Appendix L1

Source Water Protection Advisory Committee
Responses to Questions from
EPA Guidance Document

{Note that Ms. Fidler and Mr. Upham had the benefit of seeing the other respondents comments when making theirs – in a few instances this has some affect in how they phrase their responses}

I. Public Participation:
Key Issues for Advisory Committee(s)

1. Should the state do more to provide adequate opportunity for stakeholder groups to participate in development of the program? If so, how?

Dr. George Smith, UT Ag Extension Service: Yes, but we need to be realistic about probable levels of participation and degree of interest among many groups. Their time and resources are very limited and many issues/opportunities are out there for them to deal with. Sending proposals asking for input on specific questions to targeted groups might increase participation.

Tim Higgs, Army COE: Public participation is a key issue to the success of identifying potential sources and making local residents and stakeholders aware of the SWAP. Local media should be one source utilized.

Larry Lewis, Tn Assoc. of Utility Districts: The State of Tennessee has given stakeholder groups the opportunity to participate in the program and has asked for recommendations from both technical and citizen's groups.

Tom Moss, Tn Division of Water Supply: As of October 9, we now have the Source Water Assessment Overview on the Department's internet webpage. It was concluded at the October 20 meeting that there should be three public meetings across the state. These have been set for Knoxville (December 15), Murfreesboro (December 16) and Jackson (December 17). The Public Notice for the Public Meetings (Knoxville, Murfreesboro & Jackson) that is being published in the various newspapers across the state also gives the internet address for reaching the Overview. The announcements for the public meetings have also been placed on the webpage. Those organizations with newsletters present at the meeting agreed to have the public meetings mentioned in their newsletters as well.

Sharon Fidler, League of Women Voters: Yes, groups whose primary emphasis is clean waters definitely should included. The Tennessee Clean Water Network, American Rivers, Wolf River Conservancy, perhaps, the Mississippi River Basin Alliance should be asked to send a representative. Other groups in Tennessee which have an umbrella of environmental interests

might also be asked to attend; consider the Sierra Club, the Tennessee Nature Conservancy, Foundation for Global Sustainability, Dogwood Allliance and others of similar interests.

Greg Upham, Dept of Agriculture, Nonpoint Source Program: I think it would be wise for SWAP to involve a sampling of entities (utility districts, county officials, development districts, homeowner associations, et al) from across the state in an attempt to design a program with local community and its attitudes and capabilities in mind. Why design a program that can't or won't be implemented by the local officials and landowners?! It would also bring more credibility to SWAP when it comes time for the general public to accept or not to accept its merit. Seeing local types on a list of program originators might make this program more palatable to the typical landowner/citizen.

Moss followup: Further involvement prior to the submittal was not feasible. As SWAP will be a dynamic iterative process, there should be opportunity for further involvement at a later date – particularly at the individual watershed level.

2. Should the state do more to receive recommendations from both technical and citizen's perspectives?

Dr. George Smith, UT Ag Extension Service: Same response as #1.

Tim Higgs, Army COE: The broader the review the more aspects that will be identified, although some may be beyond feasible scope. I don't know if more should be done, there are probably some good technical resources that have been overlooked but it appears a reasonable effort has been made.

Tom Moss, TN Division of Water Supply: Same response as above. This is the reason the Source Water Advisory Committee was formed.

Sharon Fidler, League of Women Voters: Perhaps. By including some of the above organizations and others, there would be greater public participation. Public hearing are also an excellent way to involve citizens, and offer an opportunity to emphasize the importance of protecting the water supply.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Providing an opportunity for feedback through broadcasting tools such as newsletters, internet Web pages, direct mailings, local newspaper articles, and the like could provide the SWAP team with a tremendous amount of insight you might not glean from a team of federal, state, and local officials who may or may not have the desired landowner/operator perspective.

Moss followup: DWS has had very poor success with local newspaper articles under wellhead protection – PWS required to publish an article every six months for which they have had to pay dearly for - no public service announcement consideration. The TDEC news release was not picked up on either.

3. What should the state do for ongoing public participation in implementing assessments once the state's SWAP is approved?

Dr. George Smith, UT Ag Extension Service: Targeted communication rather than general announcements might help. Putting information/requests for input/ structured input forms on the internet might also help increase public participation.

Tim Higgs, Army COE: The state should encourage broad distribution of the assessments. Key local groups should be included such as watershed management groups, local environmental groups, etc. The state should document what public groups were involved or consulted by the water system.

