

**Comments on
U.S. EPA's Ground Water Task Force
Discussion Papers:**

Cleanup Goals Appropriate for DNAPL Source Zones

And

**Ground Water Use, Value and Vulnerability as Factors in Setting
Cleanup Goals**

Submitted by:

Superfund Task Force
National Ground Water Association
601 Dempsey Rd.
Westerville, OH 43081
800/551-7379, ext. 560



July 29, 2004



Comments on U.S. EPA's Ground Water Task Force Discussion Papers

Background on the National Ground Water Association:

The National Ground Water Association (NGWA), founded in 1948, is a not-for-profit professional society and trade association for the ground water industry. Our more than 15,000 members from all 50 states include some of the country's leading public and private sector ground water scientists, engineers, water well contractors, manufacturers and suppliers of ground water related products and services. NGWA has been and continues to be a forum for discussing and promoting the responsible protection, utilization and cleanup of the nation's ground water.

Comments on U.S. EPA's Ground Water Task Force:

The Association commends U.S. EPA for forming the Ground Water Task Force and undertaking this initiative. The Association believes the process provides a forum to raise awareness of ground water issues, educate participants, and involve a broad community of interested individuals. While we recognize that reaching agreement on the issues may remain elusive, the Association believes that on-going dialogue is beneficial. Figure 1 accompanying the "Ground Water Use, Value and Vulnerability as Factors in Setting Cleanup Goals" very succinctly demonstrates ground water's importance to local constituents and the nation, and reinforces the continuing need to focus on its protection, responsible use and management.

Limitations on Comments:

The following represents the comments of a diverse group of ground water professionals. In the interest of furthering the debate, NGWA did not attempt to reach consensus on the issues raised here. The comments do not reflect the position of NGWA but rather of individual members within the Association.

The following process was followed in preparing the document. Where there was no consistency of response from reviewers, the document captures the varying



perspectives through listing multiple comments on single points. Where a single reviewer expressed an opinion on a particular point, the comment is identified as coming from “a reviewer.” Where there was consistency of opinion from multiple reviewers, the document identifies these comments as such.

General Comment on the Discussion Papers:

The Agency faces a very difficult task in identifying specific policies that will apply across-the-board, given that some sites may deserve to be addressed more aggressively and others may merit waiting until another day based on many factors, including the importance or value of the resource and the difficulty of the hydrogeology.

For Additional Information:

For additional information, please contact NGWA’s Washington representative Cartier Esham, The Dutko Group, 202/484-4884 or Christine Reimer, NGWA Government Affairs, 800/551-7379, ext. 560.

Comments on the “Cleanup Goals Appropriate for DNAPL Source Zones”

Discussion Paper:

General comments:

Comment 1: We will need to tackle the issues related to technical impracticability (TI) and alternate cleanup levels (ACL). These are crucial moving forward. It’s worth noting that the oil industry has dealt with removal of NAPL for years and they do not consider it possible to remove 100% of the material. We will have to acknowledge that technical impracticability is a real issue for DNAPL. Likewise, where it can be shown that there is a stable diffuse plume and where a reasonable effort has been made to remove the “worst” of the contamination (not NAPL) then state and federal agencies need to allow ACLs. Right now there is no consistency in approach by the various regulatory agencies.

Comment 2: Although the oil industry does remove NAPL, theirs is a very different business model. In the environmental industry, removing parts per billion of dissolved phase can be as important as removing mobile pure phase. If retrieving the residual NAPL was of value to the oil industry, as it may be one day, perhaps there would be better methods of extraction developed today.

Comment 3: The paper omits non-NAPL source zone contamination. Primarily, this includes sorbed phase and dissolved phase contamination that has diffused into the soil matrix and slowly diffuses/desorbs out of the matrix sustaining long-term contamination. This can be especially true in tight or fractured aquifers. Beth Parker and others at Waterloo have shown that NAPL in fractures may have dissolved long ago, but a significant degree of mass still resides in the matrix blocks. This clouds the issue of source zone delineation even further (where does source zone end and plume begin?). But, from a broader perspective, it calls into question the relevance or need to delineate the location of the DNAPL.

