



United States and Germany Bilateral Working Group on Redevelopment of Contaminated Sites

Final Feasibility Study

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ACRONYMS AND ABBREVIATIONS

ADEQ	Arkansas Department of Environmental Quality
AIG	American International Group
ARC	Appalachian Regional Commission
BMBF	German Federal Ministry of Education and Research
BMU	German Ministry of Environment
BUILD	Brownfields: Utilizing Insurance for Land Redevelopment
DETAD	German Standard Procedure for the Evaluation of Remedial Technologies
DiFu	German Institute of Urban Affairs
EPA	U.S. Environmental Protection Agency
GI	General Issue
GIS	Geographic Information System
ITRC	Interstate Technology and Regulatory Cooperation
ORD	Office of Research and Development
OSWER	Office of Solid Waste and Emergency Response
PLL/CCC	Pollution Legal Liability/Cleanup Cost Caps
SFA	Specific Focus Area
SITE	Superfund Innovative Technology Evaluation
TIF	Tax Increment Financing
UBA	German Federal Office of the Environment (Umweltbundesamt)
UV	Ultra Violet
U.S.	United States
VCP	Voluntary Cleanup Program



CONTENTS

<u>Section</u>	<u>Page</u>
DISCLAIMER	i
ACKNOWLEDGEMENT	ii
ACRONYMS AND ABBREVIATIONS	iii
1.0 INTRODUCTION	1
1.1 UNITED STATES-GERMAN BILATERAL WORKING GROUP	2
1.2 SUMMARY OF THE REPORT ELEMENTS OF REDEVELOPMENT OF CONTAMINATED SITES	3
1.3 SUMMARY OF APRIL 2000 MEETING OF THE BILATERAL WORKING GROUP	4
2.0 GOAL AND APPROACH	7
3.0 LIST OF ISSUES	8
4.0 INTERVIEWS	11
5.0 U.S. WORKSHOP ON REDEVELOPMENT OF CONTAMINATED SITES	13
6.0 REFINED LIST OF RESEARCH TOPIC AREAS	19
7.0 PROPOSED WORK PLANS	22
8.0 FUTURE DIRECTION	27
APPENDIX A BIBLIOGRAPHY OF RESOURCES	

TABLES

<u>Table</u>	<u>Page</u>
Table 1. Meeting Participants	4
Table 2. General Focus Areas and Sub-Issues	5
Table 3. Issues, Possible Solutions, and Benefits	8
Table 4. Summary of Stakeholder Interviews*	11
Table 5. Summary of Group A Breakout Session – Brownfields With very limited economic return on investment	16
Table 6. Summary of Group B Breakout Session – Brownfields with Low Economic Return on Investment	17
Table 7. Research Topic Areas	20



1.0 INTRODUCTION

Redevelopment of sites contaminated with environmentally toxic or hazardous materials is a global concern that requires an integrated approach to mitigate the risks to human health and the environment. Many countries have committed extensive resources to the effort to address environmental, social, and economic issues related to the cleanup and redevelopment of hazardous waste sites. The challenge is to determine how to capitalize on the resources, expertise, and knowledge of countries that are developing solutions to those issues and effectively share and transfer that information to the organizations responsible for making decisions and implementing redevelopment actions.

The United States (U.S.) Environmental Protection Agency (EPA) and the German Federal Office of the Environment (Umweltbundesamt [UBA]) have initiated a cooperative effort to share such information and evaluate new solutions and tools for the redevelopment of contaminated sites. **The goal of this report is to identify focus areas that can be addressed to overcome barriers to redevelopment of contaminated sites.** This report builds on a previous report published in June 2000 by EPA, *Elements of Redevelopment of Contaminated Sites*. That report described the issues associated with the redevelopment of sites in the U.S. and provided a foundation for discussions between the U.S. and Germany regarding areas of common interest.

To identify innovative approaches, tools, or technologies that would facilitate the redevelopment of contaminated sites, EPA is applying a systematic approach. Once new techniques have been identified, EPA proposes to demonstrate those techniques or approaches through model projects at EPA pilot program sites. EPA then will share the results of the demonstration projects through publications, Web sites, and conference presentations. By using model projects to demonstrate exemplary approaches to site redevelopment, EPA hopes to provide a mechanism for evaluating new approaches and technologies and then transferring lessons learned throughout the U.S. and Germany.

This report is divided into eight sections, including this introduction. Section 2.0 describes the goal and approach of the study documented by this report. Section 3.0 presents a list of issues and sub-issues identified during preparation of the report as potential barriers to redevelopment or tools for facilitating redevelopment of contaminated sites. Section 4.0 provides a list of the sources of information (interviews with stakeholders and various publications) used in preparing this report. The issues identified through these sources are then summarized in terms of the stakeholders affected, obstacles to redevelopment, and benefits of focusing on the issues identified. Section 5.0 presents a summary of the U.S. Workshop on redevelopment of contaminated sites held February 6 and 7, 2001 in Philadelphia, Pennsylvania. Section 6.0 provides a refined list of Research Topic Areas for the future focus of the U.S.-German Bilateral Working Group. This section also identifies methods of evaluating the success of future efforts of



the bilateral working group in achieving the goals outlined in Section 2.0. Section 7.0 presents proposed work plans for the refined list of issues presented in Section 5.0. Section 8.0 outlines the future direction for the bilateral working group, based on the proposed work plans.

1.1 UNITED STATES-GERMAN BILATERAL WORKING GROUP

In 1990, EPA and the German Federal Ministry of Education and Research (BMBF) established a bilateral working group to gain a better understanding of each country's efforts in the cleanup of hazardous waste sites and to evaluate the effectiveness of innovative technologies being applied at selected sites in each country. The overall objective of the bilateral working group is that each country develop a comprehensive understanding of the other's approach to the cleanup of hazardous waste sites and that the effectiveness of innovative technologies being applied at those sites be evaluated. The specific goals of the bilateral working group are to:

- Facilitate an understanding of each country's approach to the remediation of contaminated sites
- Evaluate innovative remedial technologies according to the standards of both countries
- Facilitate international exchange of technologies

Activities of the bilateral working group are being conducted in three phases. The first two phases focused on technology issues related to remediation, while the third addresses the overall redevelopment process. During Phase I, 10 technologies were evaluated at sites in the U.S. and Germany. In the U.S., technologies in use at demonstrations conducted under the EPA Superfund Innovative Technology Evaluation (SITE) Program were evaluated; in Germany, technologies in use at full-scale remediation projects were evaluated. The technologies demonstrated during Phase I were soil washing, thermal desorption, two biological treatment technologies, in situ radio frequency heating, vacuum distillation, catalytic oxidation, ultra violet (UV)-oxidation, pyrolysis, and in situ ventilation.