Larry Lewis, Tn Assoc. of Utility Districts: Once the SWAP program for each water system is completed, the public may gain knowledge of the results in the Consumer Confidence Report from the water system and each water system should have this information on file at its office.

Tom Moss, TN Division of Water Supply: The assessments will be available via the internet, and at local public libraries. The availability of the assessments will also be announced in the Consumer Confidence Reports required to be mailed annually to every customer by each water system. The first CCR will be in October of 1999 and every subsequent July. The assessments will also be incorporated into the Division of Water Pollution Control's Watershed Management Program. This program looks at pollutant discharge permitting watershed by watershed on a five year cycle and includes public hearings and data collection within each watershed.

Most Consumer Confidence Reports will be reporting administrative/bookkeeping violations (failure to sample or failure to send in report) since violations from contamination are actually pretty rare. Any contamination above drinking water standards would already have to have been reported to the customers within a very short time after the occurrence.

Tennessee Association of Utility Districts has also been working with water systems in developing individual newsletters to improve communication to the public prior to the Consumer Confidence Reports.

Sharon Fidler, League of Women Voters: For ongoing public participation, the TDEC Webpages is an excellent tool. If the WebPages were also able to receive comments perhaps there would be a greater response. Mailing assessments to each water consumer is commendable but they would also need some background information with the assessments, such as the water source in their area and priorities for the area. If this information will be on the WebPages, then just the Internet address is necessary. How will individuals NOT on a public water system receive this information?

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: There are many local watershed associations out there, as demonstrated during the recent MAG meeting {management advisory group for Nonpoint Source Program), that are looking for assistance from the state in initiating

local efforts to improve water quality. Dealing with these entities directly should be of much benefit to the efforts of SWAP. SWAP could meet with these folks and learn what problems they think are present in their watersheds, after all they live there and we probably do not.

II. State's Strategic Approach: Key Issues for Advisory Committee(s)

1. Has the state done an initial review of all data sources available and determined the scope of the need for additional information?

Dr. George Smith, UT Ag Extension Service:Yes, as far as I can tell.

Tim Higgs, Army COE: An initial review has been done. I'm not sure about the scope of the need for additional information.

Larry Lewis, Tn Assoc. of Utility Districts: The State of Tennessee has reviewed the data sources that are available; this data seems to be inaccurate and additional data is being discussed but has not yet been determined.

Tom Moss, TN Division of Water Supply: We intend to make use of existing Departmental databases (as well as other state and federal agencies), electronic phone databases with locational information and standard industrial code classification as well as on-the-ground surveys within 5 miles upstream of the intake. The State's contractor will also be interviewing the individual water systems.

Sharon Fidler, League of Women Voters: The League of Women Voters is concerned that the question of wetlands is not addressed more fully. Even if the wetlands are not always part of the direct source for drinking, nevertheless, they have a vital function in maintaining water quality and protecting public health as well as maintaining habitat for wildlife. The wetlands, even if they are not a direct source for a drinking water supply, still filter impurities thus protecting the surface water sources.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Yes, to an extent, this was done just a few months ago when the Unified Watershed Assessment team, facilitated by Greg Denton & Rich Cochran of TDEC-WPC, compiled data available from NRCS, TDA and TDEC. Conceivably there is still some out there held by USGS, TWRA, USF&WS, OSM, TVA-CWI, universities, et al, but there is a good probability that the STORET database, managed by TDEC-WPC-Planning and Standards Section, would provide you with the vast majority of reasonably accessible water quality data. These data may or may not extend into the predominantly nonpoint source areas of watersheds. The TDA-NPS Program will be funding TDEC-WPC at $300,000 annually (with another $200,000 of TDEC match) to partially remedy this circumstance, but it will require a considerable amount of time to acquire complete coverage, if indeed, this is even possible.
By selecting a finite number of subwatersheds to address during your first three contractual years, you might be able to achieve some overlap with where TDA-NPS Program will be

spending funds and cooperating with TDEC-WPC to facilitate its Grant Pool program introduced in the FYI – 98 319(h) grant. Perhaps a WPC-SWAP-NPS partnership is possible!

Moss followup: Wetlands cannot be addressed directly with SWAP, although they may be addressed in Watershed Management. SWAP is merely an assessment and has no real regulatory authority in and of itself.
The entire SWAP must be completed in 3 years, not just a limited number of watersheds. Any cooperation will be welcomed where possible.

