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Office of Solid Waste and Emergency Response

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Name of Contact Person	Mail Code	Office	Telephone Code
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3. Title

RI/FS Improvements

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Provides guidance for initiatives aimed at improving performance on Sueprfund RI/FS projects.

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9. Signature of Lead Office Directives Coordinator	Date
Richard Hyde	7/23/87
10. Name and Title of Approving Official	Date
Henry L. Longest II, Director OERR	7/23/87

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 23 1987

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE
OSWER Directive 9355.0-20

MEMORANDUM

SUBJECT: RI/FS IMPROVEMENTS

FROM: Henry L. Longest II, Director
Office of Emergency and Remedial Response

TO: Directors, Waste Management Division
Regions I, IV, V, VI, VII, and VIII
Director, Emergency and Remedial Response Division
Region II
Directors, Hazardous Waste Management Division
Regions III and X
Director, Toxic and Waste Management Division
Region IX

Early in the Superfund program, EPA anticipated that an average RI/FS would be completed in 18 months. Inefficiencies in the process have resulted in significant project delays and, in some cases, unnecessary cost increases. Currently, project planning activities take approximately 6 months to complete and a full RI/FS runs an average of 25 months. EPA's goal, through implementing the RI/FS improvement recommendations in the attachment to this memo, is to improve the schedule and cost efficiency of the RI/FS process while concurrently improving the technical quality of the RI/FS work.

In a joint effort between Headquarters and the Regions, EPA has developed several initiatives aimed at improving performance on Superfund RI/FS projects. The attached RI/FS Improvement Analysis report discusses several of these initiatives and proposes implementation strategies for improving project performance while concurrently streamlining the RI/FS schedule. These initiatives are applicable to both Federal-lead and State-lead RI/FS projects. The RI/FS Improvement Analysis report was developed by evaluating previous analyses of the RI/FS process, compiling a detailed critical path chart of the existing RI/FS process, and modeling various implementation alternatives aimed at improving project efficiency and technical quality. In addition to using data from completed fund-lead projects, the analysis also relied on input from over 50 individuals in 7 Regions. The focus of the analysis was to develop a realistic strategy for implementing a phased RI/FS that would facilitate meeting SARA objectives without requiring major changes to the remedial program. The study focused on the following areas for RI/FS improvement:

- Phased RI/FS Execution
- Streamlined Project Planning

- Management of Handoffs and Streamlined Critical Activities
- Quality Control and Technical Advisory Committee

The attachment to this memo presents definitions, recommendations, implementation assistance, and results for each of the above areas for program improvement. It also presents information on other guidance documents, training, and future program initiatives.

OERR recommends that the suggestions contained in this report and the attachment be used to expedite the RI/FS process and meet the Superfund improvement objectives. These objectives are (1) to contain project planning activities within a 3-month period after project initiation, (2) to ultimately reduce the overall RI/FS process to an 18-month schedule, (3) to reduce overall costs, and (4) to improve technical quality of the RI/FSs. These goals are ambitious; however, they are absolutely necessary in light of the program expansion and schedules mandated by SARA. The success of this RI/FS improvement initiative will depend largely on your ability to integrate the guidance and recommendations made here into Regional operations. Headquarters will continue to provide the Regions with policy and technical support as well as program management tools to help accomplish this goal. If you have any questions regarding these initiatives, feel free to contact me or have your staff contact Don White or Nancy Willis of my staff at at FTS 475-9755 or FTS 382-2347, respectively.

Attachment

cc: Environmental Services Division Directors (Regions I-X)
Air Division Directors (Regions I-X)
Water Division Directors (Regions I-X)

ATTACHMENT

RI/FS IMPROVEMENTS

PHASED RI/FS EXECUTION

Definition

The RI/FS is evolving into a more interactive process which leads toward phasing the RI and FS, as discussed in OSWER Directive 9355.0-19, Interim Guidance on Superfund Selection of Remedy. In a phased RI/FS, the results of each phase are evaluated and used to define the more focused scope of subsequent phases, thereby minimizing extraneous activities. This leads toward more efficient and effective data collection and evaluation efforts. The format for each RI/FS must be developed on a site-specific basis, but the following definitions can be used as a starting point for developing a phased RI/FS:

- Site Characterization
- Development of Alternatives
- Initial Screening of Alternatives
- Field Investigation/Treatability Studies
- Detailed Analysis of Alternatives

Proper planning is important to effective execution of a phased RI/FS. This requires closely coordinating development of the RI with the FS to assess data needs for alternative evaluation and treatability studies. The development of data quality objectives for each phase is important to ensure collection of adequate data of sufficient quality for each specified data use. Also, data needs and associated costs should be commensurate with the level of complexity of the site.