During Phase II, the quality management protocols of the SITE program were reviewed and used in developing a German equivalent, the German Standard Procedure for the Evaluation of Remedial Technologies (DETAD). Both the U.S. and the German quality management protocols then were applied to five technology evaluations in the U.S. and five technology evaluations in Germany. Types of technologies demonstrated during Phase II include enhanced soil vapor extraction, bioremediation, reactive barriers, electroheating, surfactant-enhanced extraction, soil stabilization, and catalytic combustion. The SITE program and quality management protocols of the DETAD yielded data of known quality for the demonstrations carried out in each country.



The bilateral working group currently is proceeding with Phase III, which is focused on redevelopment of contaminated sites. The first U.S. report prepared under Phase III, which provided a summary of the elements of redevelopment of contaminated sites, is summarized in Section 1.2 of this report. In April 2000, a meeting of the bilateral working group was held in Berlin, Germany to discuss the future focus of the working group. Section 1.3 of this report presents a summary of that meeting. Based on the results of the April meeting, feasibility studies were conducted in both the U.S. and Germany to identify focus areas, measures of success, and work plans for Phase III activities of the bilateral working group. This report documents the findings of the U.S. feasibility study and proposes Research Topic Areas for future Phase III efforts of the bilateral working group. This report will be presented for discussion at a bilateral planning meeting to be held in April 2001 during which future focus areas of interest to each country will be finalized.

1.2 SUMMARY OF THE REPORT ELEMENTS OF REDEVELOPMENT OF CONTAMINATED SITES

The first report issued by EPA under Phase III of the bilateral working group was entitled *Elements of Redevelopment of Contaminated Sites*. The report was prepared to establish a baseline of U.S. redevelopment issues and to facilitate the transfer between the two countries of information about those issues in the hope of finding mutual international solutions to common redevelopment and risk management problems. The report consisted of five sections. Sections 1.0 and 2.0 provided an introduction and discussed the background of Phase III of the activities of the bilateral working group. Section 3.0 provided a summary of U.S. regulatory compliance and risk management considerations related to the redevelopment of contaminated sites. Section 4.0 described liability and non-regulatory considerations for redevelopment of contaminated sites. Section 5.0 outlined the next steps in Phase III. Sections 3.0 and 4.0 are summarized briefly below.

The concerns of U.S. citizens over the extent of uncontrolled or abandoned hazardous waste sites, such as abandoned warehouses and landfills, led Congress to establish the Superfund program in 1980 to locate, investigate, and clean up the worst sites nationwide. EPA administers the Superfund program in cooperation with individual states and tribal governments. In addition to the Superfund program, EPA established the Brownfields Economic Redevelopment Initiative to empower states, communities, and other stakeholders involved in economic revitalization to work together to accomplish the redevelopment of abandoned, idled, or underused industrial and commercial facilities at which expansion or redevelopment is complicated by real or perceived environmental contamination. Section 3.0 of *Elements of Redevelopment of Contaminated Sites* provided an overview of the framework of regulations and policies that govern the redevelopment of contaminated sites, including: the Superfund Program, the Brownfield Economic Redevelopment Initiative, requirements for risk assessments, and permitting requirements.



Section 4.0 of *Elements of Redevelopment of Contaminated Sites* described liability and non-regulatory considerations that should be addressed when beginning a redevelopment project in the U.S. Some of those considerations become barriers to redevelopment (for example, potential liability) if not adequately dealt with, while some considerations can motivate the redevelopment project based on the intended reuse of the site. The section discussed those considerations, including liability issues related to cleanup financing, insurance, and legal issues; cleanup drivers such as ecological and human health, social, economic, and political factors; and the roles of various stakeholders.

1.3 SUMMARY OF APRIL 2000 MEETING OF THE BILATERAL WORKING GROUP

During the week of April 10, 2000, a series of meetings of the Bilateral Working Group was held in Berlin, Germany. The purpose of the meetings was to review the results of Phase II activities and to discuss common interests and approaches to Phase III.

TABLE 1. MEETING PARTICIPANTS

AFFILIATION	PARTICIPANT(S)
U.S. EPA	Annette Gatchett, Office of Research and Development (ORD), U.S. Bilateral Program Manager Ann Vega, ORD Karl Alvarez, Office of Solid Waste and Emergency Response (OSWER) Dale Medearis, Office of International Affairs
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The discussion during, and outcome of, the April meeting related to Phase III activities of the bilateral working group are summarized below (discussions relevant to Phase II are not presented).



Presentations were made by U.S. and German members of the bilateral working group to outline their respective interests in redevelopment of contaminated sites. In light of the broad interests of both countries, it was determined that a feasibility study should be conducted to identify the primary focus areas of Phase III. Participants established the following goal for the feasibility study.

The goal of the feasibility study is to identify focus areas in which research could be completed to yield tools or techniques that would have a measurable impact on facilitating the redevelopment of contaminated sites and would be of benefit to one or both countries.

For example, a strength in one country that could benefit the other or a need in both countries that the bilateral working group could address would be identified as a focus area.

The bilateral working group then developed a common framework for conducting a feasibility study that would include a workshop to discuss the findings of the feasibility study with redevelopment practitioners representing each country. The bilateral working group identified three general focus areas to be investigated: environmental issues; economic issues; and social, civic, and political issues. Sub-issues then were developed for each general focus area.

TABLE 2. GENERAL FOCUS AREAS AND SUB-ISSUES

ENVIRONMENTAL ISSUES	ECONOMIC ISSUES	SOCIAL/CIVIC/POLITICAL ISSUES
<ul style="list-style-type: none"> • Mitigation of contamination (chemistry and technology) • Assessment and characterization • Planning and land use • Regulations • Community relations • Partnership communication • Protection of natural resources • Sustainability 	<ul style="list-style-type: none"> • Market analysis and business plan (cleanup costs, tax mechanisms, property value, return on investment, and subsidies and grants) • Lending requirements • Insurance • Job creation • Infrastructure • Legal hurdles • Redevelopment master plans • Partnership communication • Marketing • Sustainability and the multiplier effect on community 	<ul style="list-style-type: none"> • Gentrification, displacement, and stabilization (environmental justice and social inclusion) • Urban planning and community vision • Community impacts (safety, health, and economic and job security) • Labor base (availability of talents and workforce development) • Community acceptance and buy-in • Organizational and jurisdictional challenges with local authorities • Civic marketing • Partnership communication • Sustainability and quality of life

Additionally, a list of “umbrella” issues was developed which included: transportation, waterfront development, industrial heritage, “green” infrastructure, cultural amenities, public safety, mixed-use development planning, regional planning, and design issues.

