Comments on EPA's Task Force *Groundwater Use, Value, and Vulnerability…* Options Paper (5/10/04)

GENERAL

Thank you for drafting the paper and making it available for comment. It is a good document, with commendable intentions. Like many topics crying out for guidance/resolution/consistency, this is one where the authors can proceed to take one of two fundamentally different paths. The first path, which is by far the most common, is to produce a document that is intentionally crafted to be offensive to almost no one. This type of document, policy memo, guidance, is the typically over-general product that repeats to the reader what he/she already knows, articulating the obvious issues and presenting the universe of different points of view. This is a safe approach but does not help individual decision-makers at particular sites, who must assess groundwater and eventually make…a remedial decision.

The second path, by far the riskier for the authors themselves, is to audaciously tackle the issues head on and either propose how these issues should be resolved, or propose a cookbook-type methodology for resolving them that is detailed enough to (always) lead to a site-specific decision. Taking this path will bring down the wrath of most of the so-called "stakeholders," but will produce something that can potentially add to the site manager's toolkit (whereas taking the first path simply re-states the problems that most of us all already know exist). For example, yes, we know that it is difficult to judge the social *value* of an aquifer. Therefore, it's hard to know in many cases how clean it needs to be, when it needs to be this clean, and how much we should spend to make it this clean. The "second path" would set out concrete steps for answering these questions at a given site.

The following are comments on the second half of the options paper:

SPECIFIC

Problem Statement #1 is concerned that there is not sufficient awareness of groundwater (GW) "functions, associated values and vulnerability of drinking water supplies." In addition, awareness and understanding are lacking with respect to hydrogeological conceptual models (i.e., how aquifers may connect to each other and to surface water bodies). Additionally, there is uncertainty regarding the effects that contaminants in GW could have on human health and the environment.

This is not actually a single problem statement, but a list of concerns that should be addressed separately. A lack of awareness about GW uses on the part of the regulators in charge of a site cleanup is a different problem than a corresponding ignorance on the part of the general public.

So, e.g., I would suggest that this PS be broken down into its components:

1a: the public is insufficiently aware of GW functions, values, and vulnerability;

1b: the regulated community is insufficiently aware of GW functions, values, and vulnerability;

1c: the regulators are insufficiently aware of GW functions, values, and vulnerability;

1d: the public is insufficiently aware of conceptual models GW-to-GW and GW-to- SW interaction;

1e: the regulated community is insufficiently aware of conceptual models GW-to-GW and GW-to- SW interaction;

1f: the regulators are insufficiently aware of conceptual models GW-to-GW and GW-to-SW interaction; and,

1g: there is uncertainty regarding the effects that contaminants in GW could have on human health and the environment, and this uncertainty is not properly considered as a part of cleanup decision-making.

In general, I do not agree with many of these statements, but in those cases where any of them may be true, it seems like the remedies must be tailored to the actual problem and "group."

Similarly, Problem Statement #3 includes what I would consider two different problems. The problem of whether an aquifer should be considered a "reasonably expected" source of future drinking water is a different question than figuring out: a) what the other beneficial uses[1] of the aquifer are, and b) what quality the GW must have to serve those uses.

Problem Statement #4 is a bit ambiguous. I have interpreted this as a concern that expensive GW cleanups – to achieve drinking water standards – can result in a poor (high) cost/benefit ratio, if the benefits are defined as overall reduction in risk. If this is what the Statement means, perhaps it could be written more clearly.

Option 1, which proposes the development of fact sheets and training seminars to improve awareness of those topics described in PS #1, would need to be targeted to the appropriate audience. Personally, in my experience,

- it is true that the general public is often unaware of some GW functions, values, and vulnerability;
- the regulated community (or their consultants) and the agencies are aware, or become aware during the remedial process, of most GW functions and vulnerabilities. They usually become aware of the "value" (and more commonly, the

[1] Something of a misnomer, since cleanups must protect human health and the environment as well as restore GW to its highest beneficial use. While restoration of an aquifer to drinking water standards may meet the goal of achieving quality commensurate with the highest beneficial use, this water may still be an unacceptable threat. One example would be the case where shallow GW is remediated to drinking water standards, but continues to pose a risk (to indoor air) via vapor intrusion.

"values") of the groundwater as well, at least as much as anyone in the community can express the worth of this resource;
- the general public often has only an elementary knowledge of GW-to-GW and GW-to-SW interaction;
- the regulated community (or their consultants) and the agencies become fairly well-educated with respect to the site's GW-to-GW and GW-to- SW interaction (though they may disagree); and,
- while there is uncertainty regarding the effects that contaminants in GW could have on human health and the environment, the agencies use a risk assessment methodology that attempts to maximize the protectiveness of decisions. The agencies' methods are certainly debatable, however, and can be challenged from either direction (as being too protective or not protective enough).

So, I would argue that Option 1 has almost no advantages. We could, however, turn a portion of this "concern" over to the folks who provide guidance for public outreach at cleanup sites. Perhaps they could carry the ball on this one and recommend that agency site managers do a better job of communicating GW-related information (hydrogeology, GW values/uses, etc.), and how they have considered uncertainty, to the public when they are soliciting comment on cleanup actions.

Option 2 is a good idea *as part of* Options 4, 5, and/or 6. As a stand-alone option I think it has few advantages, though it could serve as supporting information for someone needing to directly respond to PSs 2 and 4.