Recommendation

Phasing the RI/FS process, with incorporation of DQOs before the initiation of each stage of data collection, should become a standard approach for planning RI/FS projects.

Implementation Assistance

- **Interim Guidance on Superfund Selection of Remedy (OSWER Directive 9355.0-19) - gives explanation of phases in the RI/FS process and incorporation of SARA requirements**
- **Data Quality Objectives for Remedial Response Activities (OSWER Directive 9355.0-7B) - explains procedures for development of data quality objectives at different stages in the RI/FS process; focuses on how to determine data quality needs based on data uses**

- RI/FS Guidance (under revision) - detailed guidance on RI/FS procedures in compliance with SARA requirements
- Headquarters OERR staff - Headquarters assistance will be available to Regions in planning and implementing new procedures
- RI/FS Standardized Tasks (OSWER Directive No. 9242.3-7) - establishes standard tasks that will expedite project planning activities

Results

Implementation of a phased RI/FS approach should yield the following results:

- Interim activities such as the initial site visit and limited field sampling will help define the work plan and site conceptual model more clearly from the beginning of the process.
- Earlier initiation of field activities (reduced project planning phase) because project planning activities can focus on initial phases of the RI/FS; subsequent phases only need to be discussed in general terms in the initial work plan.
- More effective use of resources on the job through using DQOs to guide data collection activities and working from a very focused scope at each phase of the work.
- Elimination of infeasible remedial alternatives earlier in the RI/FS process through evaluation of results from early data collection phase.
- Assist in reducing overall RI/FS schedule and overall project costs.
- Conduct of treatability studies during the RI/FS.

STREAMLINED PROJECT PLANNING

Definition

Project planning encompasses the period from work assignment initiation through approval of the work plan. For past RI/FS projects, these activities have taken up to 18 months (with an average of 6 months) and a full third of the project budget to complete. Efforts to streamline the project planning process are focused on completing these activities within 3 months after work assignment initiation.

An integral part of this planning process is development of data quality objectives (DQOs) for each phase of data collection activity. DQOs are qualitative and quantitative statements which specify the quality of the data required for specific uses. DQOs are established during project scoping and at the initiation of any subsequent data collection activities to ensure that data are of sufficient quality for their intended use.

Recommendation

Recommendations for streamlining the project planning process are as follows:

- Consolidate S&A plans and QAPPs - As stand-alone documents, these plans often are redundant and therefore require duplication of contractors' efforts.

- Incorporate standard procedures by reference - This will avoid repeating technical reviews of a procedure that has already been approved for use in the Region.

- Limit intra-Agency reviews to contractual requirements - Rely on contractors' internal quality control/review procedures and RPM review for most project documents and limit intra-Agency reviews to the work plan, community relations plan, and S&A plan.

- Initiate preliminary site work upon interim authorization - Authorization for initiation of Phase I field activities can be granted upon approval of the Phase I S&A plan, possibly before approval of the complete work plan.

- Make work plans specific for initial phases of work, general for later phases - This will expedite development and review of the work plan; subsequent changes in the technical direction of the work can be documented through the use of a Technical Direction Memorandum (TDM), as long as the work is within the original scope and budget of the assignment.

- Incorporate Technical Advisory Committee (TAC) review into project planning phase - A TAC is a group of senior level EPA/State and contractor personnel selected to serve as technical reviewers for a project, based on their areas of expertise (e.g., hydrogeologist for a ground water site, etc.). Review of key deliverables in the draft stage by senior level personnel can improve the quality of the documents and expedite EPA intra-Agency reviews. The RPM is expected to be involved in review of interim deliverables. Early TAC review will also facilitate better management of RI/FS projects through early identification of technical and policy issues.

- Use standardized tasks - The Agency has developed a standard task structure which can be used for all RI/FS studies. This task structure will standardize cost and schedule tracking and allow development of a data base that will be used to better estimate resource requirements for new remedial projects.

