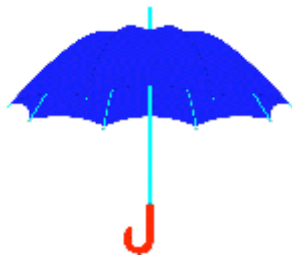


GROUNDWATER USE AND VALUE DETERMINATION GUIDANCE

A RESOURCE-BASED APPROACH TO DECISION MAKING

Developed in cooperation with the



*Comprehensive Groundwater
Protection Strategy*



*Superfund
Initiative*



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I. INTRODUCTION

This guidance combines the goals of two major regional initiatives, the Superfund Beneficial Reuse Initiative and the Comprehensive Ground Water Protection Strategy. As part of the Superfund Beneficial Reuse Initiative, this guidance is intended to result in more informed and focused decision-making and more common-sense, cost-effective ground water cleanups which will facilitate the beneficial reuse of contaminated parcels. To accomplish these objectives, this guidance incorporates the resource-based considerations used in EPA's Comprehensive Ground Water Protection Strategy. Specifically, this guidance document establishes an approach for determining the relative "use" and "value" of site ground water resources and explains how this determination affects EPA-New England's ground water remedial decision making process.

II. OVERVIEW OF NEW APPROACH

The new Approach to Superfund ground water decision making will be as follows:

- * The Approach will be implemented in States with EPA-endorsed Comprehensive State Ground Water Protection Programs or CSGWPPs, but only where such States have entered into a Memorandum of Agreement with EPA-New England concerning the implementation of the Approach;
- * EPA-New England will no longer rely on the 1986 Draft EPA Guidelines for Ground Water Classification in setting goals for ground water remediation and in making decisions on the level of cleanup necessary;
- * Instead, a site specific determination will be made on the relative "use" and "value" of the ground water. States will play a pivotal role in determining the relative "use" and "value" of site ground water and will seek input from local officials and the public, as appropriate;
- * EPA-New England will utilize the Use and Value Determinations performed by the States, in establishing remedial action objectives and making ground water remedial action decisions.

III. USE OF THIS GUIDANCE

The Approach provided in this guidance will be considered at current and future sites in the pre-remedial or RI/FS stages, to the extent possible. This guidance is for use by EPA-New England and State Remedial Project Managers in scoping Remedial Investigations, conducting Risk Assessments, developing Remedial Action Objectives and identifying Remedial Alternatives. EPA-New England does not intend to re-open remedy selection decisions based on this guidance. This guidance is for internal Agency use and contains no right, substantive or procedural, for any party.

IV. REGULATORY FRAMEWORK

A. NCP REGULATORY REQUIREMENTS: EXPECTATIONS FOR GROUND WATER

Under CERCLA and the 1990 National Contingency Plan (NCP), EPA is directed to meet certain expectations in addressing ground water contamination. Under the NCP regulations, EPA is expected to return:

- usable ground waters
- to their beneficial uses
- wherever practicable
- within a time frame that is reasonable,
- given the circumstances of the site.

When restoration of the ground water to beneficial uses is not practicable, EPA expects to prevent further migration of the plume, prevent exposure to contaminated ground water, and evaluate further risk reduction. 40 C.F.R. § 300.430(a)(1)(iii)(F).

B. USE OF THE 1986 DRAFT GUIDELINES FOR GROUND WATER CLASSIFICATION

The preamble to the 1990 NCP provides guidance as to how the expectation contained in the regulation should be achieved. As a guide to determining how to restore ground water to its beneficial uses, the NCP preamble states that EPA should assess the characteristics of ground water. To do this, the preamble to the NCP states that EPA should determine whether to classify the ground water as Class I, II or III. Guidance to make this determination is contained in the 1986 Draft Guidelines for Ground Water Classification. The preamble states that the 1986 Draft Guidelines are to be used as guidance to set goals for ground water remediation and to help make decisions on the level of cleanup necessary. However, as the preamble notes, these guidelines are not to be used as strict requirements, and should not be considered applicable, or relevant and appropriate requirements (ARARs).

