

July 30, 2004

Mr. Ken Lovelace  
U.S. EPA Office of Superfund Remediation and Technology Innovation (5202G)  
Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

Dear Mr. Lovelace:

This letter transmits the comments of the Texas Commission on Environmental Quality on your two Ground Water Task Force discussion papers entitled "Cleanup Goals Appropriate for DNAPL Source Zones," and "Ground Water Use, Value and Vulnerability as Factors in Setting Cleanup Goals."

We appreciate the opportunity to comment on the papers, and the opportunity to participate in your Internet Seminar. If there are any questions or a need for clarification on any of the comments submitted, please do not hesitate to contact Mr. Hector H. Mendieta, P.E., of the Policy and Regulations Division, Office of Environmental Policy, Analysis and Assessment, at 512/239-6694.

Sincerely,

Mark R. Vickery, P.G.  
Acting Deputy Executive Director

Enclosure

**Comments by the Texas Commission on Environmental Quality (TCEQ) on the Ground Water Task Force Discussion Papers Entitled “Cleanup Goals Appropriate for DNAPL Source Zones,” and “Ground Water Use, Value and Vulnerability as Factors in Setting Cleanup Goals.”**

General Comments

The TCEQ’s remediation programs need to evaluate how these new federal initiatives will impact our current practices, which are based in large part on state-developed rules and guidance (e.g., the Texas Risk Reduction Program (TRRP) rule). Consistency between our federal and non-federal programs regarding basic approaches to remediation is desirable. For example, the TCEQ is finalizing a guidance document for TRRP specifically addressing DNAPL remediation, which is the subject of one of these discussion papers. The TCEQ is about to propose rules for Municipal Setting Designations (MSDs). The paper on “Groundwater Use, Value and Vulnerability” identifies as a problem the trend toward exposure controls instead of cleanup. The MSD is a type of exposure control. Several other states with programs similar to the MSD were cited in this document as examples of this trend. Also, the MSD considers the vulnerability of deeper groundwater resources which is another issue being addressed by this guidance. The TCEQ needs to monitor and shape developments in these issues if our MSD rule and other remediation programs are to be compatible with future guidelines.

Discussion Paper - *Cleanup Goals Appropriate for DNAPL Source Zones*

Specific Comments

The discussion paper identifies eight problems for expanded discussion and proposes a range of options for each problem. TCEQ’s comments are provided first on the problem statements and then on the options.

Problem 1. *Site owners say that cleanup to drinking water standards (e.g., MCLs) is not a realistic goal for DNAPL source zones, yet they are rarely allowed to use alternate goals.*

Comment: Without the benefit of knowing specific instances, there may be other factors precluding the use of alternative cleanup goals, such as:

- some states may have regulatory constraints (e.g., facility type may not be applicable to a state program allowing flexible alternative cleanup goals);
- site owner has not adequately characterized the hydrogeologic setting and a conceptual site model (CSM) developed which would support an alternative approach (e.g., technical impracticability [TI] demonstration);
- DNAPL source zone not delineated (ties in with site characterization); and
- groundwater is vulnerable in the site area - receptors are in close proximity to the site.

Problem 3. *Federal and State managers say that alternative cleanup goals often cannot be applied because the DNAPL source zone has not been distinguished from the overall*

*plume.*

Comment: TCEQ's interpretation of the problem is summarized as follows:

- site has not been adequately characterized;
- program flexibility (e.g., TI demonstration/waiver) is not feasible unless there is an adequate site characterization and development of a conceptual site model; and
- there is a real impasse to alternative/flexible approaches if site owners decline to adequately delineate the DNAPL source zone and plume.

In addition to the eight problems identified in the discussion paper, the TCEQ notes three additional problems and proposes possible solutions using the options developed by the Ground Water Task Force.

Additional problems:

1. Problem: Site owners are reluctant to spend money and resources to cleanup DNAPL source zones. Site owners say aggressive technologies may have successfully removed the DNAPL mass, but by far only the federal facilities can afford these expensive technologies. Site owners are also hesitant to utilize non-EPA approved technologies. Site owners are concerned that after DNAPL source depletion, state regulators would still require them to cleanup the entire plume to meet unrealistic cleanup goals.

