

Sent Via Electronic Mail



July 30, 2004

Mr. Ken Lovelace
Office of Solid Waste & Emergency Response (MC-5202G)
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Ground Water Task Force Options Papers

Dear Mr. Lovelace:

The American Chemistry Council (ACC)¹ is pleased to submit comments on EPA's Ground Water Task Force's (GWTF) two options papers, "Ground Water Use, Value, and Vulnerability as Factors in Setting Cleanup Goals" (herein referred to as the Ground Water Use paper) and "Cleanup Goals Appropriate for DNAPL Source Zones (herein referred to as the DNAPL paper). We commend EPA for establishing the GWTF and for soliciting public input on these issues. We also support the joint comments provided by the Superfund Settlements Project and the RCRA Corrective Action Project.

We support recent efforts by EPA to develop policies and guidance on contaminated ground water that allow greater flexibility in implementing risk-based cleanups. We also support EPA's phased approach to addressing contaminated ground water and the Agency's policy recognizing that groundwater has differing uses and that the nature and extent of remediation will therefore differ from site to site. Allowing targeted solutions to site-specific problems is the best way to address cleanup in an appropriate and cost-effective manner.

We recognize that the issues of ground water use, value and vulnerability, and DNAPL cleanup goals, addressed in the two options papers, have been and continue to be problematic to stakeholders. However, we believe that these issues can be addressed by fully embracing risk-based cleanups. A risk-based approach to cleanups is truly site specific, reflects the anticipated use of the land and ground water and evaluates its suitability for those uses, addresses any potential human

¹ ACC represents the leading companies engaged in the business of chemistry. Council members apply the science of chemistry to make innovative products and services that make people's lives better, healthier and safer. The Council is committed to improved environmental, health and safety performance through Responsible Care[®], common sense advocacy designed to address major public policy issues, and health and environmental research and product testing. The business of chemistry is a \$450 billion dollar enterprise and a key element of the nation's economy. It is the nation's largest exporter, accounting for ten cents out of every dollar in U.S. exports. Chemistry companies invest more in research and development than any other business sector.

exposure to contamination left in place, and considers the technical practicability of remedial decisions. When a risk-based approach is used, both ground water use and DNAPL sources are evaluated as part of the remedy selection process. Continuing to require contaminated ground water to be cleaned up to drinking water standards undermines the risk-based decision-making process and places the same priority on all ground water without evaluating and prioritizing sites. Our comments on groundwater policies for RCRA corrective action and the One Cleanup Program (dated August 12, 2003) touch on many of the issues that we are commenting on in this letter.

Comments on Ground Water Use Paper

The Background section of the Ground Water Use paper reviews EPA's ground water goals and policies over the past twenty years. This section stresses that preventing adverse effects to human health and the environment is the foremost goal of EPA's ground water policy as stated in the document titled, "Protecting the Nation's Ground Water: EPA's Ground Water Strategy for the 1990's." We were encouraged by the inclusion of the following statement: "Given the costs and technical limitations associated with ground water cleanup, a framework should be established that ensures the environment and public health benefit from each dollar spent is maximized." We agree with EPA's statement, and want to stress that ground water protection can best be achieved by focusing on the prevention of future ground water degradation in those areas that have not been historically impacted. For sites with historical contamination, restoration to drinking water standards is usually not possible; however, ground water protection can be achieved by controlling further degradation of the resource, e.g., through plume containment.

We also recognize that the primary responsibility for ground water oversight lies with the states. As discussed above, ground water cleanup goals should rely on human health and environmental protection criteria that are based upon site-specific factors, including the ground water quantity and quality, its use (both current and reasonably foreseeable future), and the vulnerability of high priority ground water and surface water ecosystems to adverse impacts. Unfortunately, development of site-specific ground water cleanup goals has been hampered by many states' outdated ground water classification schemes. Following the lead set by EPA almost 20 years ago, many states adopted an anti-degradation policy to classify all ground water as high priority and/or as a potential drinking water source, regardless of actual or likely future use. Since then, evolving scientific knowledge has identified the serious technical and economic resource limitations that result from this policy. Nonetheless, many state ground water policies have not been updated to reflect recent science.