The working group prepared a preliminary list of stakeholders in the redevelopment process, as follows:

- Current landowners
- Consultants



- Cities, municipalities, counties, and tribes
- Property developers
- Investors
- Insurers
- Lenders
- Regulators
- Residents and neighborhood groups
- Politicians and political parties
- Lawyers
- Redevelopment agencies
- Non-government agencies
- Universities
- Media
- States
- Chambers of Commerce

The bilateral working group determined that it would be advantageous to hold technical workshops in each country, to be presented by expert practitioners in the field of contaminated sites. During the workshops, the practitioners would discuss information in, and findings of, the U.S. and German draft feasibility studies and case study information that is pertinent to the results of the feasibility study. A general schedule for completion of the U.S. and German feasibility studies was established, with the draft feasibility studies delivered in December 2000. In February 2001, a workshop was held in Philadelphia, Pennsylvania to discuss and refine the draft feasibility study. A summary of this workshop is presented in Section 5.0.



2.0 GOAL AND APPROACH

During the April 2000 meeting, the bilateral working group established as the goal of this feasibility study, the development of a list of common areas of interest related to redevelopment to support the creation of joint acceptance of feasible goals (that is, goals that can be accomplished and have a meaningful effect) and development of a work plan for Phase III. **Areas of common interest are defined as “issues in which the needs of one partner match the strengths of the other” or “the need for solutions on both sides and joint creation of solutions.”** The approach to achieving that goal for the Phase III feasibility study included the following steps:

- Step 1. Identify issues and sub-issues and possible obstacles and opportunities – An extensive amount of available literature was compiled and reviewed to identify a preliminary list (“long list”) of issues.
- Step 2. Identify sources and stakeholders associated with those issues and conduct interviews – Stakeholders in the redevelopment process were identified, including those having specific interest in selected issues. Nine interviews were then conducted with the identified stakeholders.
- Step 3. Refine issues based on source information – A “short list” of Research Topic Areas was identified based on input from the EPA leads for the bilateral working group.
- Step 4. Develop feasible goals for addressing Research Topic Areas – Goals were established for each Research Topic Area on the short list. Parameters included the desire for measurable results within the five-year time frame of Phase III.
- Step 5. Determine methods of evaluating success in achieving goals – Measurable parameters were identified for each Research Topic Area to allow a quantitative determination of success.
- Step 6. Develop work plans – Brief, specific work plans were developed for each Research Topic Area to outline EPA’s approach to achieving the goals for that issue.

Following the issuance of this draft feasibility study, EPA held a workshop for selected contaminated site redevelopment practitioners to obtain comments and views to support further refinement and selection of Research Topic Areas and work plans for Phase III.



3.0 LIST OF ISSUES

As part of Step 1 in developing this feasibility study, a review of available reference materials associated with redevelopment of contaminated sites was conducted. Based on the review, the following list of issues was compiled. Accompanying each issue is a possible solution or solutions that address elements of the issue, as well as a benefit provided by that solution. The possible solutions listed in Table 3 are not intended to be a comprehensive list of potential solutions, but rather focus areas that could be addressed by the bilateral working group that could have a meaningful impact on the identified issue.

TABLE 3. ISSUES, POSSIBLE SOLUTIONS, AND BENEFITS

ISSUE	POSSIBLE SOLUTION/BENEFIT
<p>Communities often oppose redevelopment efforts because of future uses of a site are unknown and it is not clear how those uses will effect the surrounding area. Their concerns encompass environmental; economic; and civil, political, and social factors.</p>	<p>Possible Solution: Environmental Landscaping and Design - This concept incorporates both the application of green space to enhance the attractiveness and livability of the revitalized area and the use of phytoremediation, evapotranspiration barriers, wind power, photovoltaic systems, and other concepts to support requirements for long-term remediation.</p> <p>Benefit: Enhances the attractiveness of the property and overcomes the environmental stigma associated with a site, while achieving environmental restoration.</p>
<p>Successful cleanups and redevelopment projects should reflect the views and have the support of local, regional, and state stakeholders.</p>	<p>Possible Solution: Site-Specific Environmental Redevelopment Business Plans - An environmental redevelopment business plan integrates and analyzes physical planning, economic analyses, and environmental design and restoration strategies allowing for input from local, regional, and state stakeholders. The plan permits a holistic presentation and analysis of redevelopment and environmental alternatives.</p> <p>Benefit: Documents the environmental redevelopment strategy from a holistic perspective and provides a forum for all stakeholders to review and comment on the environmental considerations related to redevelopment of contaminated site; thereby enhancing cooperation between local, regional, and state stakeholders.</p>
<p>Regulatory agencies often are overburdened.</p>	<p>Possible Solution: Privatized Review Process - To provide relief from the burden of regulatory oversight and accelerate the cleanup process, some states (for example, Illinois and Ohio) allow private, registered consultants to provide oversight of the investigation and remediation of contaminated sites. Each state has unique requirements to govern the authority and provide oversight of private, registered consultants.</p> <p>Benefit: Accelerates the review and oversight process for site redevelopment.</p>
<p>Fear of federal liability even after complying with state regulations hinders cleanup and redevelopment of contaminated sites.</p>	<p>Possible Solution: State Voluntary Cleanup Programs (VCP) - More than 30 states have VCPs to encourage cleanup of sites in a timely manner by eliminating many of the procedural and economic barriers to cleanup and reuse. However, EPA is not required to recognize state VCPs or honor any liability protection they provide. Conducting a study to scientifically assess the effectiveness of state VCPs that could lead to EPA verification of that technology tool and additional memoranda of understanding with states that would enhance the usefulness of that tool.</p> <p>Benefit: Provide unbiased analysis of performance of state VCPs to allow EPA to develop policy or verification positions on the effectiveness of such programs.</p>