The preamble to the NCP states that, for Class I and II ground waters¹, preliminary remediation goals should be generally set at MCLs and non-zero MCLGs. EPA's preference is for rapid restoration, when practicable, of Class I ground waters and contaminated ground waters that are currently, or likely in the near-term to be, the source of a drinking water supply. The NCP preamble further states that drinking water standards "will not be used" to determine preliminary remediation goals for Class III ground

¹Class I ground waters were defined in the 1986 Draft Guidelines as ground waters of high value which are (i) irreplaceable sources of drinking water and/or (ii) ecologically vital. Class II ground waters were defined as current and potential sources of drinking water and water having other beneficial uses.

waters². Finally, the NCP also states that EPA will make use of state classifications when determining appropriate remediation approaches for ground water, unless it would lead to a less stringent solution than the EPA classification.

C. COMPREHENSIVE STATE GROUND WATER PROTECTION PROGRAM

Shortly after the NCP was promulgated in 1990, EPA undertook a new direction in its policies regarding ground water protection. In December 1992, EPA issued the Final Comprehensive State Ground Water Protection Program Guidance (CSGWPP), establishing principles and elements for a comprehensive ground water protection program. Under CSGWPP, EPA set out a three-tiered hierarchy of ground water protection goals:

- Prevention of contamination whenever possible;
- Prevention of contamination based on relative vulnerability of the resource, and where necessary, the ground water's use and value; and,
- Remediation based on relative use and value of ground water. The goal is to remediate all aquifers to meet their designated uses.

CSGWPP says that EPA and the States should take a realistic approach to restoration of contaminated ground water. The remedial response should be based on the actual and reasonably expected use of the resource, as well as social and economic values. CSGWPP acknowledges that the States' role is critical in understanding ground water resources. EPA, other federal agencies, and the states must work together to ensure consistent approaches to cleanup objectives.

Recognizing the states' critical role, the Comprehensive Ground Water Protection Strategy calls for states to develop Comprehensive Ground Water Protection Programs (CSGWPPs) consistent with the three-tiered hierarchy of ground water protection goals. These programs must be endorsed by EPA, and form the basis upon which EPA shall negotiate with the states for greater flexibility to effectively manage their ground water resource. To date, three New England states have EPA-endorsed Comprehensive Ground Water Protection Programs: Connecticut, New Hampshire and Massachusetts. The remaining New England states are in various stages of program development and endorsement, with anticipated endorsement of all six New England states by October 1996.

The Comprehensive Ground Water Protection Strategy also calls for Regions to improve cross-program coordination and integration in support of a State-directed, resource-based approach to ground water management. In November 1994, EPA-New England released its Comprehensive Ground Water Protection Strategy Implementation Plan. This plan included Action Plans for over 16 ground water-related EPA programs which identified creative new ways of doing "Ground Water Business" at the program operation level. As relevant here, Action Items identified for the Superfund Program included: 1) supporting integration of federal and state remediation programs under one comprehensive strategy;

²Class III ground waters were defined in the 1986 Draft Guidelines as ground water that is unsuitable for human consumption because of salinity or widespread contamination from multiple sources.

and 2) developing a consistent ground water remedial decision-making process based on the relative "use" and "value" of the resource.

On July 14, 1995, EPA headquarters issued a memorandum affirming its commitment to apply the principles provided in CSGWPP to Superfund ground water decision-making in those States with EPA-endorsed CSGWPPs. The Office of Solid Waste and Emergency Response (OSWER) also intends to issue guidance concerning the use of CSGWPPs in Superfund remedial decision making. This regional guidance represents EPA-New England's approach to ground water decision making in states with EPA-endorsed CSGWPPs, based on the relative "use" and "value" of the resource.

IV. GROUND WATER USE AND VALUE DETERMINATION - A RESOURCE-BASED APPROACH TO REMEDIAL DECISION-MAKING

A. GENERAL PRINCIPLES

The principles of this resource-based Approach to ground water remedial decision-making reflect many of the Strategic Directions of EPA-New England, including the following:

- **Targeted and prioritized** remediation activities in high risk areas (e.g. Wellhead Protection Areas, Drinking Water Supplies);
- **Integration** of federal and state prevention and remediation programs under one comprehensive strategy minimizing inconsistencies and inefficiencies;
- **Empowering States** in a pivotal role for ground water management, with consistent decision making based on relative "use" and "value" of the resource;
- **Clarification of roles** for federal, state and local governments as **partners** in ground water management;
- **Improved public understanding and involvement** in community-based ground water decision-making; and,
- **Common-sense remediation decisions**, with ground water restoration strategies based on clear and informed information about the site-specific resource needs.