Implementation Assistance

- Compendium of Field Operations Methods (OSWER Directive 9355.0-14, planned August 1987) - provides consolidated reference of available field procedures

- Revised work assignment procedures, including guidance on using TDMs

- RI/FS Standardized Tasks (OSWER Directive No. 9242.3-7) - provides standard tasks to expedite project planning

- Data Quality Objectives for Remedial Response Activities (OSWER Directive 9355.0-7B) - explains procedures for development of data quality objectives at different stages in the RI/FS process

Results

The results of implementing the above recommendations should be as follows:

- Earlier initiation of field activities helps define conceptual models more accurately and helps refine the scope of subsequent field activities

- Shortened review times

- Overall reduction of project planning time and costs through elimination of duplicative efforts

- Improved quality of deliverables

MANAGEMENT OF HANDOFFS AND STREAMLINED CRITICAL ACTIVITIES

Definition

A handoff is any transfer of responsibility for administrative or technical project activities. Examples include turning samples into CLP for analysis, turning data over to ESD for validation, or turning documents into EPA for intra-Agency review. Project handoffs have been identified as a major cause for delays in the RI/FS process. Critical activities include any RI/FS activities that lie on the critical path of the project. A delay in the execution of a critical activity will result in a delay in the RI/FS completion. In the RI/FS analysis, many key deliverables and handoffs were found to be critical activities. SARA requires increased State participation in the RI/FS process. This entails reviews that may be critical activities and will therefore have to be managed carefully to avoid creating project delays.

Recommendation

Since handoffs have been identified as a key source of project delays, they should be kept to a minimum and, when possible, should be planned so that they do not fall on the critical path for the RI/FS. Also, critical activities can be minimized by scheduling concurrent activities, by receiving interim approvals, and by phasing critical field tasks. Specific recommendations include the following:

- Turn data over to contractor for pre-analysis prior to data validation, thereby avoiding delays in data evaluation. However, unvalidated data should not be released to other organizations, Agencies, or individuals.

- Allow contractors to validate CLP data according to EPA standard procedures, with Regional audits, if this will expedite the project schedule.

- Keep intra-Agency document reviews to only those that are contractually required (The RPM will be responsible for review of other deliverables).

- When a responsibility transfer is necessary, obtain a commitment from the receiving party to meet schedule requirements.

- Involve key decision makers in the TAC meetings to reduce review time of RI/FS deliverables.

- Initiate treatability and/or pilot testing during the RI (after initial alternatives evaluation) to assist in remedial alternative selection and expedite predesign, and to keep this activity off the critical path.

- Use results from the analysis of screening samples to develop a conceptual model for the site and to perform preliminary technology and alternative screening.

- Provide interim approvals for initial field activities prior to full work plan approvals to expedite data collection and analysis.

Implementation Assistance

- RI/FS Improvement Analysis - discusses handoff analysis (Section 2.2) and provides an example of how a project can be structured to effectively manage handoffs and keep them off the critical path (Appendix C).

- RI/FS guidance (under revision) - discusses project requirements.

- Guidance on Preparation of Superfund Memorandum of Agreement - establishes voluntary procedures to assist EPA and the States in working together to maintain projects on schedule. The SMOA will be highlighted in the NCP preamble, Subpart F. (Draft, July 1987)

- Headquarters staff - available to advise on streamlining project activities.

Results

Implementation of the recommendations above should result in the following:

- Streamlined review of RI/FS deliverables

- Better control over project schedule

- Assist in meeting shorter overall project schedule and costs

QUALITY CONTROL AND TECHNICAL ADVISORY COMMITTEE

Definition

EPA wants to ensure that the RI/FS process is conducted in a manner that yields high-quality products and is comparable and consistent among the Regions. This can be accomplished through implementation of Region-specific technical quality control processes and involvement of a Technical Advisory Committee (TAC) at key project milestones. The TAC will consider such things as major technical or policy issues and if the scope and costs are commensurate with the level of complexity of the site.

Recommendation

- Identify and draw upon technical experts and/or other agencies (e.g., Bureau of Mines for a mining site) or within EPA for an early brainstorming session to review the overall scope of the project and identify technical or policy issues. The expertise required would depend on the nature and complexity of the project. Information from this session would then be made available to the TAC for consideration in their review of project deliverables.

- Identify and convene a TAC at project milestones; e.g., draft work plan, preliminary summary of site investigation (first phase RI), second phase RI, initiation of FS phase, and predesign.

- Develop a Regional RI/FS control process to be implemented for all remedial projects in your Region.

- Clearly identify reviews and signoffs required for deliverables in the Region.

Implementation Assistance

- RI/FS Improvements Analysis - presents a discussion of Regional quality control in Section 4.0.

- RI/FS and ROD guidance (under development) - for a discussion of project requirements.

- Data Quality Objectives for Remedial Response Activities (OSWER Directive 9355.0-7B) - explains procedures for development of data quality objectives at different stages in the RI/FS process.

- Compendium of Field Operations Methods (OSWER Directive 9355.0-14, planned August 1987) - provides consolidated reference of available field procedures.

- Regional and Headquarters QA staff are available to advise RPMs regarding QA and QC issues.