Solution: Option 2 (Develop a fact sheet describing program flexibilities and alternative cleanup goals that may be applied to the DNAPL source zone other than attainment of MCLs) and Option 7 (Develop guidance on performance measures for the effectiveness of DNAPL mass removal, and on how to determine when active DNAPL removal efforts should be discontinued).

2. Problem: Federal and state site managers are concerned that subsurface geology and DNAPL behavior at a site could result in DNAPL migration into the deeper groundwater-bearing zone and/or into fractured bedrock. Site managers also are concerned that subcontractors do not obtain sufficient training on how to deal with DNAPL behavior, particularly the use of the "1% rule"; hence, they misinterpret the data. Because of insufficient information, site managers cannot agree with the final remedial goals.

Solution: Option 5 (Develop guidance on recommended methods and approaches for delineating the extent of the DNAPL source zone).

3. Problem: Federal and state site managers say that they do not trust technology demonstrations provided by the vendors. They would prefer to utilize EPA's documentation regarding the performance of each technology which vendors claimed would result in DNAPL source removal.

Solution: Option 7 (Develop guidance on performance measures for the effectiveness of DNAPL mass removal, and on how to determine when active DNAPL removal efforts should be discontinued).

Options 1, 2, 5, 6, 7 & 8 (collectively).

Comment: In lieu of the proposed fact sheets and guidance documents, and in an effort to rapidly disseminate current information, the TCEQ suggests that the Task Force compile a comprehensive DNAPL annotated bibliography (for internet access) of references, research, organizations (e.g., academic, industry, and government) and their respective web links/addresses. The annotated bibliography could be organized by categories (e.g., DNAPL remediation, DNAPL case studies), by government (e.g., by state, EPA, DoD, DOE) or by organization (e.g., Battelle, research organizations/academia). There are numerous on-going projects at military bases, research efforts/projects and case studies that can be located on the internet; however, a centralized web page linking this information would be a major service to the public, industry and regulators. A recent conference on *Accelerating Site Closeout and Reducing Costs Through Optimization* (Dallas, June 15-17, 2004) was sponsored by the Federal Remediation Technologies Roundtable in cooperation with the Environmental Security Technology Certification Program (ESTCP), Strategic Environmental Research and Development Program (SERDP) and Interstate Technology Regulatory Program (ITRC). Up-to-date information regarding many of the problem statements and issues presented in this discussion paper were addressed at the conference.

A cursory query on the internet (using “DNAPL source zone”) produced the following pertinent information:

- DNAPL Source Zone Initiative where SERDP and ESTCP are funding projects in the area of DNAPL source zone characterization and remediation ([www.serdp-estcp.org/DNAPL](http://www.serdp-estcp.org/DNAPL)). This web site also provides relevant DNAPL source zone links.
- Assessing Source Zone Remediation: Review of Case Studies (ROCS), Naval Facilities Engineering Command. The presentation is located at: [http://enviro.nfesc.navy.mil/erb/erb\\_a/support/cleanup\\_conf/2004conf/proceedings/201.pdf](http://enviro.nfesc.navy.mil/erb/erb_a/support/cleanup_conf/2004conf/proceedings/201.pdf)
- An article entitled, Source Zone Characterization Approaches Including Contaminant Mass Flux by Annable & Hatfield, University of Florida.
- A Mass Flux Approach for DNAPL Source Zone Characterization and Remediation Evaluation by Page & Soga, University of Cambridge,

Department of Engineering.

Recommendation: Immediately implement Option 1 (Develop a fact sheet describing the potential benefits of DNAPL mass removal from the source zone, as well as the potential disadvantages) and Option 3 (Develop supplemental EPA guidance on technical impracticability which clarifies questions for Superfund and other EPA cleanup programs).

Option 3 - Develop supplemental EPA guidance on technical impracticability which clarifies questions for Superfund and other EPA cleanup programs

Comment: The proposed supplementary guidance may be useful only if the information is disseminated in a timely manner. Otherwise, in the interim, EPA should develop an index or bibliography (available on the internet) which identifies specific sites where technical impracticability demonstrations or alternative cleanup approaches have been approved by the various EPA Regions. Such a listing would be useful from a case study perspective.

Option 4 - Develop a policy memorandum re-emphasizing existing EPA policy that program flexibilities are to be used for DNAPL source zones, as a means of setting cleanup goals that are achievable in a reasonable time frame.

