-taking by all stakeholders.

These are common-sense, reasonable and attainable goals. While some may be aided by legislation or rulemaking, most could be advanced through policy changes or even changes in the way stakeholders approach cleanups. As our nation's cleanup programs mature and immediate health risks become less of a concern, incremental and thoughtful change has become an appropriate method of ensuring that we make cleanup decisions openly and fairly, spend our resources wisely, and obtain the most effective and expedited restoration of our nation's contaminated sites possible.