Page 2, lines 30-31:

Substitute: ...mix with water, and form a separate liquid phase. Dense NAPLs (DNAPLs) sink while light NAPLs (LNAPLs) float on water. DNAPLs include....

Page 2, line 37:

Substitute: ...DNAPL pools can be mobile.

Page 3, line 3-5:

Substitute: ...contamination problem at DNAPL sites has three components: 1) the DNAPL source zone, 2) the aqueous phase plume, and 3) a potential vapor phase plume emanating from the source zone or the dissolved plume.

Page 3, line 14:

Insert: ...undertaking and boreholes placed in DNAPL zones increase the potential for DNAPL migration down these openings even when “properly” sealed. At many sites...

Page 4, line 1-5:

Substitute: ...where MCLs are the cleanup goal, the MCLs are typically required to be met throughout the plume. Thus, long-term cleanup goals at most Superfund sites and RCRA Corrective Action facilities include attainment of drinking water standards “throughout the plume” of contaminated ground water, which may include the DNAPL source zone.

Page 4, line 7-8:

Delete first sentence

Page 4, line 9:

Substitute: ...future sources of drinking water, MCLs are...

Page 4, line 32-34:

Substitute: ...Each of these technologies have been used with varying degrees of success on DNAPL source zones or on dissolved contaminants in the plume.

Page 4, line 40-41

Substitute: ...2) the long time required to achieve MCLs even in cases where a substantial percentage of the DNAPL can be removed, 3) ...

Page 4, line 41:

Comment: Do not understand number 3.

Page 5, Potential Benefits and Impacts of DNAPL Mass Reduction:

Comment: As regards the section on the Potential Benefits and Impacts of DNAPL Mass Reduction, the negative impacts are better known and proven, but the positive impacts, at this point, are more hopeful than proven. Additional time and data are needed until we have a definitive answer. NGWA reviewers agreed with the Agency's national panel that "Quantitative predictions of these potential benefits and adverse impacts to aid decision making on whether to implement DNAPL source depletion actions are highly uncertain. These uncertainties remain as significant barriers to more widespread use of source depletion options."

Page 7, Problem Statements Generally:

Comment: Problem Statements are more like Opinion Statements and they cannot necessarily be resolved by doing the "options" presented. Problem statements should be prioritized for which are the most important to resolve. This would lead naturally into determining which options should be undertaken since they have the greatest impact in resolving the overall issue.

Page 8, line 1, Problem Statement 4:

Comment: While the reviewer could not strongly disagree with problem statements from either paper, the reviewer found statements like Problem 4 in the Cleanup paper frustrating, because we do not have many (or any) choices here. There is plenty of site evidence that MCLs are extremely difficult, if not impossible to reach today; but if alternative cleanup goals continue to be ignored, then the status quo will continue with site owners and very little will be accomplished. Bottom line is that the reviewer did not think that uncertain future reliability is a reason not to move forward from where we sit idle on many sites today.

Page 9, line 42, Additional Problem Statements:

Add Problem Statement: Reviewers supported the addition of a problem statement along the following lines. Consultants say that the cost and uncertainty of securing regulatory approval is a significant problem in deploying new technology to address DNAPL source areas. Pilot studies or demonstration projects add to project costs. Additional consultant time and concomitant fees are incurred because of the more lengthy regulatory approval process that occurs if an “innovative” technology is proposed. In some cases, regulatory agencies may require pump and treat systems, or other more traditional technology, as a contingency; meaning costs of the innovative technology and the traditional technology are both incurred. More exact source delineation may be required for the application of innovative technology than required with traditional pump and treat systems. In general, efforts to apply innovative technology to reduce source zones may result in additional upfront costs with no certainty of regulatory acceptance and actual field application. Similarly, responsible parties are reluctant to approve the use of innovative technology without significant field data and experience. Because there is general agreement that pump and treat systems can reduce risk and control migration, consultants, responsible parties and regulators may opt respectively to recommend, request or approve traditional approaches rather than risk using newer, more unproven source control technology. This problem stifles the application of new technology and removes incentives for even further development of technologies to address DNAPL source areas.