Option 3 is also a good idea, and it appears that the Discussion Paper has taken a preliminary stab at initiating this. The bottomline here is: what would such a summary *lead to*? Simply summarizing what the states and programs are doing will not, to my mind, address the "problems" of:

- too much reliance on exposure controls
- too little consideration of future drinking water demands
- too little agreement on what constitutes "reasonably expected" in terms of future sources of drinking water
- too much uncertainty about what contaminant level standards are appropriate for GW uses other than drinking water
- too much money being spent cleaning-up GW to drinking water standards

Again, this might be better used as a component to an option, rather than as a stand alone *fix*.

Options 4 and 5: now we are getting somewhere. I would combine them, and target them directly at the identified "problems." That is:

If there is a perception that EPA or the States are relying too much on exposure controls to address contaminated GW, the policy memo should respond to this. The response could take the form of a) an examination of what is actually being done at EPA sites and a representative sample of State sites; b) a discussion, based on what was found at these sites, of how often controls were used instead of remediation, and why; and, c) a policy statement

reflecting EPA's preference for when exposure controls should, *realistically*, be considered as preferable to remediation.

The same process could be used to respond to the perception that the agencies are not sufficiently considering future drinking water needs. That is, the authors could look at what is being done and why, and then produce a policy statement reflecting EPA's position on how the future use of GW as drinking water should be evaluated. As part of this analysis and statement a working definition of "reasonably expected" could be put forth, and a methodology for quantifying and integrating intrinsic GW value into cleanup decisions at EPA sites could be proposed.

To respond to the concerns related to non-drinking water beneficial uses, and the lack of information concerning standards to protect these uses, the policy memo should describe the likeliest of these uses and either explain how EPA site managers should proceed to set levels that will protect these uses, or at the minimum, present a roadmap of steps that should be taken for ensuring that GW cleanup levels will be protective of these uses. Obviously, establishing GW cleanup levels that are protective of agriculture, or protective of surface water, can be very complicated, since food chain considerations must often be incorporated into the cleanup level derivations. Including guidance on calculating such levels would be far beyond the scope of the policy memo. Including information about the steps to go through, and the sources that do provide this guidance, however, could be a significant help.

Finally, the memo could at least respond to the claim that cleaning-up GW to drinking water standards may not be the best use – in terms of reducing risk – of private or public monies. In responding, it seems that the authors should differentiate between (1) very costly cleanups of GW that is a current source of drinking, or is clearly expected to be in the near future, and (2) GW cleanups where drinking water standards are the cleanup levels, but there is no plan to use the GW as a drinking water source. In the first case, it seems that EPA – and many States -- has concluded that significant sums of private/public monies are justifiably spent remediating GW to return it to its use, or potential use, as a drinking water source. There may be cases where the price tag is simply to high, for whatever reason, to achieve this, but the goal remains to cost-effectively restore the aquifer, even if the expense is considerable. Perhaps this isn't the best use of the money in terms of strictly reducing risk, but there appears to be a national consensus that the *value* of aquifer restoration merits significant expenditure.

In the second case, where the agencies proceed to remediate GW to drinking water standards at a site where GW is not "expected" to be a source of drinking water in the future, the memo can set out the conditions under which EPA feels this is or is not justified. In some cases, though there are no plans to use the GW as drinking water, its natural quality may be such that it could be a drinking water source at some point in the future. In the past the Agency has generally considered such groundwater in need of remediation sufficient to protect a future use as drinking water – if yield was not a limiting factor. This could be an opportunity to re-affirm that position. The memo could also go further, though, and provide guidance for how agency site managers could use the likelihood that such GW would not be used for many years as drinking water in choosing the appropriate response to the contamination. For example, while EPA might continue to feel that the costs of remediating such aquifers to drinking water standards may be justifiable, the *time* over which

the remedy would need to be proven successful could be substantially lengthened. As a result, less aggressive and less costly remedies might be determined to be, in some cases, more cost/effective choices.

Option 5's focus on priority-setting seems mis-placed to me. I don't believe that EPA and the States have problems with assessing which contaminated groundwater zones are the most important to remediate, or should be remediated soonest (if possible), so much as they have difficulty deciding whether or not the – sometimes remote -- likelihood of a future drinking water use justifies the expenditures involved in restoring GW for this use. Certainly, from an agency site manager's perspective, a priority-setting framework document would be of minimal use. However, if you remove "prioritize" from this paragraph and replace it with "assess" or "evaluate" the Option becomes clearly focused on individual cleanup sites, and transforms the framework into a document that could be used, as described above, to help agency and facility managers dealing with GW cleanups.

Option 6 is a good idea, but seems to ask a lot from the information supplied by the SWAP. The SWAP is outside my area of expertise, but from what I have seen of the type of information submitted pursuant to SWAP requirements, its utility would be primarily as a supplement to the data collection performed in Option 3.

Moreover, I find it difficult to understand the objective, stated under Option 6, of maximizing efficiencies/benefits within each source water area. How does this relate to the Problem Statements? Is it simply a matter of targeting cleanup goals similarly within each designated SWAP area?

Option 7 is, again, a fine proposal, and few could argue that there would not be value in holding such meetings. Would they result in actions to address the Problem Statements? Not likely, to my mind. They could be used to set up committees to work on particular "problems" (issues), and they could be used to bring forth additional issues that could benefit from more consistency and national guidance, but their primary value would be what they would *lead to,* not what they would produce.