ISSUE	POSSIBLE SOLUTION/BENEFIT
<p>High cleanup costs deter businesses and municipalities from redeveloping contaminated sites.</p>	<p>Possible Solution: Develop more cost-effective technologies. Benefit: Cleanup costs would be reduced. Possible Solution: Redevelopment Tax Credit - Some states (for example, Illinois and Michigan) allow tax credits for the cost of qualifying remediation, asbestos abatement, infrastructure improvement, demolition, and site preparation activities. State regulations have been promulgated to specify the criteria and procedure for approval of tax credits. Benefit: Provides an offset for redevelopment and remedial costs associated with contaminated site. Possible Solution: Tax Increment Financing (TIF) - TIF is a financing tool that uses the increase in property taxes that results from redevelopment to finance environmental remediation. Municipalities actively invest in redevelopment after establishing that an acceptable return on investment would be gained. Benefit: Provides a creative financing tool for redevelopment of contaminated sites and financial benefits to the community.</p>
<p>Potential liability of redeveloped site purchasers at redeveloped sites at which residual contamination is discovered hinders owners from selling their property or obtaining financing for redevelopment.</p>	<p>Possible Solution: Polanco Act Approach - This approach refers to California legislation that empowers redevelopment agencies to prompt cleanup of contaminated sites that are subject to redevelopment. The act provides a regulatory basis for immunity for developers and their successors based on successful assessment and remediation of the site. The act also establishes a “fee-shifting provision” under which the agency can initiate investigation and cleanup in cases where responsible parties are not responsive. Benefit: Provides a legislative basis for expediting cleanup and provides immunity for redevelopment agencies and developers and their successors.</p>
<p>Uncertain liability of owners, developers, lenders, and investors involved in the redevelopment of contaminated or potentially contaminated properties hinders cleanup.</p>	<p>Possible Solution: Liability Releases - Some states have formalized the concept that a “no further remediation letter” signifies a release from further responsibilities under a cleanup required by the state. In addition, the letters provide evidence that the site does not constitute a threat to human health and the environment (as long as the site is used in accordance with the terms of letter). Furthermore, additional guidance could be provided to clarify cleanup goal options. Benefit: Limits uncertainty about the potential requirement for additional remediation at sites where that often is an inhibiting factor for investors, developers, site owners, and public agencies.</p>
<p>Technical information about cleanup processes and technologies is difficult to explain to some stakeholders.</p>	<p>Possible Solution: Geographic Information Systems (GIS) - GIS can be used to integrate remedial investigation data, expedite data analysis, and prepare risk analysis presentations for novice and expert stakeholders that allows real-time manipulation of conceptual site models, risk screening levels, and cleanup scenarios. Developing a Web-accessible tool would promote access to the data. Benefit: Uses state-of-the-art data management techniques and decision tools to integrate diverse and complex data sets for presentation of remedial scenarios to stakeholders, thereby enhancing communication of key scientific data and facilitating buy-in to a selected cleanup scenario.</p>
<p>Communities may hesitate to redevelop sites that have historical significance.</p>	<p>Possible Solution: Reuse and Recycling of Building and Material - Materials derived from redevelopment activities often can be reused on site as construction materials for new structures or as part of landscape features. This concept includes material reuse and recycling, as well as “industrial inheritance,” through which industrial features from historical uses are included in the site design and landscaping. Benefit: Reduces industrial waste and potentially reduces redevelopment costs while maintaining industrial heritage.</p>



ISSUE	POSSIBLE SOLUTION/BENEFIT
<p>Multiple redevelopment activities in an area can lead to inconsistent regional planning.</p>	<p>Possible Solution: Regional Redevelopment Plans - Regional planning documents set a framework for continuity and consistency for individual redevelopment sites, and if developed with appropriate buy-in from regulatory and municipal stakeholders, can streamline the site redevelopment process.</p> <p>Benefit: Establishes regional parameters that offer “economy-of-scale” (the relative savings realized when the size of a facility or enterprise is increased) benefits to individual redevelopment practitioners.</p>
<p>It often is not clear what types and amounts of cleanup and redevelopment information will be required when a party applies for a loan.</p>	<p>Possible Solution: Financial Risk Management Report - This report would summarize data pertinent to lending institutions to facilitate their conducting of risk management processes when reviewing loan applications for the redevelopment of contaminated sites. The report would provide scientifically defensible technical data, a summary of regulatory requirements, and an assessment of long-term liability to assist lending institutions in quantifying project risks. Other issues addressed in the report would include remediation costs, cleanup standards, the stigma associated with the contaminated land, project profitability, level of contamination, regulatory clarity, and economic and administrative incentives (for example, tax incentives or planning changes).</p> <p>Benefit: Facilitates the transfer of pertinent and defensible data to satisfy lending institutions and accelerate the lending process.</p>
<p>High cleanup costs deter municipalities from redeveloping contaminated sites.</p>	<p>Possible Solution: Develop more cost-effective technologies.</p> <p>Benefit: Cleanup costs would be reduced.</p> <p>Possible Solution: Tax Increment Financing (TIF) - TIF is a financing tool that uses the increase in property taxes that results from redevelopment to finance environmental remediation. Municipalities actively invest in redevelopment after establishing that an acceptable return on investment would be gained.</p> <p>Benefit: Provides a creative financing tool for redevelopment of contaminated sites and financial benefits to the community.</p>
<p>Uninformed and uninvolved stakeholders can hinder the redevelopment process.</p>	<p>Possible Solution: Stakeholder coordination guide for building partnerships - The document would serve as a primer to assist lead agencies responsible for redevelopment of contaminated sites in developing an integrated, well-coordinated approach to the redevelopment process. Development of such a guide would address the almost universal theme that partnerships are an essential ingredient in a successful redevelopment project.</p> <p>Benefit: Provides a tool for active partnering and coordination to facilitate the redevelopment process, primarily for stakeholders that are new to the process.</p>
<p>Insurers, developers, and stakeholders want to know the entire cost of a cleanup and redevelopment and how it would benefit them.</p>	<p>Possible Solution: Quantifying the cost of environmental cleanup - develop and validate a cost estimating tool for quantifying cleanup and redevelopment costs, possibly a web-based or downloadable tool.</p> <p>Benefit: In a broader context, a “redevelopment cost model” for contaminated sites would provide an analysis of all the costs and benefits attributable to the redevelopment project.</p>



4.0 INTERVIEWS

As part of Step 2 in developing this feasibility study, interviews were conducted with stakeholders associated with the redevelopment process. These stakeholders included representatives from the insurance industry, federal and state government, and law firms. In addition, an extensive bibliography was compiled and reviewed during the feasibility study. A copy of the bibliography is provided as Appendix A of this report.

Summaries of the interviews conducted with the stakeholders listed previously are presented in Table 4. In general, participants seemed to experience the same types of obstacles in their efforts to obtain federal funding. Most individuals believed that large public entities are the only entities that succeed in obtaining federal Brownfields funding and that smaller communities and private entities receive no federal support. Most participants also recommended teaming with large, public entities to ensure success.

TABLE 4. SUMMARY OF STAKEHOLDER INTERVIEWS*

STAKEHOLDER	SUMMARY
Insurance Industry	Insurance companies, such as the American International Group (AIG) Environmental have established programs, such as BUILD (Brownfields: Utilizing Insurance for Land Redevelopment) as a means to expedite the Brownfields process. AIG provides BUILD as a service that prevents anyone from assuming unwanted liabilities. BUILD helps to keep the redevelopment process moving forward because all participants know their financial obligations. If government funds are insufficient, environmental insurance can provide the funding to keep the cleanup moving. The BUILD program consists of flexible environmental insurance products such as pollution legal liability/cleanup cost caps (PLL/CCC) and secured creditor impaired property policies (secured creditor).
Federal, State, and Local Government	Government agencies, such as the Appalachian Regional Commission (ARC), are forming partnerships with other federal, state, and local governments to help expedite the Brownfields process. ARC is planning a series of workshops in Mississippi to encourage stakeholders to take advantage of the federal government funding for Brownfields projects in their regions.
State Government	State governments, such as the Arkansas Department of Environmental Quality (ADEQ) are developing Brownfield guidance documents designed for use by municipalities. The ADEQ guidance document will provide information about how to obtain federal funding for Brownfields. The document also will discuss how to begin a redevelopment project and acceptable levels of cleanup.
Local Government	Local governments, such as the Economic Development Department of the city of Dallas are developing job-training programs to support the redevelopment of businesses in Brownfields areas. Another issue of particular concern to Dallas is the myth that the West Dallas area is an environmental cleanup disaster. That myth poses a problem because it has led people to believe that it would be extremely costly to clean up and redevelop Brownfields sites in West Dallas. There have been approximately 20 successful Brownfields redevelopment projects in the Dallas area.