Add Problem Statement: There are no ranking or scoring criteria of the severity of a DNAPL source zone. If such criteria were established based on, for example, resource damages, risk to human health, and mass flux, then subsequent decisions on what actions should be required on a site would have a basis for their severity of requirements. The reviewer did not think such a site ranking would be so difficult to initially develop and within its creation some obvious site data would have to be collected (e.g. source zone delineation, mass flux measurements and calculations, aquifer impacts, etc.).

Page 10, line 38, Option 1:

Comment: Option 1 does not seem to be very useful. This option does not seem to have any significant impact on the problem statements. The reviewer did not support this.

Page 11, line 7, Option 2:

Comment: Options 2 and 4 are very similar. EPA should decide to do either a fact sheet or policy memo. Reviewer would support this since it could bring the parties together for decision making. Reviewer did support some version of these.

Page 11, line 25, Option 3:

Comment 1: Reviewers overall voiced support for Option 3. They believe that drafting supplemental guidance on technical impracticability (TI) will foster additional debate on the subject, which would be positive. They note that the TI guidance was developed sometime ago and the state of knowledge has grown since its development.

Comment 2: Guidance on technical impracticability could be quite useful. Option 3 has a significant role in addressing problem statement 8. Reviewer supported this option.

Comment 3: Reviewer has no issues with the content of the TI discussion – either the paper or the comments. However, the issue of TI seems to be a fringe issue to the overall focus of “Cleanup Goals Appropriate for DNAPL Source Zones.”

Page 12, line 8, Option 4:

Comment: Ground water professionals generally voiced support for Option 4 with one addition. They recommended that EPA identify state programs where flexibility has been used in addressing DNAPL sites. They believe that examples of successful programs will provide a model for use in other states. As an aside, reviewers found it difficult to distinguish what the significant differences are between Option 2 and 4.

Page 12, line 40, Option 5:

Comment 1: Option 5 could be out of date before it is completed. Reviewer did not support this.

Comment 2: Reviewer liked Option 5 (Option 6 too but not as much due to the qualitative intent.)

Page 13, line 13, Option 6:

Comment 1: Option 6 could be out of date very quickly. It could be of more use politically rather than technically. Reviewer did not support this.

Comment 2: Reviewer is generally more in favor of the “technical” option numbers 6, 7, and 8 than the “policy” options. Reviewer thinks all groups need more technical guidance than confusing more indirect policy guidance that often does not and cannot commit and is difficult to apply to such a wide variety of sites in this country. The statement that says these technical options are more difficult or expensive to carry out is warranted because that is where we are in this debate today – i.e. all the simple options have been applied and we now know enough to move forward with some helpful guidance on more difficult issues.

Comment 3: The “policy” options discuss revising guidance and re-emphasizing guidance. But, the current guidance is not uniformly applied due to differences in interpretation, vagueness, ambiguity, so the new iteration of these guidance documents will likely be met with confusion and resistance as well. Reviewer supports 5, 6, 7 and 8 as valuable Options to pursue.

Page 13, line 37, Option 7:

Comment 1: Option 7 could be quite useful. This option has a significant role in addressing several important problem statements including 4, 5, and 7. I strongly support this.

Comment 2: Reviewer is generally more in favor of the “technical” option numbers 6, 7, and 8 than the “policy” options. Reviewer thinks all groups need more technical guidance than confusing more indirect policy guidance that often does not and cannot commit and is difficult to apply to such a wide variety of sites in this country. The statement that says these technical options are more difficult or expensive to carry out is warranted because that is where we are in this debate today – i.e. all the simple options have been applied and we now know enough to move forward with some helpful guidance on more difficult issues.