2. What level of exactness/detail should be achieved by each assessment to be considered "complete?"

Dr. George Smith, UT Ag Extension Service: Human health risks is one criteria to decide on level needed. Flexibility is needed also one size will not fit all.

Tim Higgs, Army COE: The State should have a list of minimum requirements to provide consistency. Each system could go beyond the minimum requirements and be tailored for the type of system (surface versus groundwater).

Larry Lewis, Tn Assoc. of Utility Districts: Each assessment should look at the medium to high-risk sites when determining whether the assessment is complete. There should be some type of ranking used to determine the vulnerability of the site to the system. This information should be measured to an accuracy of +/- 300 feet.

Tom Moss, TN Division of Water Supply: By using the technique described in the previous response, we feel that we will have a reasonably complete assessment. There will need to be some consideration of land use and population density -some of the intakes in very rural areas may have very few potential contaminant sources to inventory; whereas there may be considerable sources near major cities and a more focused assessment.

Sharon Fidler, League of Women Voters: Each assessment should maintain lists of potential sources of contamination for each drinking water sources. Although these potential areas of concern will vary according to the type of water supply, rivers versus aquifers, these possible sources should include agricultural runoff of farm chemicals, lawn chemicals, siting of animal waste lagoons, stormwater runoff, proximity of coal-burning power plants, industry, landfills, and mining. The potential sources should also include possible contamination from states that border Tennessee.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Depending on the size of the subwatershed, of course, but significant amounts of nps sources need to be documented in order to assure any future remediation efforts address a sufficient proportion of these sources which would in turn cause a significant improvement in local water quality. Of course, I am assuming the SWAP exercise has been designed and initiated to promote an end result, hopefully, water quality improvement either through governmental assisted programs and/or local stewardship. It

is an almost, and perhaps is, an impossible task to predict what degree of remediative and corresponding abatement activity will be required in any given subwatershed to produce a significant improvement in local water quality. Yet, we certainly do not want to spend so much time on so few watersheds and not produce enough "assessed" subwatersheds to provide a viable coverage across the state which would provide you with support to promote SWAP efforts in years to come.
Perhaps the SWAP assessment effort could work in tandem with the Grant Pool effort funded by the FY – 98 grant which has been awarded to TDA – NPS Program. We could team up (Sherry, David, and Rich of WPC, Don and Regional Coordinator of TDA, and your contractors) to address the same subwatersheds. Perhaps as a pilot project 25% of your "assessed" subwatersheds and 25% of our grant pool subwatersheds could be common and done in a partnering effort.

Moss followup: See previous response. the SWAP is merely an assessment phase. Hopefully there will be opportunity for water quality improvement through the link with Watershed Management.

3. Will the level of assessment provide for the protection and/or benefit of the public water supply(s)?

Dr. George Smith, UT Ag Extension Service: If integrated into other programs.

Tim Higgs, Army COE: The SWAP should improve awareness of potential contamination sources for each water system. Hopefully, this will lead to improved preparation to deal with potential problems.

Larry Lewis, Tn Assoc. of Utility Districts: The data gained should provide information to each utility to be used for their benefit.

Tom Moss, TN Division of Water Supply: Tennessee Association of Utility Districts has been cleared as our sole source contractor. TAUD is tailor-made for working with the water systems and will be interacting with water system personnel from the start.

Sharon Fidler, League of Women Voters: Yes, as long as air-borne pollutants are included in the assessment.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Once again, this is next to impossible to predict. If you begin with the most detailed study known to mankind this will still not guarantee you an improvement for the local water supply. Suppose no local landowners want to participate in any remediative activities, te\hen you will be in a position of knowing all that needs to be done, but, short of an enforcement action on most of the landowners, not being able to do a darn thing anyway.

Moss followup: There are definitely cases where air pollution can be an issue. SWAP will make use of all available pertinent TDEC databases. There is work being done to get Air Pollution data into GIS. It is true that local cooperation is an unknown.

4. What should be the basis for differential levels of assessments to be completed for different public water supplies or categories of public water supplies? System type or size? Preliminary information about the existence of threats? Other?

Dr. George Smith, UT Ag Extension Service: None I can think of.

Tim Higgs, Army COE: System type should be used since ground water and surface water systems have different risks involved. The size of the system will no doubt limit the resources available from the water system. Information about potential threats should also be used to categorize systems based on the degree of risks.