Results

The above recommendations should yield the following results:

- Standardized Regional quality control review procedures
- Improved consistent quality of RI/FS deliverables
- Strong technical work plans, which will improve project efficiency
- Assist in reducing overall project schedule and cost

OTHER GUIDANCE DOCUMENTS

Additional guidance is available to RPMs, State, and contractor staff to assist in improving project performance. These documents do not present specific time-saving mechanisms but their use should improve the flow of project management activities and minimize schedule slippages.

Superfund Federal-Lead Remedial Project Management Handbook (OSWER Directive No. 9255.1-1) and Superfund State-Lead Remedial Project Management Handbook (OSWER Directive 9355.2-1)

EPA has prepared two handbooks to provide guidance on remedial project management, one for Federal-lead projects and one for State-lead projects. Both of these handbooks, which will be updated periodically to incorporate program changes, are expected to become key reference documents for both experienced and new RPMs. The objective of these documents is to promote a proactive management style of preventing problems through better project planning, thereby avoiding adversely affecting project costs, schedule, or technical quality.

The revised work assignment procedures, included as an appendix to the Federal-lead handbook, rely greatly on a new work assignment form that replaces a series of forms used previously. The new procedures also allow modifications to the technical work to be approved at the Regional level using Technical Direction Memorandum (TDM). This procedure avoids the need for work assignment amendments if the changes are within the overall scope and budget of the assignment.

Community Relations in Superfund: A Handbook (OSWER Directive 9230.3A)

Under the requirements of SARA, community relations for remedial response activities will be a more visible part of the remedial program. It is imperative that community relations activities be effectively integrated with the technical work being conducted at Superfund sites. The interim version of Community Relations in Superfund: A Handbook was issued by EPA in March 1986. The handbook is currently undergoing revision to incorporate the new public participation provisions required under SARA. Upon final approval of the NCP, the handbook again will be revised to reflect the new regulations. Currently, the handbook is used by a wide range of individuals, including EPA, State, and local technical and

community relations staff. Along with required community relations activities, the handbook suggests activities to consider in the development of a site-specific community relations program.

TRAINING

EPA has a number of training courses available that are tailored toward remedial program management needs and the Superfund program. Among these are the following:

- CERCLA Orientation Course
- RPM/OSC Training Course
- Construction Management Course
- Project Officer Course
- Contract Administration Course

In addition to the above courses, RI/FS and ROD workshops are held annually. EPA encourages Regional staff to take advantage of these training opportunities. If your Region needs specialty training in specific technical areas, contact Joe Bahnick at FTS 475-8600.

FUTURE PROGRAM INITIATIVES

The guidance and recommendations described above provide project managers with readily available information for immediate use in improving performance on RI/FS projects. Additional program initiatives are under way which will assist in further reducing project schedules to the 18-month goal. EPA is delegating increasing authority over remedial assignments to the Regions. Among these efforts are revised award fee procedures and the alternate remedial contracts strategy (ARCS). OERR also has initiatives under way to develop a nationwide treatability/pilot study subcontracting support system and to develop additional technical standard procedures. We will be monitoring the effectiveness of these initiatives during Regional reviews.

Revised award fee procedures are discussed in OSWER Directive No. 9242.3-07, Implementation of the Decentralized Contractor Performance Evaluation and Award Fee Process for Selected Remedial Program Contracts. This initiative gives the Regions more control over evaluation of contractor performance and will be an integral part of ARCS implementation. This initiative was developed in part based on the responses to the questionnaire sent out as part of the RI/FS Improvements Analysis (Appendix B). We will evaluate the effectiveness of the new procedures over the next award fee period and will revise them as appropriate.

In addition, an initiative is under way to evaluate various strategies for streamlining the subcontracting process. Among the alternatives being examined are initiating subcontracting procedures early in the project planning phase and expediting signoffs on individual subcontracts.

Expert systems are also being examined for potential applications throughout the remedial program. A demonstration prototype has been developed to determine tasks, resources, and costs for an RI/FS for landfill sites. Additional modules are expected to be produced and will be available to the Regions by the end of the fiscal year. Another expert system is now available to estimate remedial construction costs for ongoing remedial assignments. This system was developed to assist with out-year budget projections only.

To facilitate transfers of information about methods for measuring and screening chemicals in the field and for quick-turnaround analyses, EPA is developing a Catalog of Field Screening Methods. The catalog will be provided to users as both a pocket guide and on disk in a dBase III system. Currently, the catalog includes about 30 field sampling or screening methods, including several gas chromatography methods, two x-ray fluorescence methods, ultraviolet fluorescence, fiber optic sensors, immunoassay, mass spectroscopy, and atomic absorption. For more information, contact Carla Dempsey of the Analytical Operations Branch at FTS 382-7906.