The inclusion of the list in the Ground Water Use paper of approaches used by states to designate ground waters based on use, value, and vulnerability is a valuable reference, both for our members and other states. This list includes states that have acknowledged the problems associated with implementing an anti-degradation policy and have developed their own enhanced ground water classification systems. These classification systems typically divide ground water into residential and industrial uses, and then establish protective concentration levels for the different ground water uses at a specific site. These cleanup levels afford protection of human health and the environment, and allow ground water to be used in a variety of beneficial ways other than as drinking water. These states are now enjoying the substantial economic and environmental benefits of site

revitalization and redevelopment since adopting an approach to classifying ground water that evaluates value, priority and vulnerability of the resource.

The GWTF should revisit the four problem statements to accurately define and capture the issues associated with the role of ground water use in setting cleanup goals.

The GWTF developed four problem statements to help define the issues associated with setting cleanup goals. According to the paper, these problem statements are intended to capture the perspectives of various stakeholders, and, as such, may not reflect the opinions of all stakeholders. We believe the problem statements are fundamentally flawed. Not only do they not reflect the views of most of the regulated community, they *do not adequately reflect EPA's more than twenty years of experience trying and often failing to meet unrealistic restoration cleanup goals, and the Agency's evolving acceptance of risk-based cleanups as a means of preventing adverse effects to human health and the environment.*

Problem 1: EPA indicates that there does not appear to be enough awareness by the general public, regulated community, and government officials pertaining to the various ground water functions, values and vulnerability of drinking water supplies, as well as a lack of understanding about the interconnectedness of aquifers to each other and to surface water bodies, and how chemicals may impact human health through these connections.

As members of the regulated community, we strongly disagree with this problem statement both because it attributes this lack of awareness to the regulated community and because it fails to address the full range of information that needs to be understood and assessed to make well-reasoned ground water management and cleanup decisions. We are well aware of the threat that contamination poses to clean drinking water supplies and to ecologically sensitive watersheds. Industry fully supports taking necessary action to protect ground water resources. However, we are also aware that not all ground water is of drinking water quality or connected to sensitive ecological receptors, and that even contaminated ground water can be used for many purposes, including drinking water if properly treated at the wellhead. What the problem statement fails to address is the need for all stakeholders to also understand the limitations of technology, the costs associated with their application, the full impact to society (both good and bad) of the remediation decisions made, and how they and the environment can be protected in cases where full restoration is not practicable.

While the regulated community is well aware of the issues and complexities surrounding ground water use and function, we agree that a well-informed public would facilitate better ground water management decisions. EPA and states should better emphasize to the public, on a site-specific basis, what are reasonable and practicable ground water cleanup goals and inform the public of the considerable investment and progress being made to achieve those under federal and state cleanup programs. EPA and states should also educate the public and public officials about the very real and intractable technical impediments to cleaning up ground water to drinking water standards, and the protections offered by risk-based cleanups both in preventing human exposure to contamination and in preventing future contamination of potential drinking water supplies.

Problem 2: The second problem statement reads: “There appears to be an increasing demand for reliance on exposure controls rather than cleaning up contaminated ground water. Decisions not to cleanup may be short-sighted with regard to increasing future demands for clean drinking water supplies.”