Comment: This option would create more problems for the federal and state site managers. To date, site managers have to spend more time to demonstrate to the site owners that Technical Impracticability is not the only remedial option when cleaning up DNAPL source zones. Creating a memorandum that does not specify a technical basis will not be of much use to decision makers. We believe that EPA has already offered this option in the previous policy which has been used among the state and federal site managers.

Option 6 - Develop guidance providing a qualitative approach for determining when source depletion technologies should be implemented, or should not be implemented.

Comment: This option is not a good basis for determining when source depletion technologies should or should not be implemented. Implementation of source depletion technologies should be determined on a regulatory basis, not on a qualitative guidance basis. The qualitative guidance appears to emphasize the remediation cost and benefit analysis in lieu of technical effectiveness and regulatory basis. For example, the TCEQ has developed a scaled response approach that considers the resource value of the groundwater. TCEQ's NAPL management guidance requires source zone depletion in Class 1 groundwater (potential source of highest quality or quantity of drinking water) unless technical impracticability is demonstrated. NAPL in Class 2 (potential source of drinking water) or Class 3 (not a potential source of

drinking water) groundwater should be recovered or controlled to prevent exposure to receptors. Explosive conditions from NAPL source zones must be abated, and mobile NAPL must be stabilized or controlled. When controlled by a plume management zone (PMZ), NAPL source zone depletion would be required to the extent that stabilizes the dissolved-phase plume. The PMZ would have to stay in place to prevent exposure to the plume.

Observation: Lastly, the ideas presented in this discussion paper are appreciated; however, many of the technical problem statements and issues have been the focus of established programs or consortiums of agencies, such as:

- Strategic Environmental Research and Development Program (DoD)
- Environmental Security Technology Certification Program (DoD)
- Interstate Technology Regulatory Program (ITRC)
- Federal Remediation Technologies Roundtable (EPA is a participating agency)

Discussion Paper - *Groundwater Use, Value and Vulnerability as Factors in Setting Cleanup Goals*

Specific Comments

The discussion paper identified four problems for expanded discussion and proposed a range of options for each problem. TCEQ's comments are provided first on the problem statements and then on the options.

Problems. A common theme appeared either directly or indirectly throughout the problem statements presented in this paper:  
1) increasing demand for reliance on exposure control rather than cleaning up contaminated groundwater; and  
2) with regard to future demands, identify methods to determine which groundwaters are "reasonably expected" to be sources of drinking water and how those decisions influence cleanup objectives.

Comments: A relevant Texas example follows: Today, the brackish groundwater near the Brownsville, Texas area would probably be considered a Class 3 zone (not a potential source of drinking water due to high salinity or low yield) for remediation purposes; therefore, alternate cleanup standards would be used (not Federal drinking water standards). However, this brackish groundwater has been identified locally as a "new" drinking water source. A desalinization project is in the development stages. Was this brackish groundwater "reasonably expected" to become a "new" drinking water source? How do regulators adequately anticipate "new" groundwater sources? Will the desalinization plant be equipped to treat potential organic contaminants such as PCE or BTEX, which, in the past, had different cleanup goals or standards (i.e., standards that exceeded drinking water standards)?

This example highlights another problem - the need for reliable tracking and mapping of contaminated areas so that future resource developers can have ready access to such information for appropriate planning and response by either avoiding contaminated areas, monitoring for or treating for the contamination.

EPA should also help develop guidelines on determining cleanup levels for non-potable groundwater pathways, such as for irrigation water. Also, there needs to be consideration of subsequent pumping and discharge of the groundwater cleaned to non-potable levels and then discharged. Such discharge could result in non-compliance with other criteria.

Options: Of the seven options developed in the discussion paper, the TCEQ concurs with the following four options:

Option 1 - development of educational fact sheets and internet training;

Option 2 - research impacts on other developed nations with the presence or lack of strong groundwater protection programs;

Option 3 - prepare summaries of how EPA and State cleanup programs consider water use, value and vulnerability in setting cleanup goals; and,

Option 5 - using information from Federal and State cleanup programs, develop a framework that describes how to prioritize sites.

Conclusion: As the demand for surface water and groundwater increases due to demographic shifts to more arid parts of the nation and Texas specifically, the problems and issues presented in this discussion paper regarding “reasonably expected” groundwater sources become more relevant and urgent.