REQUIREMENTS, GUIDANCE AND LOGIC IN
PLANNING ENVIRONMENTAL INVESTIGATIONS:
APPROVAL VERSUS IMPLEMENTATION

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September 9, 1993

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For Presentation at the
Focus on Eastern Ground Water Issues
Presented by the Association of Ground Water
Scientists and Engineers
(a division of the National Ground Water Association)

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*Fernald Environmental Restoration Management Corporation with the U. S. Department of Energy under Contract No. DE-AC05-92OR21972
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Abstract

In today's litigious society, it is important for both private parties and government to plan and conduct environmental investigations in a scientifically sound manner, documenting the purpose, methods, and results in a consistent fashion throughout the exercise. Planning documents are prepared during the initial phases of environmental investigations. Project objectives, including data quality requirements (e.g., precision, accuracy, etc.), specific work which will be conducted to fulfill data needs, and requirements for the conduct of the described work (operating procedures) are specified. Regulatory agency approval (e.g., U.S. Environmental Protection Agency or a state agency) of these documents is often required prior to plan implementation. These approvals are necessary and appropriate to fulfilling the agency's mandated role.

Many guidance documents prepared by regulatory agencies suggest the content and format of various scoping documents. These guidelines help standardize thought processes and considerations in planning, and provide a template to ensure that both the plan and the proposed work will fulfill regulatory requirements. To be useful to the document preparer, guidance should include the following elements:

- the purpose of the guidance and a description of where it applies;
- the type of items to be addressed in planning;
- identification of requirements which are applicable to all projects for which the guidance is intended;
- identification of requirements which are only applicable in certain situations, including examples to clearly define those situations;
- a description of items to facilitate planning, including when they are and are not applicable;
• a suggested format for fulfilling applicable requirements;
• examples applications of the guidance.

Disagreements arise between planners and reviewers/approvers when elements of guidance are used as leverage to require work not directly related to project objectives. Guidance documents are often written for document reviewers instead of preparers. In many cases, guidance is inappropriately used as a milestone by which site-specific plans are judged. Regulatory agency review and approval are regarded as a primary objective of the plan, rather than as steps in mitigating a problem. The result is development of plans that are approveable, but which are difficult to implement and fail to achieve project objectives, or result in the collection of unnecessary data.

Introduction

Planning and conducting environmental investigations or remediation in a scientifically sound manner has never been more important than it is today. However, in an attempt to clear all of the regulatory hurdles in the most cost effective manner, good science may fall victim to regulatory agency policies and conventions. Costs incurred in gaining approval to use and validate results of new and innovative technologies often discourage their use in favor of more widely accepted techniques. Minor disagreements in work plan format can lead to expenditures of thousands of dollars to pay for meetings, preparation of and transmittal of letters and memorandums, conference calls, and legal and environmental consulting fees. Therefore, a strategy of gaining approval for a document may gain precedence over preparing a plan that adequately addresses the problem to be investigated.

A number of documents are available to assist regulated parties and regulatory personnel navigate their way through the legislative maze. Among other things, guidance documents present useful information on performing technical work within the scope of a regulation, how to plan projects, how to negotiate confusing regulations concerning penalties or cost recovery, and how to prepare and submit documents. The basic intent of any guidance document is to simplify and clarify the regulatory process. In practice, conventions introduced through guidance documents become standard operating procedures within certain agencies. In many cases this is warranted to standardize repetitive tasks and to shorten the learning curve for both regulated parties and inexperienced regulators. However, it would be rare for a guidance document to address all possible scenarios which may be covered by the regulation the guidance is intended to simplify. A tendency to generalize or to force a scenario into the mold of a guidance document may result in using guidance in a matter in which it was not intended. This problem may result in users not understanding the boundaries of the guidance, or from authors of guidance not properly explaining the limitations of the guidance.
The Hierarchy of Regulatory Tools

As an increasing number of real or perceived environmental threats are identified, legislators at the Federal, state, and local level are creating and passing into law an ever-expanding body of environmental statutes. On the Federal and state levels, and often at more local levels, each of these statutes require the development of a set of implementing regulations. The intent of each discrete requirement in a statute must be interpreted, broken down into its component parts such as who it affects, when it affects them, what exceptions are required, how to identify affected parties, how to demonstrate compliance, and how to assess and implement penalties for non-compliance; and finally, presented in a manner that can be understood by the regulated community and published. A typical hierarchy for environmental laws and regulations may include the original Federal statute, the implementing regulations, an individual state's statute, the implementing regulation, and a Federal Register notification that the state is now empowered to implement their own version of all or part of the original statute.

This proliferation of environmental legislation makes it increasingly difficult for private parties, industry, and government agencies to keep pace with new requirements at a time where the costs of both compliance and non-compliance are increasing dramatically. Companies are developing entire new departments whose responsibility it is to identify and interpret how new requirements affect their particular operations. "Environmental Compliance" has become a career path for an increasingly significant portion of the environmental work force. These environmental professionals often have little or no responsibility for identifying, characterizing, and remediating environmental problems: instead, they identify new requirements and propose methods to prevent falling into non-compliance.