Larry Lewis, Tn Assoc. of Utility Districts: The degree of hazard found and the pumpage and storage of the water system as well as the source type, size and rate of flow should be used when assessments are being done. Preliminary information about the existence of any threats is vital for the accuracy of the data.

Tom Moss, TN Division of Water Supply: The Division scaled the wellhead protecton requirements based on the number of connections and the pumping rate of the water systems. The smallest of community systems (trailer parks) and all of the noncommunity systems (campgrounds, schools, etc.) are typically their "own worst enemy" in that they are located in very rural areas where there are few other contaminant sources other than the those associated directly with those facilities. There are 147 community systems using surface water and only 14 noncommunity systems using surface water. We do not feel it will be necessary to scale the assessments for the surface water intakes. Many of the noncommunity intakes will be in very rural areas with a limited number of potential contaminant sources in the area, which will naturally require less work without having to set up a scaled approach. Since there will be emergency response emphasis for surface water systems, rate of travel in the stream is more critical than size or type of system.

Sharon Fidler, League of Women Voters: I can understand that rate of travel in the stream would be important for this program than the size of the system.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: One should first look at what water quality parameters are at high enough concentrations to cause immediate concern to the local water supply and then make some sort of educated prediction as to what kind of pollution sources and pollutants could arise in the subwatershed that would cause concern for the local water supply. Each subwatershed and water supply is going to be unique unto itself for the most part.
What is the projected stress on the water supplier? Will there be significant industrial, commercial, or residential growth? What contaminants will be acceptable at what concentrations?
What subwatersheds will be addressed first? Is SWAP going to address subwatersheds that provide water for suppliers that are already in a water quality predicament? If so, then the specific problems now and in the future need to be carefully examined to determine the level of assessment.

Moss followup: Currently, there really aren't any stressed systems that the Division is aware of. Prioritization will be for the Group 1 watersheds categorized by Watershed Management to get the assessments synchronized with the watershed management plans.

5. How will the state SWAP be coordinated among various environmental and other state programs (e.g., Public Water System Supervision, water quality, water resources, agriculture, land use, information management, geologic)?

Dr. George Smith, UT Ag Extension Service: A key question. It requires lots of information sharing, dialog and participation in other programs. Strong, consistent, long-term leadership from the top is also needed.

Tim Higgs, Army COE: The citizens and technical advisory committee has involved various groups. The SWAP should have a broad distribution for public review. The TDEC home page would be a good distribution source also.

Larry Lewis, Tn Assoc. of Utility Districts: The SWAP information for each water system should be submitted to the State of Tennessee and the State or its contracted agency should then maintain and update the database. Quarterly meetings should be held to coordinate this.

Tom Moss, TN Division of Water Supply: Integration has been planned with the Watershed Management Program in the Division of Water Pollution Control from the start with the advent of the Wellhead Protection Program. Source Water Assessment data will be incorporated in the watershed management plans and source water protection components will be included in several chapters in each watershed's management plan. One of the goals for the Department of Environment and Conservation's Geographic Information System (GIS) will be to have the assessment information available Department-wide for various environmental permitting decisions. As a part of the requirement of making the assessments available to the public, this same assessment information will also be available on the Department's webpage for various state and federal agencies, industries and the general public.

Sharon Fidler, League of Women Voters: The Internet is a valuable tool for maintaining the connection among all government divisions. It is good to note that the Wellhead Protection Program is being linked with the Watershed Management Program.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: This effort is directly in line with what the NPS Program is mandated to do in the Clean Water Act of 1987. In fact, this type of work has already been done in four of TDEC-WPC's Environmental Assistance Centers through 319(h) funding through 1994 and 1995. At the request of TDEC-WPC-NPS Program, as it was known at that time, staff of Memphis, Jackson, Chattanooga and Knoxville field offices, as they were known at the time, went to the field and produced landuse maps which incorporated all of the locally known nps pollutant sources. This was first done, though, by the NPS Program central office staff in Bedford County as a precursor to a ground water/water well study. The NPS Program would welcome the opportunity to team up with the SWAP effort (seeII.2)

Consequently, the NPS Program should be strongly involved. Likewise, many of TDEC's divisions as well as NRCS, TVA, USACE, OSM, utility districts, and many others should at least be made aware of SWAP and be invited to have some input into its development. A certain level of involvement from these entities will assure that SWAP is addressing all of the necessary issues. Of course, you also want to be careful that you do not create a group too large to manage either.