STAKEHOLDER	SUMMARY
Law Firms	<p>Several law firms identified potential barriers to or tools for use in the redevelopment of contaminated sites that their firms have encountered:</p> <ul style="list-style-type: none"> • California's Polanco Act provides a unique tool that allows municipal redevelopment agencies to initiate cleanup and protects future owners of the redeveloped site • Building partnerships with public agencies as well as private stakeholders can facilitate the redevelopment process • Skepticism about available insurance products that cap redevelopment costs for liabilities • Increased flexibility and accelerated responses for cleanup under the National Contingency Plan would be beneficial • Limited guidance provided by local agencies on cleanup issues • All federal funding for Brownfields projects goes to public entities • Small communities and private individuals pursuing Brownfields designation cannot obtain federal assistance • Federal tax deductions are effective only in limited situations and have never been able to help private individuals obtain Brownfields money <p>Some attorneys suggested that specialized assistance should be provided to help private entities learn how to begin the Brownfields qualification processes.</p>
Local Government	<p>Local governments, such as the Hudson County Division of Housing and Community Development in Jersey City identified several problems that they have encountered in respect to Brownfields redevelopment:</p> <ul style="list-style-type: none"> • Smaller communities have difficulty obtaining federal funding eligibility and completing the complex Brownfields regulations • Obtaining sufficient funds to clean up entire sites is difficult • Identifying the right program to use • The gap between what owners need (more federal and state funding and technical support) and what they receive • Lack of interest in financing by banks • Insurance issues • Municipalities delay foreclosures because of fear that they will be held responsible for the cleanup of the site • Uncertainty about the extent of contamination at a site <p>Hudson County has found that in order to help the smaller communities the county has to become involved. Listed below are tools and processes they have found successful:</p> <ul style="list-style-type: none"> • Providing technical consultants • Obtaining grants from EPA • Establishing a loan program • Assigning officials to the communities • Developing letters that limit liability; similar to covenant not to sue letters
State Government	<p>State governments, such as the state of New Jersey discussed the advantages of communicating regional environmental data to stakeholders through an Internet-based system. The state of New Jersey currently is developing such an information management system.</p>

* This table represents a summary of options collected from each stakeholder group and not necessarily EPA policy.



5.0 U.S. WORKSHOP ON REDEVELOPMENT OF CONTAMINATED SITES

On February 6 and 7, 2001 a workshop was held in Philadelphia, Pennsylvania to discuss issues and focus areas for Phase III of the U.S.-German Bilateral Working Group. The focus of the workshop was to identify tools and techniques to overcome barriers to redevelopment of contaminated sites. Over the 2-day workshop, a series of presentations, discussions, and breakout sessions were conducted to gather information from redevelopment stakeholders and practitioners. Additionally, on February 8, 2001, a series of meetings and a site tour was conducted in Trenton, New Jersey (the activities of February 8 are not summarized herein).

The following is a brief summary of the workshop activities. Available presentation materials are noted.

Tuesday, February 6, 2001

Introductions/Agenda - Annette Gatchett, EPA - Ms. Gatchett welcomed everyone to the workshop, presented a brief summary of the workshop objectives, and the history of the U.S.-German Bilateral Working Group. A copy of Ms. Gatchett's presentation is available upon request.

Results of the German Feasibility Study and Workshop - Kai Steffens, Probiotec - Mr. Steffens summarized the results of the German Feasibility Study and workshop highlights including a three tier programmatic approach (Strategic, Project, and Tool levels) as well as specific areas of research to be conducted under Phase III of the Bilateral Working Group. A copy of Mr. Steffens' presentation is available upon request.

Draft U.S. Feasibility Study - Roger Argus, Tetra Tech - Mr. Argus presented the draft U.S. Feasibility Study for EPA's participation in Phase III of the U.S-German Bilateral Working Group. The Feasibility Study identified five specific focus areas and three general interest areas. A copy of Mr. Argus' presentation is available upon request.

Barriers to the Brownfield Developer and Service Provider - Greg Romaine, Brownfields Development Group, LLC - Mr. Romaine provided an overview of the primary barriers to redevelopment of contaminated sites, methods currently used to overcome those barriers, and specific improvements that would be helpful. A copy of Mr. Romaine's presentation is available upon request.

Economic Development, Remediation, and Reuse of Mound - Linda Watkins, Site Transition Manager, DOE Mound Facility - Ms. Watkins presented a brief history of DOE's Mound site, their organization and



mission, obstacles and challenges to redeveloping the site, and lessons learned. A copy of Ms. Watkins presentation is available upon request.

Redevelopment of Contaminated Sites - Mark Del Piero, Consultant - Mr. Del Piero provided an overview of municipal, redevelopment agency, and private consultant perspectives on redevelopment of contaminated sites.

Wednesday, February 7, 2001

Brownfield Development in the City of Philadelphia - Jon Edelstein Manager, Brownfields Development City of Philadelphia - Mr. Edelstein presented an overview of the priorities and procedures for redevelopment of contaminated sites owned by the municipality of Philadelphia. A handout describing the redevelopment assistance available in Philadelphia is available upon request.

New Jersey Perspective on Redevelopment of Contaminated Sites - Mary Beth Brenner, Special Assistant to the Commissioner NJDEP - Ms. Brenner provided an overview of New Jersey's approach to redevelopment of contaminated sites and identified two major barriers: (1) multiple state agencies are responsible for financing redevelopment requiring a coordinated approach including public outreach, and (2) the need to identify and inventory contaminated sites. A copy of Ms. Brenner's presentation is available upon request.

A Lender's Perspective on Brownfields Transactions - Garen Sahagian, Environmental Bankers Association - Mr. Sahagian outlined a lender's perspective on parameters affecting funding of contaminated property redevelopment deals. Mr. Sahagian described the factors related to setting up and implementing a transaction strategy. A copy of Mr. Sahagian's presentation is available upon request.

Breakout Session A

This breakout session focused on obstacles, stakeholders, resources, and tools for contaminated sites for which there is no economic driver for redevelopment. Factors addressed for these sites included: vision, site characterization and assessment, community empowerment, government bureaucracy, and business. A summary of results of Breakout Session A is presented in Table 5.