Because many environmental statutes and regulations sometimes overlap and occasionally conflict [e.g. PCB requirements under the Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and the Toxic Substance Control Act (TSCA)], regulatory agencies are continuously preparing and distributing guidance on specific aspects of a problem. These guidance documents are intended to help regulatory personnel and regulated parties identify and interpret applicable requirements for a specific scenario. Like the legislation to which it applies, guidance is prepared on many different levels (Figure 1). For example, the "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (U.S. Environmental Protection Agency 1988) was prepared by the Office of Emergency and Remedial Response at the Federal level. This document was then passed to each EPA Region and to individual states. Each EPA Region and state then adopted certain conventions regarding implementation of the guidance, or prepared their own guidance. For example, some regions required quality assurance project plans and field sampling plans to be prepared and submitted as separate documents, while some required them to be included in the same document. Some started with one convention and changed to another. Some states have required the information identified as applicable to a field sampling plan be included in a work plan. The end effect is there are a number of requirements which are not part of the statute or regulation which must be fulfilled before getting a plan approved by a certain regulatory group.
Figure 1. Hierarchy of Environmental Regulatory Tools

ENVIRONMENTAL STATUTE
(e.g., U.S. Code)

IMPLEMENTING REGULATION
(e.g. 40 CFR)

State Statute and Regulations

Requirements

Guidance

National Policy

National Guidance Documents

Regional Policy

Regional Guidance

State Policy and Guidance
Guidance documents can become requirements when included in site-specific agreements. Many EPA regions produce boiler-plate text for inclusion in various types of site-specific agreements which include references to conducting work as suggested by specific guidance. It is up to the other parties to the agreement to determine whether the guidance is applicable prior to completing any agreements.

Use and Applicability of Technical Guidance

To be useful, technical guidance documents must define the audience they are intended for, the situations to which they are applicable to, and be consistent with regulatory intent. Three guidance documents prepared to assist in planning and implementation of RCRA requirements at various levels have been selected to illustrate typical achievement and shortcomings relative to these goals. The "RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (TEGD)" (U.S. Environmental Protection Agency 1986) was prepared for the Office of Solid Waste and Environmental Response for use on a national level. The "Region V Model RCRA Quality Assurance Project Plan (QAPP)" (U.S. Environmental Protection Agency 1991) was prepared by Region V personnel for use on the regional level. The "Closure Review Guidance" was prepared for use on RCRA projects within the State of Ohio by Ohio Environmental Protection Agency personnel.

RCRA TEGD

The TEGD has been praised and maligned during its existence. It may possibly be the most cited ground-water document in plans of investigation of RCRA and CERCLA sites. This paper will be limited to a brief discussion of the Overview and a small portion of the first chapter, "Characterization of Site Hydrogeology." The Overview clearly defines the purpose of the document and the audience for which it is intended. It also recognizes that the document "...is not a regulation and should not be used as such...," and that "...the spectrum of hydrogeologic regimes is great, and no single document could provide detailed, step-by-step instructions for monitoring each one." The TEGD is intended to present a framework for application of a dynamic decision-making process combining "national opinion and site-specific considerations."

In Chapter 1 on the TEGD, the writers once again affirm their belief that site-specific factors should be used to define investigation techniques to define site geology and identify ground-water flow paths and rates. However, they follow this with a statement that there are certain techniques that all investigations should incorporate. Some of these required items are part of the decision-making framework, such as review of existing data. Others are much more specific, such as soil borings, material tests, geologic or soil map at a scale of 1 inch to 200 feet, water table or potentiometric surface maps with flow lines, installation of piezometers, conducting slug tests or pump tests, specifying boring density and contour intervals, and specifying minimum time periods for data collection. The statement that these items should be included in all investigations have effectively made them requirements, even in cases where they are not required based
One goal of guidance documents is to encourage standardization in presentation of plans and results. This allows more efficient training of document preparers and reviewers. The use of standard formats and language is common in regulatory projects. The model RCEA QAPP acknowledges the desirability of standardization, and even urges implementation of RCEA QAPPs for a wide variety of RCEA investigations. The Region Y Model RCEA QAPP includes a standard QAPP form for use in planning, preparing, and reviewing RCEA investigations. This form is designed to encourage standardization in presentation of plans and results.

Region Y Model RCEA QAPP

The model RCEA QAPP provides a framework for developing and implementing RCEA investigations. The model QAPP includes standard formats for various types of investigations, including environmental investigations, geologic investigations, hydrogeologic investigations, and public health investigations. The model QAPP also provides guidance for preparing investigations, including details on how to conduct investigations, how to analyze data, and how to write reports.

Additional guidance documents have been developed by the regional agency, including a guide for preparing geologic investigations, a guide for preparing hydrogeologic investigations, and a guide for preparing public health investigations. These additional documents provide more detailed guidance on how to conduct investigations and prepare reports.

The model RCEA QAPP and additional guidance documents provide a framework for developing and implementing RCEA investigations. The model QAPP and additional guidance documents can be used to develop RCEA QAPPs for specific projects or regions. The model QAPP and additional guidance documents can also be used to provide training for document preparers and reviewers.