B. IMPLEMENTATION

1. EPA-New England Will No Longer Rely on 1986 Draft Federal Ground Water Classification Guidelines

Under this resource-based Approach, EPA-New England will no longer rely on the 1986 Draft Guidelines for Ground Water Classification in setting goals for ground water remediation and in making decisions on the level of cleanup necessary. Instead, EPA will rely on the resource-based Approach to ground water evaluation taken in CSGWPP. Specifically, EPA's ground water remedial decision making process will be based on the relative "use" and "value" of the ground water resource as described below.

2. Assessing the Use and Value of the Contaminated Aquifer

EPA-New England has developed an eight factor analysis to encourage a consistent approach across all New England states. Many of these factors were obtained from the state classification systems currently in place and are considered by EPA as critical factors for site specific ground water use and value determinations. EPA considered simply deferring to state classifications for making site specific decisions but rejected this approach for the following reasons: (1) approaches to ground water classifications differ among the states; (2) EPA is seeking to promote consistency; and (3) some state classification schemes include factors (such as the PRPs' ability to pay) which EPA can not legally consider in making ground water decisions.

a. Eight Factor Analysis

The "Use and Value Determination" requires consideration of the following eight factors:

1. Quantity;
2. Quality ;
3. Current Public Water Supply Systems (PWSS);
4. Current Private Drinking Water Supply Wells;
5. Likelihood and Identification of Future Drinking Water Use;
6. Other Current or Reasonable Expected Ground Water Uses(s) in Review Area;
7. Ecological Value; and
8. Public Opinion (of use and value of ground water).

Information contained within the analysis will be supported to the extent practicable by pre-remedial and remedial investigations, and supplemented, as needed, to form the basis of determining the use and value of the on-site³ ground water.

It should be noted that the Use and Value Determination calls for a consideration of public opinion on the use and value of the aquifer. In considering public opinion, the Use and Value Determination may require evaluation of local water resource planning, contingency planning for public drinking water supplies, and feedback received from the public on the use and value of on-site ground water.

b. Concept of Review Area

In making a Use and Value Determination, EPA anticipates that States will consider resources in a larger area than simply the area within the boundary of the Superfund site. Therefore, the Approach calls for the Use and Value determination to be made within a "Review Area." The Review Area is defined as a delineated area based initially on a two-mile radius from the boundary of the facility or area of contamination. The dimensions of the Review Area are flexible, and can be expanded or reduced

³The term "on-site" as used in this guidance refers to groundwater that is contaminated or threatened by the CERCLA release being addressed.

based on the hydrogeologic setting or other appropriate factors. EPA believes that it is important to include the concept of a broad Review Area because the current area of contamination is not necessarily static, and may be affected by future stresses outside of the contaminated area (e.g., the installation of pumping wells).

c. Sources and Types of Information Considered

Appendix A identifies the above-listed eight factors, and other information to consider in evaluating these factors on a site-specific basis, and provides a list of sources to consult in gathering the necessary information. This appendix also specifies the sources and types of information that may be considered in evaluating the use and value of the ground water, including, but not limited to:

- Nature and extent of contamination (RI Report);
- Productivity and yield of aquifer (RI/State/USGS Reports);
- Locations/types of Wellhead Protection Areas (State/Local);
- Current and projected threatening land uses (State/Local);
- Zoning for land/ground water use (State/Local); and
- Sensitive resources supported by on-site ground water (EPA/USFW/State).

Appendix B provides examples for each of the eight use and value factors. These examples are not intended to direct future site-specific decision-making, but may be used as flexible guidelines for deciding whether each of the above factors should be described as high, medium or low. Appendix C includes a definition section and a list of categories of potential sources of ground water contamination.

d. High, Medium and Low Use and Value Aquifers

Overall, the purpose of the Use and Value Determination is to identify whether the aquifer at the site should be considered a "high," "medium," or "low" use and value aquifer. This bottom line description of the on-site ground water will be determined by the state, based on the balancing of the eight factors. Upon agreement by EPA, this determination will be considered when setting the remedial objectives and selecting the remedial action, as further described below. It is not EPA's intention that the HIGH, MEDIUM, and LOW results should be applied mechanically to direct a particular remedial outcome. Instead, the results of the use and value determination should be used as a management tool to assist decision makers in determining an appropriate remedy for the site.