Breakout Session B

This breakout session focused on obstacles, stakeholders, resources, and tools for contaminated sites for which there is a limited economic driver for redevelopment. A summary of results of Breakout Session B



is presented in Table 6. Additionally, the following stakeholders and resources were identified during the breakout session:

STAKEHOLDERS

1. Community
2. Developer
3. Business owners
4. Owners: private/public
5. Financial Services
6. Insurance companies
7. Consultants
8. State
9. Regulators
10. City
11. PRP- past owner
12. Buyer

RESOURCES

1. Risk Assessor
2. Remediation Services
3. Consultant
4. Public funding incentives to private investors
5. Pool multiple types of public funding on incentives (tax liabilities, credits, etc)
6. Private sector to help identify a site, fund, and start redevelopment process
7. New application of existing resources used for brownfields
8. Bankruptcy- turn into resources
9. Impact fees
10. Regional coordination "circuit riders"
11. Regional revenue sharing

Presentation of Discussion Session Summaries

A representative of each breakout session presented summaries of their respective discussions. In addition, Ms. Gatchett presented a brief closeout of the workshop.



TABLE 5. SUMMARY OF GROUP A BREAKOUT SESSION – BROWNFIELDS WITH VERY LIMITED ECONOMIC RETURN ON INVESTMENT

Element	Vision/Creation	Site Characterization/Assessment	Community Empowerment	Government Bureaucracy	Business
Obstacles	<ul style="list-style-type: none"> No market driver Lack of forums Lack of education 	<ul style="list-style-type: none"> Access Funding Bad information Technical knowledge 	<ul style="list-style-type: none"> Conflict Apathy Distrust Creative planning 	<ul style="list-style-type: none"> Malaise Credibility Information distribution Scope 	<ul style="list-style-type: none"> No motivation Lack of knowledge of innovative technologies
Stakeholders	<ul style="list-style-type: none"> Neighbors (matriarch) Mayor/locals 	<ul style="list-style-type: none"> EPA Owner Utilities Municipalities Neighbors 	<ul style="list-style-type: none"> Redevelopment Agency Environmental Justice Community Special Interests 	<ul style="list-style-type: none"> Federal State Local Regional Neighborhood Cultural Religious 	<ul style="list-style-type: none"> Bankers Insurers Consultants Developers Utilities Lawyers 3rd Party litigants
Resources	<ul style="list-style-type: none"> Meeting location Time Information Access 	<ul style="list-style-type: none"> Voluntary Cleanup Programs State funds Verification Program Contract laboratory program 	<ul style="list-style-type: none"> Volunteer labor Education 	<ul style="list-style-type: none"> Grants Tax mechanisms HUD/EDA funds Loans Government funding 	<ul style="list-style-type: none"> Goodwill Image/public relations Community investment
Tools	<ul style="list-style-type: none"> Internet/email Success stories 	<ul style="list-style-type: none"> Field screening tools Verification programs 	<ul style="list-style-type: none"> Intensive outreach Youth/energy 	<ul style="list-style-type: none"> Master plans Low tech notice Site inventories 	<ul style="list-style-type: none"> Information from associations/groups/government
Bilateral	Best practices/presumptive remedies/outreach toolbox/inventories/deal flow/national and local conferences				



TABLE 6. SUMMARY OF GROUP B BREAKOUT SESSION – BROWNFIELDS WITH LOW ECONOMIC RETURN ON INVESTMENT

Obstacles	Tools
1. Community “fear”	<ul style="list-style-type: none"> • Community education & communication (Redevelopment & contaminated sites education, “smart growth,” use of citizen guides, marketing) • Communications strategy—GIS, Internet • Heritage to connect people ⁽¹⁾ • Marketing
2. Absence of vision/creativity for land use	<ul style="list-style-type: none"> • Create vision with all stakeholders involvement; Bring everyone together to the table during pre-planning • Heritage to connect people ⁽¹⁾ • Management strategy • Balanced sustainable grant system; national ecological impact programs – public facility – design competition • Visual model – use of arts
3. Making team work	<ul style="list-style-type: none"> • Heritage to connect people ⁽¹⁾ • Management strategy
4. Business/developer may not bring in community	<ul style="list-style-type: none"> • Heritage to connect people ⁽¹⁾ • “Natural” infrastructure – parks, bike trails, greenways • Marketing
5. Lack of information about what is in community and their role	<ul style="list-style-type: none"> • Community education & communication (Redevelopment & contaminated sites education, “smart growth,” use of citizen guides, marketing) • Communications strategy—GIS, Internet • Heritage to connect people ⁽¹⁾ • Master developer – set up • Internet/GIS visuals communication strategy • Marketing
6. Coordination of effort	<ul style="list-style-type: none"> • Heritage to connect people ⁽¹⁾ • Management strategy



Obstacles	Tools
7. Too much focus on area – no big picture strategy	<ul style="list-style-type: none"> Community education & communication (Redevelopment & contaminated sites education, “smart growth,” use of citizen guides, marketing) Communications strategy—GIS, Internet Create vision with all stakeholders involvement; Bring everyone together to the table during pre-planning Heritage to connect people ⁽¹⁾ “Natural” infrastructure – parks, bike trails, greenways Management strategy Urban sprawl regulations
8. Private owners allowing access	(none stated)
9. Time	<ul style="list-style-type: none"> Expedited accelerated cleanup – fix analytical technologies, sampling smarter
10. Uncertainty	<ul style="list-style-type: none"> Expedited accelerated cleanup – fix analytical technologies, sampling smarter Education/planning – city
11. Subsidized greenspace development	<ul style="list-style-type: none"> Marketing Balanced sustainable grant system; national ecological impact programs – public facility – design competition
12. Lack of reward for creativity (this is what we’ve always done; misapplication of existing regulation guidance including guidance versus regulatory interpretation)	<ul style="list-style-type: none"> Visual model – use of arts
13. Lack of civil engineering knowledge	<ul style="list-style-type: none"> Visual model – use of arts Knowledge – “smart building tools” – Restrictive guidance documents
14. Color of money	(none stated)
15. Real or perceived quality of live – urban	<ul style="list-style-type: none"> Marketing Urban sprawl regulations
16. Geographically separated sites/people – competition	<ul style="list-style-type: none"> Regional coordination, circuit riders, revenue sharing
17. Liability	(none stated)
18. Buyer/seller agreement; negotiation; lack of disclosure; no consistency w/ clauses	<ul style="list-style-type: none"> Education/guidance; advisory group – expert on public side

(1) Heritage to connect people means connecting people to their heritage as associated to the site; this concept is a common thread across all obstacles.