We believe that this problem statement as drafted undermines the risk-based nature of the RCRA Corrective Action and Superfund programs, conflicts with the findings of a number of EPA and National Research Council reports on ground water cleanup issues, and is inconsistent with the findings in the Ground Water Task Force’s paper on “Cleanup Goals Appropriate for DNAPL Source Zones.” Even more importantly, it contradicts EPA’s own “Final Guidance on Completion of Corrective Action Activities at RCRA Facilities” where EPA concludes that a determination of “complete with controls” may be made where protection of human health has been achieved through engineering or institutional controls. This guidance legitimizes exposure control as an appropriate remedial approach for protecting human health and the environment. Furthermore, the Completion Guidance acknowledges the difficulty and impracticability of restoring sites to unrestricted use and accepts that the goal of protecting human health and the environment can be met even when leaving contamination in place with proper exposure control mechanisms.

The RCRA corrective action program and Superfund were designed to be risk-based programs that protect human health and the environment. A primary means of reducing risk is to reduce exposure to what causes the risk. Controlling exposure to environmental contamination has become a viable and widely supported method for meeting the goals of remediation, particularly where ground water restoration to health-based goals is not practicable.

Exposure controls are commonly used in conjunction with ground water treatment technologies as well as with containment methods. One such example is pump-and-treat systems, which are used at more than half of Superfund NPL sites as a remediation technology. In actuality, pump-and-treat systems have been shown to be much more effective in containing ground water contamination than in treating ground water, and are now most often implemented as a means of exposure control. Pump-and-treat systems are selected as a containment “remedy” at many sites because of the inherent technical difficulties in cleaning up ground water to achieve drinking water standards, particularly at sites where the contamination is historical in nature.

Furthermore, relying on exposure controls today to reduce risk does not threaten future drinking water supplies. EPA’s second sentence of Problem 2 (“Decisions not to cleanup may be short-sighted with regard to increasing future demands for clean drinking water supplies.”) suggests that ground water can be cleaned up in all cases and that failure to do so is simply shortsighted. More than twenty years of experience attempting to restore aquifers to drinking water standards suggests otherwise as few sites, especially those with any DNAPL contamination, have achieved those standards throughout the plume. Most sites today are continuing long-term exposure control even where active remediation has been implemented. As the Task Force’s DNAPL paper points out, without delineation and complete removal of the source zone, it is likely that ground water will remain at concentrations above MCLs far into the future, at least at some points within the known plume. Should new demands on ground water supplies require further work, permeable barrier walls have been shown to be successful in treating contaminated ground water at its perimeter, and

there are many cases in Europe and the U.S. where contaminated ground water is being treated at the wellhead and used to provide drinking water.

Education and training are required to ensure that decisions to implement exposure controls, in place of or in conjunction with treatment methods, are fully evaluated in terms of the current and future use of the ground water, the availability of proven and practicable remediation technologies, and the economic and social impacts of any remedial decision.

Problem 3: EPA states that there is a lack of agreement among stakeholders regarding methods to determine which ground waters are “reasonably expected” to be sources of drinking water, and how those decisions should influence cleanup objectives.

We agree that much effort should be focused on protecting current and reasonably anticipated future sources of drinking water, as well as ground waters that serve sensitive watersheds and ecological receptors. We believe that the framework outlined in the Comprehensive State Ground Water Protection Program (CSGWPP) provides the tools for determining whether or not an aquifer will be utilized as a source of drinking water. EPA should educate stakeholders about the CSGWPP framework, and encourage states to devote resources to developing CSGWPPs.

Problem 4: This problem states that ground water cleanup decisions are often not prioritized in a manner that results in addressing the most pressing needs first.

Use of risk-based decision-making by EPA and the states will result in the characterization of ground water problems and selection of appropriate remedies to ensure that human health and the environment are protected and the most pressing risks are addressed first.

The real problem facing the states and EPA is the development of unrealistic cleanup goals that cannot be accomplished at most sites.

In our view, the four “problems” outlined in the Ground Water Use paper are merely symptoms associated with the real problem. The real problem is that, following the lead set by EPA almost 20 years ago, many states adopted an anti-degradation policy to classify all ground water as high priority, or as potential drinking water sources, regardless of actual or likely future use. Since then, evolving scientific knowledge has identified the serious technical and economic resource limitations that result from this policy. Nonetheless, many state ground water policies have not been updated to reflect recent science. Further, EPA has not ensured that its multiple guidance documents promoting risk-based decision-making, such as the “RCRA Completion” guidance and the Underground Storage Tank guidance, have been applied by project managers in the field.