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information, may be confusing and complicate data generation and interpretation. Once document preparers and reviewers lose sight of project-specific scientific goals and operating conditions, the project is doomed to mediocrity or even failure, no matter how closely the plan is followed.

As an example, Section 1.6 of the Region V Model RCRA QAP/IP defines data quality objectives (DQOs) and five analytical levels (called DQO levels). The descriptions in this document are similar to those presented in EPA (1987) (the DQO guidance document). However, the preparers of the Region V document added interpretations concerning the quality of the data generated which are not part of the original definitions. Workers familiar with EPA (1987) definitions may miss these seemingly subtle differences. However, once implemented, data generated as Level III by EPA (1987) definitions may be either DQO Level 2, 3, 4, or 5 by the Region V definition, and may consequently fail to fulfill project objectives.

A second potential pitfall in using this guidance to create a document for a user and not a regulatory approver lies in the extensive use of boiler-plate language. Boiler-plate language, catch phrases, and other "standard" text is commonly used by most document preparers in the environmental field. Plan and report preparation time can be substantially reduced by "cutting and pasting" portions from one document directly into another. However, use of boiler-plate has its pitfalls. For example, misspellings and bad grammar tend to be perpetuated through numerous documents. More importantly, boiler-plate is often contradicted by project-specific conditions. Also, boiler-plate often is so general that it adds little real content to a document. One suggested rule for the use of boiler-plate test is that it only be used or reviewed by the originating party to prevent misinterpreting its intent. In the absence of this strict control, all users should have a thorough understanding if the intent of the standard language prior to using it in a document.

**OEPA Closure Plan Review Guidance**

The OEPA (1991) Closure Plan Review Guidance Foreword states that it was designed for use by OEPA closure plan reviewers, although it acknowledges that the document would be useful to closure plan preparers. The authors acknowledge that this document does not represent OEPA policy, and the guidance does not supplant regulations. It limits the use of the document for the preparation and review of RCRA closure plans in Ohio. Finally, it acknowledges that portions of the plan could change due to changes in regulations or interpretations.

Section 2.2 of OEPA (1991) states "Be careful to distinguish between requirements and recommendations in the closure plan review." This is an important item to a party submitting a Part B permit who requires that work at their facility proceed uninterrupted.

Section 3.11.2 acknowledges that detection limits in laboratory analyses will not always be the same, and that guidelines vary on a site-by-site basis. The entire document is liberally sprinkled with references to related documents, and information incorporated
from other documents, such as plan checklists, are copied directly from the original document. This policy prevents subtle changes from being incorporated which could prevent the document from being utilized in a productive manner by different parties. One drawback is that copies of other documents are not usually as clear and sharp as newly printed text. This problem is compounded when using third or fourth generation copies as originals for document printing.

Overall, OEPA (1991) stays within its stated objectives, and is clearly intended for the audience stated in the Foreword. Examples are numerous and address a wide range of specific items. Qualifying statements are numerous and generally informative. The document is set up in a format that can be correlated directly to the applicable regulations, which could allow it to be used as a training document in addition to its intended purpose as a guide to closure plan reviewers.

Conclusions and Recommendations

Because guidance documents address such a wide variety of subjects, it is not possible to fully cover all of the pitfalls in preparing and using such documents in one paper. However, certain elements may be considered desirable for most guidance documents for planning environmental studies. These elements include the following:

- the purpose of the guidance and a description of where it applies should be clearly stated in the foreword and emphasized throughout the document;
- the type of items to be addressed in planning should be presented clearly and logically;
- identification of requirements which are applicable to all projects for which the guidance is intended should be highlighted;
- identification of requirements which are only applicable in certain situations, including examples to clearly define those situations, should be clearly described;
- a description of items to facilitate planning, including when they are and are not applicable, should be included;
- a suggested format for fulfilling applicable requirements while facilitating document preparation and review should be presented;
- examples applications of the guidance should be an integral portion of the document.

Care should be taken in literally applying guidance to specific sites, especially if the site has unique properties which would complicate planning. Site-specific agreements and orders should be carefully examined for references to guidance documents before they are signed. Specifically referenced guidance should be examined in detail, and suggested methods evaluated for site applicability before they become a requirement for the project. Should guidance be incorporated as a requirement, specific language should be reviewed to determine which items constitute requirements and which are clearly only suggestions.

Three guidance documents, one prepared by EPA at the National level, one prepared at the Regional level, and one prepared by a state environmental agency were briefly reviewed and critiqued. The TEGD fulfills all of the suggested elements in part,
but contradicts its intended use and applicability in many portions of the document. These contradictions have been the source of much criticism of the use of the document since its release, and has compromised its useability by making it a target for disagreements rather than a model for completing work. The Region V Model RCRA QA Project fulfills most of the suggestions, but the intent of the document is not consistent with the design and implementation of site-specific scientific investigations. Use of the document can prevent a holistic approach to project planning, which in turn may be inconsistent with the intent of the original regulations. The OEPA Closure Plan Guidance fulfills the suggested elements in a manner which is clearly understood and usable to its intended audience. Its main drawback is in poor quality reproductions of some included attachments.

References


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