6.0 REFINED LIST OF RESEARCH TOPIC AREAS

As part of Step 3 in developing this feasibility study, a list of refined Research Topic Areas was developed based on input received from the U.S. workshop, EPA leads for the bilateral working group, and information collected from the interviews conducted with stakeholders summarized in Section 4.0. The refined list includes three Research Topic Areas:

- **Site-Specific Characterization and Cleanup**
- **Redevelopment Business and Management Plans**
- **Risk Communication, Guidance, and Education**

Table 7 summarizes each Research Topic Area identified as well as goals for each in terms of work products and activities.

The success of the Phase III activities of the bilateral working group will be measured in two ways. First, it will be measured by the degree of completion of the work products, activities, goals, and measures of success identified in Table 7. Whenever possible, the degree of success will be measured quantitatively as it is related to each product, activity, or outcome. Second, it was suggested that EPA will compile information about and document, on an annual basis, the following indicators to assess changes related to the successful redevelopment of contaminated sites:

- Determine the overall trends in the number of acres approved for development and in the reduction of the number of acres of Brownfields.
- Identify changes in property tax revenue at selected sites that have been redeveloped.
- Determine the leverage ratio between public and private investments for selected redevelopment projects.
- Calculate the number of jobs created directly and indirectly by specific redevelopment projects.
- Determine the trend in the number of cleanups at redevelopment sites (EPA already tracks such data).
- Determine any population change in the localities near redevelopment projects, as Brownfields projects are implemented.
- Evaluate increases in property values for localities near redevelopment projects.





TABLE 7. RESEARCH TOPIC AREAS

RESEARCH TOPIC AREA (RTA)		DESCRIPTION	POSSIBLE WORK PRODUCTS AND ACTIVITIES
<p>RTA-1: Site-Specific Characterization and Cleanup</p>	<p>This RTA will focus on demonstration and technology transfer of characterization and cleanup technologies including field-screening technologies. These technologies are either new to the marketplace or are demonstrated under Superfund and need to be transferred to redevelopment of contaminated sites.</p> <p>Examples include the use of environmental landscaping as part of the cleanup plan for redevelopment sites and involvement of long-term stewardship of sites. Technical demonstrations under this RTA may include low cost technologies such as phytoremediation, innovative infiltration control through landscaping and site design, long-term operation and maintenance, innovative field screening technologies for contaminants of concern, optimization of remedial systems, and innovative monitoring technologies.</p> <p>This focus area may also include recycling materials or site structures and the concept of "industrial inheritance."</p> <p>Demonstrations under this RTA may include technical support to redevelopment projects to assist in maximizing recycling of materials and site structures and subsequent documentation of the effectiveness of the recycling and reuse.</p>	<ul style="list-style-type: none"> • Demonstration of innovative site characterization and cleanup technologies according to the SITE model with application to redevelopment of contaminated sites. • Demonstrate field-screening technologies as they apply to rapid characterization of redevelopment sites. • Document the approach to, performance of, and cost-effectiveness of reuse of building material at five "model" sites. • Demonstrate reuse and recycling in partnership with selected redevelopment projects (prepare demonstration plan, facilitate implementation, and document results). • Demonstrate, evaluate, and document environmental landscaping, including the use of preexisting structures and long-term stewardship at redevelopment sites. • Demonstrate innovative techniques for landscaping-related treatment technologies, long-term operation and maintenance, optimization of remedial systems, and innovative monitoring technologies. • Share information about state decision-making tools and cleanup goals. • Develop technology transfer documents for site-specific tools to enhance their acceptance across state lines. 	
<p>RTA-2: Redevelopment Business and Management Plans</p>	<p>This RTA will address demonstrating the advantages and benefits of formal, comprehensive business and management planning. Demonstrations conducted under this RTA may include development and evaluation of regional redevelopment business plans, and site-specific environmental redevelopment business plans as they relate to integrating site cleanup. This would include the use of state-of-the-art risk assessment techniques, GIS, cost models, and other risk management tools/technologies (for example, cleanup goals to develop and support planning) as part of a redevelopment impact analysis.</p> <p>Additionally, allowance of tax credits for qualifying remediation, asbestos abatement, infrastructure improvement, demolition, and site preparation costs is an effective method of encouraging redevelopment of contaminated sites. Information about the issue may be shared by preparation of site-specific case studies that documents redevelopment tax credits for various sizes and types of redevelopment projects.</p>	<ul style="list-style-type: none"> • Collect examples of regional redevelopment business plans. • Develop a model regional redevelopment business plan/integrated cleanup plan in partnership with a local redevelopment agency to be selected. • Develop an internet web page to post the model and samples of regional redevelopment business plans/cleanup plan. • Develop and demonstrate a model site-specific environmental redevelopment business plan at one or more redevelopment sites. • Develop tools to assist stakeholders and developers in obtaining federal assistance. • Identify, demonstrate, and evaluate risk assessment and GIS techniques, cost models, data presentation techniques (format, type, and amount), and other risk management tools. 	



**United States and German Bilateral Working Group
On Redevelopment of Contaminated Sites
Final Feasibility Study**

RESEARCH TOPIC AREA (RTA)		DESCRIPTION	POSSIBLE WORK PRODUCTS AND ACTIVITIES
<p>RTA-3: Risk Communication, Guidance, and Education</p>	<p>This RTA includes education and training materials for stakeholders on contaminant risk, fate and transport, treatment, and risk management alternatives. Demonstrations may include training on treatment technologies (both U.S. and German), facilitation of redevelopment technical risk communication workshops, and development of technical risk communication materials for specific technical issues related to redevelopment of contaminated sites.</p> <p>This RTA may also build on EPA's relationship with the Interstate Technology and Regulatory Cooperation (ITRC) Work Group and includes EPA facilitation of interstate cooperation. Demonstrations conducted under this RTA may include facilitated transfer of risk management as well as technology cost and performance data and redevelopment tools.</p>	<ul style="list-style-type: none"> • Develop training materials for specific outreach issues based on RTA 1 and RTA 2. • Develop a community outreach guide to assist stakeholders in communicating technical information related to innovative cleanup and characterization technologies demonstrated under the SITE program. • Develop risk communication materials for technical communication workshops. • Prepare technical risk communication materials for specific issues (for example, building material reuse). 	



7.0 PROPOSED WORK PLANS

The following are proposed work plans based on the work product and activity goals established in Section 6.0. The work plans provide a framework for discussion at the upcoming bilateral working group meeting scheduled for the week of April 23, 2001 in Bonn, Germany. It is expected that the discussions at the working group meeting will finalize the Research Topic Areas and general approach in each country.