In their 1994 report, “Alternatives for Ground Water Cleanup,” the National Research Council defined the problem stating, “*Existing procedures for setting ground water standards do not adequately account for the diversity of contaminated sites and the technical complexity of ground water cleanup.*” (1994 NRC, p. 18) National ground water policy has developed from an outdated “anti-degradation” viewpoint that the only way to protect human health and the environment was to restore all contaminated sites to near pristine conditions. For ground water, this has led to setting

drinking water MCLs as a cleanup standard for the majority of sites over the past 25 years. What is clear today, and has been clear for a decade, is that “*all regulatory agencies should recognize that ground water restoration to health-based goals is impracticable with existing technologies as a large number of sites.*” (1994, NRC Report P.18) At many sites, we cannot meet these stringent standards either because of technology limitations, or because the costs are simply too high. EPA and the states need to embrace a truly risk-based approach to setting alternative cleanup goals.

Some states have acknowledged the problems associated with implementing an anti-degradation policy and have developed their own enhanced ground water classification systems. These classification systems typically divide ground water into residential and industrial uses, and then establish protective concentration levels for the different ground water uses at a specific site. These cleanup levels afford protection of human health and the environment, and allow ground water to be used in a variety of beneficial ways other than as drinking water. These states are now enjoying the substantial economic and environmental benefits of site revitalization and redevelopment since adopting an approach to classifying ground water that evaluates value, priority and vulnerability of the resource. An example is Pennsylvania that has certified cleanup on over 1,200 sites since its Land Recycling Program was initiated less than 10 years ago. Other state programs of note include the Illinois Site Remediation Program and Texas Risk Reduction Program, as well as a number of EPA Region I state programs. EPA should wholly embrace a risk-based approach to remediation and strongly support the states in adopting the same approach.

The options presented in the Ground Water Use paper do not resolve the fundamental problem of unrealistic cleanup goals.

The Ground Water Use paper presented seven options to help address one or more of the four problems that were identified in the paper. Our thoughts on all of the proposed options are summarized below.

Option 1, educational fact sheets and training seminars, would not provide much beyond information that is already available from EPA.

Option 2, conducting research on other developed nations’ approaches to ground water protection, would provide information, but alone would not change policies.

Option 3, summaries of individual state cleanup programs, would, like Option 2, help educate other states and EPA on the different approaches being undertaken, but would not likely result in policy change.

Option 4, taking the summaries from Option 3 and then developing an EPA policy memo that explains how EPA acknowledges various state approaches and clarifies how they might influence goals established under EPA’s cleanup programs, is potentially intriguing to us. However, it sounds quite similar to the goals of the existing Groundwater Handbook, and may simply be redundant.

Option 5, developing a framework for prioritizing sites, would address some of the problems identified in the paper, but would require many resources and may yield no better results than the CSGWPPs initiative, with most states not participating.

Option 6, utilizing Source Water Assessment Program (SWAP) areas, would address the majority of these problems in an effective way, with minimal additional EPA and state resources required. We feel the biggest deterrent to states implementing risk-based cleanups is the fear of increased resource commitments on already tight budgets. By tying reforms to work that has already been completed by the states should alleviate much of that fear. While states may be reluctant to release detailed SWAP information, if sites are handled on an individual basis, it should be relatively easy to determine if a site is or is not within a SWAP without releasing detailed information on the entire SWAP.

Finally, Option 7, regular meetings with stakeholders, might provide information sharing benefits, but its utility would be limited with no apparent plan for nationwide implementation of updated guidance or policy.