Page 14, line 9, Option 8:

Comment 1: Option 8 does not seem to be very useful. Reviewer did not support this.

Comment 2: Reviewer is generally more in favor of the “technical” option numbers 6, 7, and 8 than the “policy” options. Reviewer thinks all groups need more technical



guidance than confusing more indirect policy guidance that often does not and cannot commit and is difficult to apply to such a wide variety of sites in this country. The statement that says these technical options are more difficult or expensive to carry out is warranted because that is where we are in this debate today – i.e. all the simple options have been applied and we now know enough to move forward with some helpful guidance on more difficult issues.

Page 14, line 24, Additional Option:

Add Option: Reviewers are very much in favor of guidance that provides site owners and regulators/site managers with more information to make their decisions (e.g. DNAPL source zone definition, mass flux, risks impacted, site cleanup difficulty ranking, aquifer value and vulnerability, site value). It seems this type of site information must come before a decision is required and TI determined appropriate or not. Then new policies on cleanup flexibility can be developed once these policies have the backing of site-specific information.

Comments on the “Ground Water Use, Value and Vulnerability as Factors in Setting Cleanup Goals” Discussion Paper:

General Comment:

A reviewer suggests that the paper misses the conjunctive use connection and value added with respect to providing water supply reliability in times of drought. In California, where we have a water-rich northern one-third of the state, more pressure is being put on water transfers, ground water banking, ground water storage and recovery, to move water to increase supply and reliability to address seasonal variation in precipitation, drought and climate change, along with the more mundane challenge of population growth and corresponding water demand increases. Conjunctive use programs to provide more water locally and regionally are growing; and these programs, which depend more on ground water, should increase the value of the resource. I believe the ground water value system could be expanded to include consideration of the future by taking this additional complexity and benefit into account.

Page 2, last paragraph:

Comment: Agricultural chemical applications and sewer/septic systems can impact shallow ground water quality and probably affect a larger number of people than mining and construction activities.

Page 5, line 40, Problem Statement 1:

Comment: A reviewer noted agreement with Problem Statement 1.

Page 6, line 6, Problem Statement 2:

Comment 1: There is a corollary to Problem Statement 2. Some decisions to clean up ground water that is not being used or planned to be used in the foreseeable future may result in a waste of funds especially when the plume is stable and there is no impact to human health and ecological receptors. The approach to clean up all potential drinking water sources to drinking water standards just because they may be needed some day can be a waste of funds. Cleanup goals need more flexibility to consider site specific conditions and we must move away from “one size fits all” solutions.

Comment 2: Problem Statement 2 is closely linked to Problem Statement 3 with Problem Statement 3 being the “dominant,” according to a reviewer. They should be combined. The point is that clear decisions need to be made taking various factors into consideration. Reviewer is not exactly sure what is meant by “exposure controls”. Does this mean ground water use restrictions? If so, it may indeed be appropriate for certain ground water and certain situations. Reviewer did not know of any “decisions not to clean up” – can the paper’s authors give examples? Whereas we would all like ground water to be restored as quickly as possible, there may be a case for delaying cleaning up some ground water and this should be recognized. The reviewer suggests that there could be a case for cleaning up the ground water at its future point-of-use. Where there are clear indications that ground water is not currently being used for drinking water but that it could be used for such a purpose in the future and where there is a technical impracticability issue, probably a large diffuse but stable plume, why not allow the responsible party to pay a lump sum NOW where that money is invested and would be available at some time in the future if the ground water is to be used. The ground water could then be treated on being extracted from the ground for the new intended use (either for drinking water or for industrial use).

Page 6, line 20, Problem Statement 4:

Comment: As regards Problem Statement 4, it may well be true that cleanup activities and decisions are not prioritized at a high level; but the reviewer thinks that they only need to be if there was a lack of funding for cleanup.

Page 6, line 24, Options Generally:

Comment: A reviewer dismissed problem statements 2 and 4 for consideration and focused on the options that made sense with respect to problem statements 1 and 3.