PROPOSED FEASIBILITY STUDY WORK PLAN		
Title: Site-Specific Characterization and Cleanup		Type: Research Topic Area (RTA-1)
Background:		
<p>The U.S. Environmental Protection Agency (EPA) and the German Federal Office of the Environment (UBA) Bilateral Working Group currently is focused on sharing information and evaluating new solutions to facilitate the redevelopment of contaminated sites. Currently, EPA has identified several innovative approaches, tools, and technologies that could facilitate the redevelopment process. The identified solutions or Research Topic Areas are being evaluated through a detailed review and analysis of current and past site redevelopment activities and, in some cases, demonstrated through model projects at EPA pilot program sites. Once those efforts have been completed, EPA will share the results of the analyses and demonstration projects through publications, Web sites, and conference presentations. By using model projects to demonstrate exemplary approaches to site redevelopment, EPA hopes to provide a mechanism for evaluating new approaches and technologies and then transferring those lessons learned to interested parties throughout the U.S. and Germany. Site-Specific Characterization and Cleanup is one such Research Topic Area.</p>		
Approach:		
<p>Identification, demonstration, and technology transfer of innovative site-specific characterization and cleanup technologies will be accomplished for emerging technologies through the established protocols of EPA's Superfund Innovative Technology Evaluation (SITE) Program. In addition to in situ and ex situ characterization and treatment technologies, the reuse and recycling of building materials may be evaluated as an effective method for reducing industrial waste and redevelopment costs while maintaining industrial heritage. This RTA may include recycling materials or site structures and the concept of "industrial inheritance." To explore ways that building material reuse and recycling might be a successful tool for redevelopment, demonstrations will be conducted that address how to provide technical support to redevelopment projects to assist in maximizing recycling of materials and site structures and subsequent documentation of the effectiveness of the recycling and reuse. This RTA may also include the use of environmental landscaping as part of a cleanup plan could be an effective method for enhancing reuse attractiveness and overcoming the stigma associated with a site while achieving environmental restoration. Additionally, demonstrations may be conducted that address phytoremediation, innovative infiltration control through landscaping and site design, long-term operation and maintenance, remedial system optimization, and innovative monitoring technologies.</p>		
Task 1:	Conduct Research and Select Sites – Collect examples of sites that have reused and recycled building materials and identify future sites for EPA to assist in implementing reuse and recycling of building materials. Also, collect examples of sites that have used environmental landscaping in their cleanup plans. Select sites for demonstrating field screening technologies, environmental landscaping techniques, phytoremediation, innovative infiltration control through landscaping and site design, long-term operation and maintenance, remedial system optimization, and innovative monitoring technologies.	
Task 2:	Develop Demonstration Plans – Develop site-specific demonstration plans for reuse and recycling of building materials at the sites selected under in Task 1.	
Task 3:	Implement Demonstration Plans – Implement EPA-endorsed demonstration plans at up to five redevelopment sites in partnership with selected redevelopment projects.	
Task 4:	Develop Report – Develop a draft report that summarizes the findings of Tasks 1 through 3. Develop a final report based on comments received on the draft.	
Task 5:	Develop Technology Transfer Documents – Develop fact sheets, technology performance and cost summaries, and other documents to facilitate the transfer of site-specific performance information for various redevelopment tools and technologies. Documents should summarize pertinent technology or tool information to enhance acceptance across state lines.	
Schedule of Deliverables:		
Task	Title	Completion Date
Task 1	Select Sites	12 months after project initiation
Task 2	Draft Demonstration Plans	16 months after project initiation
	Final Demonstration Plans	5 weeks after receiving comments on draft plans

**United States and German Bilateral Working Group
On Redevelopment of Contaminated Sites
Final Feasibility Study**



Task 3	Implementation of Final Demonstration Plans	8 weeks after receiving approval of final demonstration plans
Task 4	Draft Demonstration Reports	8 weeks after completing demonstration
	Final Demonstration Reports	5 weeks after receiving comments on draft report
Task 5	Draft Technology Transfer Documents	To be determined
	Final Technology Transfer Documents	To be determined



PROPOSED FEASIBILITY STUDY WORK PLAN		
Title: Risk Communication, Guidance, and Education		Type: Research Topic Area (RTA-3)
Background:		
<p>The U.S. Environmental Protection Agency (EPA) and the German Federal Office of the Environment (UBA) Bilateral Working Group currently is focused on sharing information and evaluating new solutions to facilitate the redevelopment of contaminated sites. Currently, EPA has identified several innovative approaches, tools, and technologies that could facilitate the redevelopment process. The identified solutions or Research Topic Areas are being evaluated through a detailed review and analysis of current and past site redevelopment activities and, in some cases, demonstrated through model projects at EPA pilot program sites. Once those efforts have been completed, EPA will share the results of the analyses and demonstration projects through publications, Web sites, and conference presentations. By using model projects to demonstrate exemplary approaches to site redevelopment, EPA hopes to provide a mechanism for evaluating new approaches and technologies and then transferring those lessons learned to interested parties throughout the U.S. and Germany. Risk communication, guidance, and education is one such Research Topic Area.</p>		
Approach:		
<p>Risk communication, guidance, and education may be accomplished through development of technical training programs and documents on emerging tools and technologies becoming available for redevelopment of contaminated sites. Additionally, technical issues related to site characterization, contaminant risks, and fate and transport of contaminants may be suitable topics for development of communication tools for research developments. Additionally, the use of community outreach guides could be an effective method for encouraging proactive partnering and coordination to facilitate the redevelopment process especially for stakeholders that are new to the process. To explore ways that community outreach might be a successful tool for redevelopment, demonstrations will be conducted that address training on treatment technologies (both U.S. and German), facilitation of redevelopment technical communication workshops, and development of technical communication materials for specific technical issues related to redevelopment of contaminated sites.</p>		
Task 1:	Conduct Research and Analysis – Collect information about existing types of training materials for selected outreach issues and conduct an analysis to determine what training materials should be developed.	
Task 2:	Develop Training – Develop training materials based on information collected in Task 1.	
Task 3:	Develop Community Outreach Guide – Develop a community outreach guide to assist stakeholders in communicating technical information related to innovative cleanup and characterization technologies demonstrated under the SITE program.	
Task 4:	Develop Workshop Materials – Develop materials for technical communication workshops; for example, capsules for specific issues such as building material reuse.	
Schedule of Deliverables:		
Task	Title	Completion Date
Task 1	Training Analysis	4 months after project initiation
Task 2	Draft Training Materials	To be determined
	Final Training Materials	To be determined
Task 3	Draft Community Outreach Guide	12 months after project initiation
	Final Community Outreach Guide	5 weeks after receipt of comments on draft guide
Task 4	Draft Workshop Materials	To be determined
	Final Workshop Materials	To be determined



8.0 FUTURE DIRECTION

This final feasibility study will be issued prior to a meeting of the Bilateral Working Group scheduled for the week of April 23, 2001 in Bonn, Germany. During that meeting, the Research Topic Areas for Phase III will be finalized and a framework will be established under which the two countries, over the next three to five years, can move forward in the cleanup and redevelopment of contaminated sites.

APPENDIX A
BIBLIOGRAPHY OF RESOURCES



BIBLIOGRAPHY OF RESOURCES FOR THE FEASIBILITY STUDY

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