Beyond the options presented in the Ground Water Use paper, the Task Force should focus its energy on urging EPA to promote risk-based cleanups. A true risk-based cleanup fully protects human health and the environment, is site-specific, uses available and practicable remedial technologies, and is cost-effective. We believe that EPA should continue to educate all stakeholders on the role risk should and must play in successfully remediating ground water. EPA should develop risk communication programs for all stakeholders, including regulators and the public that would explain risk and how it can be mitigated and managed. EPA should also develop an incentive program for state and regional regulators that rewards the use of proper risk-based decision-making and remedy selection. Finally, EPA should aggressively focus its resources on prevention and compliance assistance, and not on low risk sites with historically contaminated ground water.

Comments on DNAPL paper

We recognize that DNAPLs present a real challenge to all stakeholders. However, it is just one challenge that our members deal with on a daily basis. Our members work with many different types of chemicals, and as such, we want to focus on the larger issue of source zones.

We agree with EPA that delineating the source zone at a site is problematic at best. There is much confusion and lack of knowledge about source zones in general. However, focusing on the source zone without looking at whether the ground water poses risk to human health and the environment is ineffectual. As discussed in the DNAPL paper, limited data exists regarding the costs and benefits of mass removal, and no technologies were identified that can reliably remove DNAPL at a wide variety of sites. Rather than focusing on how to delineate and treat DNAPL sources, more attention should be given to evaluating whether source treatment and removal is even necessary from a risk perspective. Protecting human health and the environment can be achieved through a variety of actions ranging from source treatment and removal to containment, natural attenuation, and engineering and institutional controls. Selection of the appropriate remedial tools should be

based on an evaluation of their risk reduction capability, technical effectiveness, implementability, and cost-effectiveness. Requiring source control so that a site can eventually meet drinking water standards can often result in the expenditure of excess resources for a site that does not pose a risk to human health or the environment.

EPA should carefully evaluate setting separate cleanup goals for source zone and plume.

There is a strong implication throughout the discussion paper that the Task Force is considering separate cleanup goals for the source zone while maintaining the long-term goal of restoring the aqueous phase plume. This concept appears to be predicated on the recognition (as expressed in the EPA DNAPL Panel report) that restoration of DNAPL source zones to drinking water quality standards is not likely to be achievable within a reasonable timeframe.

While the concept of carving out the source zone for separate policy sounds good in theory, the practicality of such an approach has not been demonstrated. First, the ability to differentiate plume from source area in practice is quite difficult. As stated on Page 3, second paragraph, "At many sites, DNAPLs are suspected but have not been observed in the subsurface. For other sites, DNAPLs have been observed at some locations but the extent of the DNAPL source zone has not been distinguished from the overall plume." In our experience, sites in this category are the rule rather than the exception.

Second, the concept leads to speculation that one could effectively isolate or treat a source area and restore the plume to drinking water quality in short order. Again, the practice is not nearly this simple. Most plumes are relatively mature and have significant contaminant mass distributed throughout, often diffused into lower permeability zones and sorbed onto aquifer solids. Reversal of this plume "aging" process can in the best of cases require decades.

In the more likely case of imperfect source removal or isolation, the outlook is much longer since additional mass continues to be added to the aqueous plume. Generally, the solubility of typical DNAPL constituents such as perchloroethene is several orders of magnitude greater than the MCLs. Hence, a very small amount of DNAPL remaining after remediation can continue to generate a plume exceeding MCLs for a long time.

The EPA DNAPL panel report recognizes this limitation, as stated in the Executive Summary on page xiii, "An additional uncertainty at most sites is the fraction of the contaminant mass in the DNAPL source zone that may be present in diffusion-controlled, low permeability zones...In-situ technologies are generally limited in their ability to remove contaminant mass from these low-permeability zones." In reality, any mature plume has similar limitations extending beyond the source zone to the distal end of the plume.