3. Application of Use and Value Determination

a. Timing within the CERCLA Process

A draft Use and Value Determination shall be prepared as early as possible during the scoping of the RI/FS to support effective data gathering. A revised Use and Value Determination shall be prepared after the Remedial Investigation data has been obtained, to be used as a management tool in the remedial action development and selection, as described below.

To the extent practicable, the State, EPA and the PRPs should work together to ensure that pre-remedial and remedial studies are designed to collect information which should be considered in the final use and value determination, but which is not already available to the State. In particular, data gathering may include: 1) locations/types of Wellhead Protection Areas and alternate water supplies; 2) aquifer productivity; 3) the existence of potential sources of contamination in the Review Area; and 4) current or expected non-drinking water use of ground water. As necessary, other studies may supplement the information derived from remedial investigations to adequately determine ground water use and value. Such supplemental efforts may include: 1) status and description of approved Wellhead Protection Programs; 2) contingency planning for identified public water supply wells; 3) quality and quantity of raw and source water from Public Water Supply Systems; and 4) Critical Resource Areas threatened by site contamination.

b. Relationship to the Risk Assessment

In performing the Human Health Risk Assessment for the site, exposure scenarios will generally⁴ be based on the generally allowed uses under the state ground water classification system. Risk assessors should not vary their existing risk assessment procedures as a result of this policy, other than to consider exposures based on the state classification rather than the 1986 draft federal guidelines.⁵

The Use and Value Determination prepared by the States may be discussed as part of the exposure assessment section of the Risk Assessment. In other words, the Use and Value Determination may be used to place the exposure scenarios in perspective.

c. Relationship to the Feasibility Study

In the Feasibility Study, EPA shall incorporate the information and evaluation provided in the Use and Value Determination in developing Remedial Action Objectives, identifying applicable, relevant or appropriate requirements (ARARS), and evaluating Remedial Action Alternatives for ground water cleanup.

Remedial Action Objectives

⁴Because EPA is the agency responsible for selecting the remedial action, EPA will reserve the ability to depart from the state classification scheme under certain circumstances, as explained in section IV.B.5. below.

⁵Due to the greater reliance under this policy on state classifications in assessing risk (and therefore in establishing the trigger for remedial action under the NCP), states must carefully coordinate with EPA and State Remedial Project Managers before reclassifying groundwater underlying a CERCLA site. Coordination is necessary because in some circumstances state reclassification could preclude the use of enforceable institutional controls, such as restrictions on use of the aquifer for drinking water, as part of the CERCLA remedy.

Where the Use and Value Determination supports a high or a medium use and value for the ground water ("High" and "Medium Use and Value Aquifers"), the ground water Remedial Action Objectives generally will include the restoration of contaminated ground water to drinking water standards, within a time frame that is reasonable given the particular circumstances of the site. On the other hand, where the Use and Value Determination supports a low use and value for the ground water ("Low Use and Value Aquifers"), the ground water Remedial Action Objectives generally will include prevention of exposure to contaminated ground water and prevention of further migration, but generally will not include a goal of restoration.⁶

Applicable or Relevant and Appropriate Requirements

For High and Medium Use and Value Aquifers, remediation levels generally will be set at maximum contaminant levels and non-zero MCLGs. However, for Low Use and Value Aquifers, drinking water standards generally will not be ARARs, because of the low likelihood that such aquifers will be used for drinking water in the foreseeable future.

Remedial Action Alternatives and Remedy Selection

In developing ground water remedial alternatives for High and Medium Use and Value Aquifers, EPA will consider alternatives with different restoration time periods and methodologies that attain site-specific remediation levels. The most appropriate time period for restoration will be determined through an analysis of the remedial alternatives. For example, restoration time periods may be determined by considering such factors as: hydrogeological conditions, specific contaminants at a site, the size of the contaminant plume, whether the aquifer is one of High or Medium Use and Value, and whether institutional controls would reliably prevent ground water use until restoration is achieved.

Generally, rapid restoration is favored for High Use and Value Aquifers. A more flexible approach, such as restoration of only a portion of the plume and/or use of more extended restoration time periods, may be appropriate for Medium Use and Value Aquifers. Different restoration time frames and methodologies to achieve restoration goals will be analyzed in the Feasibility Study.

For Low Use and Value Aquifers, containment alternatives will be pursued given site-specific factors including: 1) potential migration to drinking water supplies and other sensitive resources; 2) anti-degradation considerations; and 3) further risk reduction.