Page 6, line 34, Option 1:

Comment: As regards Option 1, a reviewer suggested that while fact sheets are OK, EPA should not spend an inordinate amount of time on this. The reviewer weakly supports this option.

Page 7, line 7, Option 2:

Comment: Option 2 seems like a complete waste of time, according to a reviewer. Most “other countries” either use the US as their standard or are way behind us in their programs. Do not support this.

Page 7, line 16 and 39, Options 3 and 4:

Comment 1: My choice of options would be #3 or 4

Comment 2: Option 3 is linked to and should be combined with Option 4. If the purpose of Option 3 is focused toward getting guidance then OK, otherwise, there’s no point. Option 4 in my mind is the crux of this paper. Reviewer supported combining 3 and 4 with the emphasis on achieving guidance for setting appropriate goals.

Page 8, line 13, Option 5:

Comment 1: In regards Option 5, some have raised the question of whether a data base or a national ground water resource map may be a helpful tool. A national ground water resource map may be conceptualized as a state-by-state atlas, which prioritizes ground water resources based initially on aquifer yield and provides the public, regulatory agencies and responsible parties with a tool to focus their limited resources more effectively on the protection of the most critical aquifers or watershed areas.

Comment 2: It’s a nice idea to prioritize sites; however, this issue would seem to be potentially too politically charged which is why so many states haven’t done it already. Whom would this be aimed at? Who is doing the “prioritizing” and what ultimately is the point? - only if funding is being supplied by a certain source and that source is limited...otherwise cleanups will progress at the pace that they are able. It has potential for taking up a lot of people’s time and not ultimately achieving its goal. One reviewer voiced that she/he did not really support this.

Comment 3: Reviewer is not sure that the EPA should try to set a general policy for prioritizing clean-up sites. The Regional Water Quality Control Boards in California have different regulations depending on the region of the State. Assuming that this policy is similar in other states throughout the country, how would the EPA create such priorities? If, however, the intent is to create guidelines for states and/or local regions to



help identify problems and hence prioritize their own sites, then the reviewer would be in favor of this option.

Comment 4: Reviewer really likes Option 5 which supplies valuable real information for all groups to use as a basis for their decisions. While again this information will be difficult to develop, it is available and would be a significant advancement. It would also point out to site managers the need to obtain site data on an aquifer's value, vulnerability, etc. Along with this option, Option 3 supports it. Reviewer did not think the other options are very useful or as practical or maybe the reviewer did not understand their use fully.

Comment 5:: There is too much disparity between states for Option 5 to be viable.

Page 8, line 31, Option 6:

Comment: As regards Option 6, there is just too much potential for delaying actions here. Reviewer did not support this.

Page 9, line 8, Option 7:

Comment 1: As regards Option 7, this has just too many questions. Who would be the lead in this? Supporting these meetings could be a huge amount of money. How would they be prioritized and focused? Watershed could be too small a unit...just think of how many we have in the US! This is way too difficult to define and there is a provision in both CERCLA and RCRA for public involvement and public meetings. Reviewer voiced non-support of this option.

Comment 2: Option 7 (promotional meetings) is unlikely to result in anything meaningful.

Page 9, line 22, Additional Option:

Add option: A reviewer suggested that while perhaps not within the definition of being protective of ground water, the time may have to come to raise the issue of whether in some situations we may need to clean up the ground water at its future point-of-use. In other words where there are clear indications that ground water is not currently being used for drinking water but that it could be used for such a purpose in the future and where there is a technical impracticability issue (probably a large diffuse plume would fit



this better than a NAPL) as well as a stable plume, should one consider allowing the responsible party to pay a lump sum now? The money would be invested and would be available at some time in the future if the ground water is to be used. The ground water could then be treated on being extracted from the ground for the new intended use (either for drinking water or for industrial use).

Page 11, Figure 1:

Comment: The figure supports the importance of the nation's ground water resource and continuing efforts to protect, responsibly use, and manage the resource.