A more rational approach to addressing cleanup goals is to consider the source area and plume as a holistic system. As with any site cleanup issue, DNAPL site cleanup should be addressed starting with conceptual site model development, including pathway-receptor relationships, with the goal of protecting human health and the environment. Such an approach appropriately forces site-specific, risk-based evaluation.

Given the current uncertainties, it is premature to develop national policy that would set source zone cleanup goals separate from the plume. At a minimum, findings from Project "A" (described on Page 10 of the discussion paper) are necessary before such policy changes are considered. Otherwise, such a policy change could end up driving a host of DNAPL source cleanup projects without significantly improving protection of human health and the environment. As an alternative, EPA should consider taking the lead nationally in exploring conditions under which alternative risk-based cleanup goals should be considered throughout the source zone and plume. At this time, EPA has largely abdicated this role to the states to set their own policies.

The present state of technology development is not as advanced as portrayed in the DNAPL paper.

On Page 4 of the discussion paper, under the heading "Cleanup Technologies", the statement is made that, "Over the past two decades, significant advancement has been made in the development of these [DNAPL cleanup] technologies, especially those intended to remove or treat DNAPLs in the source zone. However, site owners and cleanup managers have been reluctant to implement these technologies." The paragraph goes on to list reasons for this reluctance, including uncertainties with respect to the actual extent of the DNAPL source zone, whether MCLs can be attained in the source zone, predicting benefits and adverse impacts of DNAPL depletion where MCLs are not likely to be attained, and the acceptability of cleanup goals other than MCLs.

This entire discussion is based on the faulty premise that commercially available DNAPL cleanup technologies are fully developed, proven and just waiting to be taken off the shelf. The reality is that while progress has been made, the available technologies are largely unproven in all but simple, small-scale applications. There remains tremendous uncertainty regarding how a particular technology will perform on any given site, and current application of these technologies is better classified as site-specific research and development lacking any real ability to predict the outcome.

The discussion paper implies that technology development is further along than it really is. The fact is that site owners choose a remedial option that yields maximum reduction of both risk and liability at the least cost. This principle is based on a fiduciary duty to the public and shareholders. Where benefit and cost of DNAPL source treatment cannot be accurately predicted in advance, the uncertainty presents a major barrier to application. Unfortunately, this remains the state of DNAPL technology development today.

The need for further work in this area is reflected in Projects "A" and "D" listed on page 10 of the paper. Both of these initiatives are very worthwhile and will lead over time toward reducing the uncertainties site owners face when making cleanup decisions involving DNAPLs. In particular, site owners need the ability to predict the likely beneficial impact of source zone remediation on the plume, not only in the long-term but in the near term as well. The reason being that risk and liability reduction is generally not associated with mass removal but with effectively managing plume migration and controlling potential for exposure to receptors.

The problem statements identified in the DNAPL paper appropriately focus on the limitations faced when cleanup goals are not risk-based.

The majority of the problem statements identified in the DNAPL paper boil down to the fact that cleanup goals for the majority of remedial sites, DNAPL or otherwise, are not risk-based. Requiring ground water contaminated with DNAPLs to be returned to drinking water use is futile for the majority of sites where current technology cannot remove and treat the DNAPLs and significant limitations exist to even characterize and delineate the contamination. The excessive costs of DNAPL removal and treatment technologies, coupled with long cleanup timelines, further exacerbate the difficulties faced at sites contaminated with DNAPL.

The options presented in the DNAPL paper need to fully embrace site-specific, risk-based decision-making.

The DNAPL paper presented eight options to help address one or more of the problems identified in the paper. Our thoughts on all of the provided options are summarized below.

Option 1, a fact sheet on benefits of DNAPL removal, would have little impact on decisions at this point in time due to the fact that likely benefits are very hard to predict in advance. Furthermore, EPA's own 2003 National Panel report noted that predictions of benefits and adverse impacts of DNAPL removal are highly uncertain.