⁶EPA-New England emphasizes that the rankings of high, medium and low are relative marks, and are to used only as a tool for setting priorities and making decisions about remedial actions. These rankings should not be considered the definitive statement on the worth of an aquifer. It is of course possible that some aquifers, although ranked "low," may ultimately attain drinking water standards in a longer time frame through natural attenuation.

After considering different remedial alternatives which have been tailored to reflect the use and value of the aquifer, EPA will select the Remedial Action by balancing the factors listed in the NCP for remedial decision making.

4. Coordination With the Implementation of EPA's Land Use Directive

EPA's Remedial Project Manager (RPM) should coordinate the development of the Use and Value Determination regarding the Site's ground water with the information gathering requirements and other considerations provided in EPA's directive "Land Use in the CERCLA Remedy Selection Process," OSWER Dir. No. 9355.7-04 (March 25, 1995) ("Land Use Guidance").

At Sites where soil contamination is impacting ground water, the source control remedial action objectives and alternatives to be considered under the Land Use Guidance will greatly depend on a coordinated evaluation of the ground water remedial action objectives and alternatives developed based on the Use and Value Determination. Thus, by coordinating the implementation of both the Land Use Guidance and this Ground Water Use and Value Determination Guidance, EPA-New England will select remedial action objectives and evaluate a range of alternatives based on a comprehensive consideration of the future uses of both the Site property and the Site ground water.

5. Federal and State Roles

As stated above, this guidance will be implemented in states with EPA-endorsed Comprehensive State Ground Water Protection Programs. EPA-New England will meet with each state to discuss state-specific implementation of this guidance. In general, EPA will propose that the states follow the procedures as described below. However, EPA recognizes that these procedures may need to be modified to account for state-specific differences. After reaching an agreement on the details of state-specific implementation, EPA and the state will enter into a memorandum of agreement, either as part of the state's core CSGWPP or as part of their multi-year agreement, for future implementation of this guidance in that state.

The state shall take lead responsibility for gathering the necessary information for, and completing, the Use and Value Determination. It is anticipated that the EPA RPM and other appropriate staff will work together with the state (e.g., the state RPM, state ground water program personnel, and other appropriate state personnel) in completing the Use and Value Determination.

As stated in Section IV.B.3.a. above, after the Remedial Investigation data has been collected, the State shall prepare a revised Use and Value Determination. At that time, the State shall also provide its general conclusions and recommendation as to whether all or part of the contaminated aquifer should be considered to be a High, Medium, or Low Use and Value Aquifer, based on the considerations presented in the Use and Value Determination and their recommendation on the appropriate restoration time frame. It is anticipated the state's general conclusions and recommendation on use and value shall be signed by the state's Commissioner of Environmental Protection.

Since EPA must select remedies that are protective of human health and the environment, and which comply with CERCLA and the NCP, EPA will reserve the ability to depart from a state's determination regarding use and value of ground water at a Superfund site (and/or from the state classification scheme), under the following circumstances: (1) if EPA believes that the state has considered inappropriate factors (e.g. cost of restoration of the ground water, or whether restoration is technically practicable)⁷ in making a use and value determination; (2) if the state has considered erroneous information (e.g., insupportable technical assumptions) in making such a determination; (3) if the state takes an inconsistent approach or does not apply the Use and Value criteria in a consistent manner across sites; (4) if interstate resources may be affected (e.g. an aquifer straddles state boundaries, or an aquifer affects interstate/tribal surface water); and (5) if following the state determination would result in selection of a remedy that EPA considers not to be protective of human health and the environment, or not in compliance with the CERCLA and the NCP. Finally, if the state does not provide the use and value determination in a timely fashion, or indicates that it does not plan to submit the use and value determination, EPA will take lead responsibility for completing the Use and Value Determination.

Upon agreement with the State's Use and Value Determination, and general conclusions and recommendation, EPA shall establish a ground water remediation approach that reflects the state's site-specific resource determination. EPA intends to take a general approach of deference to a state's determination, if the state determination is based on the eight use and value factors listed in this guidance, or similar approaches agreed to in the EPA-State Memorandum of Agreement.

⁷Issues of cost of ground water restoration, or whether it is technically practicable to restore the ground water, are relevant to the preparation of the Feasibility Study and to remedy selection. However, these issues are not relevant to determining an aquifer's use and value and should not be included in the analysis.