Option 2, a fact sheet on program flexibilities and alternative cleanup goals, may reinforce current alternative cleanup goal policies, particularly at the state level, but we do not feel that it is necessary to focus solely on the source zone. Rather, a risk-based approach to the entire plume is necessary.

Option 3, supplemental guidance on technical impracticability (TI), might be effective if the guidance promoted a site-specific approach. However, guidance alone will not solve the problem of few sites being granted TI waivers. The current guidance, developed in 1993, resulted in EPA generally considering an impracticability determination only after operation of an interim or full-scale remediation system provided sufficient data to show that reaching cleanup goals would not be possible. The need for streamlining TI determinations, rather than developing supplemental guidance, is clear. For most sites, a judgment can be made almost immediately after reviewing site characterization and feasibility study data whether the prospect for restoration is strong or not. We believe it is prudent to make a TI waiver decision based on technical and site knowledge as early in the remedial process as possible, before unnecessarily expending economic resources.

Option 4, a policy memo focusing on existing flexibilities for source zones, may be worthwhile if it truly impacted remedy decision-making at the state and local levels.

Option 5, guidance on DNAPL source zone delineation, may prove to be redundant. Other organizations are currently examining the issue. For example, various ITRC documents are addressing this subject matter, including *Introduction to Characterizing Sites Contaminated with DNAPLs* (ITRC, 2003) and the upcoming *Strategies for Monitoring the Performance of DNAPL*

Source Zone Remedies (ITRC, 2004 - in draft). In addition, the NRC has an extensive review of DNAPL remediation currently in progress that includes a section on this subject.

Option 6, guidance on implementing source depletion, will be useful if it reflects the improved understanding of DNAPL remediation performance envisioned by Projects "A" and "D" (listed on page 10).

Option 7, guidance on performance measures for DNAPL removal, could be beneficial. Any performance measures for DNAPL mass removal need to be considered within the perspective of the overall conceptual site model and risk management needs. This concept is explored quite well in the upcoming ITRC document on this subject (*Strategies for Monitoring the Performance of DNAPL Source Zone Remedies*, currently in draft).

Option 8, guidance on comparing long-term remedies, might be interesting and informative, especially for the public at large. Site owners are already well versed in the application of competitive economics and consider the long-term cost of custodial care when evaluating containment strategies.

The four projects currently in progress by EPA ("A" through "D" listed on page 10 of the discussion paper) are beneficial, particularly Projects "A" and "D" which are directed toward gaps in current scientific understanding of the performance and costs of source zone technologies. These projects should be moved forward as a top priority. To a certain extent, these projects would feed into some of the products considered under the new options put forward by the Task Force. Among these are the guidance documents contemplated under Options 6 through 8.

The current approach being pursued by the Task Force does little to advance national policy in a way that would significantly impact DNAPL source remediation efforts. The fact is that documented experience with restoring contaminated ground water systems to drinking water quality is lacking. This remains as true for mature plumes as it does for DNAPL source zones. The concept of developing separate performance criteria for source zones vs. the aqueous phase plume is not founded on a broadly accepted understanding of reality. The rate of ground water restoration is limited by natural processes such as diffusion, desorption, and biodegradation. To a large degree these are established by intrinsic characteristics of the aquifer system. Such limiting factors continue to defy our best attempts to overcome them. Until EPA takes a leadership role in embracing a risk-based approach to plume management, its official policies will lag behind the practice.

Thank you in advance for consideration of our comments. We would very much like to meet with you to discuss our comments in more detail and will call your office to schedule a meeting time. In the meantime, if you have any questions about our comments, please contact me at (703) 741-5219.

Sincerely,

A handwritten signature in black ink, appearing to read "Lorraine Krupa-Gershman". The signature is fluid and cursive, with the first name "Lorraine" being the most prominent part.

Lorraine Krupa-Gershman
Manager, Environment

Cc:

Matt Hale
Maria Vickers
Bob Hall
Tom Rinehart
Guy Tomassoni