Moss followup: The Division plans to coordinate with as many agencies as time and resources allow. Note that the agencies mentioned are on the Advisory Committee.

6. How would the state's assessment program lead to state watershed approaches and link to wellhead and other protection programs?

Dr. George Smith, UT Ag Extension Service: Much of this answer is a repeat of #5. I'm not sure this program can drive Unified Watershed Assessments and Action Programs. The role is more participatory than leading I think.

Tim Higgs, Army COE: The SWAP should be closely coordinated with the development of TMDL's and the watershed management efforts. The new source approval forms are somewhat contradictory of programs of other agencies in that potential risks are used to deny the use of a water source, even though the stream meets the designated use for Drinking Water Supply. This eliminates from consideration many larger streams based on risks and encourages siting new water intakes on more undeveloped water bodies. This does not reflect well on the control of pollution sources, if large water bodies are unusable. While spill risk is a major consideration, other factors are equally important.

Larry Lewis, Tn Assoc. of Utility Districts: The State should determine how the SWAP and the WHP should coordinate with other agencies and program.

Tom Moss, TN Division of Water Supply: See comments for #5.

Sharon Fidler, League of Women Voters: See above.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: As described in II.2, a partnership with TDEC-WPC and TDA-NPS Program, both agencies living by the watershed approach, could easily lead into watersheds being addressed across the entire state. SWAP could provide information to the NPS Program for targeting grant pool funds designed to improve water quality in relatively small watersheds at this point in time. Many other funding sources could also be brought into the picture, with or without the NPS Program's involvement, to fund remediative activities within the specific "assessed" subwatershed. Having a baseline of nps issues already in place would make it more likely for activities/efforts, such as those previously described, more likely to occur, thereby fostering the possibilities of actually improving water quality on a watershed-wide basis.

III. Delineation, Source Inventory, and Susceptibility: Key Questions for the Advisory Committee(s)

1. <u>What delineation method and criteria will be used for systems using ground waters? Where shall recharge areas not be included and why?</u>

<u>Dr. George Smith, UT Ag Extension Service</u>: Do we know enough to delineate recharge areas for all systems?

<u>Tim Higgs, Army COE</u>: Delineation will be according to zones defined in the Wellhead Protection Program. Recharge areas should not be included for systems under the influence of surface water such as a well near a lake or karst areas with direct surface connections.

<u>Larry Lewis, Tn Assoc. of Utility Districts</u>: The delineation for most groundwater systems should be complete at this time.

<u>Karen Stachowski, League of Women Voters</u>: Although a state that has an approved WHP program may adopt the delineation approach established by that WHP program, "(t)here are situations for ground water systems where states need to delineate assessment areas outside of, and in addition to, the typical wellhead protection areas. In cases where a protection area contiguous to the well or wellfield would alone be inadequate to provide for the protection and benefit of the PWS, states need to delineate recharge areas that are not adjacent to the surrounding well." State Source Water Assessment and Protection Programs Guidance – August 6, 1997, United States Environmental Protection Agency, Office of Water EPA 816-F-97-004 Chp. 2 p. 13.

I am curious about whether the Tennessee program will also consider including the recharge areas of ground water beyond the two designated zones of protection under the Tennessee WHP program considering the importance of ground water in West Tennessee (relies almost exclusively on ground water as the primary source of drinking water).

<u>Tom Moss, TN Division of Water Supply:</u> A lengthy guidance document was written to accompany the wellhead protection regulations which were promulgated in 1994. Recharge areas are an integral part of the hydrogeologic considerations that are required in delineating the wellhead protection areas. This is particularly true in karst areas and has been a consideration from the start. in karst areas there is not distinct surface water and ground water.

Wetlands are not specifically targeted unless they fall within the recharge area. For West Tennessee, water systems are required to model ground water flow and base their wellhead protection area on a minimum of a 10 year time of travel. If a water system/municipality so chooses they can have a larger area. Germantown, Collierville and Arlington went with 40 year time of travel so as to consider potential growth. The time of travel from the wetlands to Memphis's wellfields would probably be on the order of hundreds of years. It would be considerably closer to Collierville and their 40 year TOT may include some – I haven't checked. The wetlands probably do provide recharge on a regional basis, but this might be better handled in a Sole Source Aquifer petition for the Memphis Sand aquifer {Ms. Stachowski interjected her

that there wasn't much protection from Sole Source Aquifer status and Memphis wasn't particularly cooperative in her trying to pursue Sole Source Aquifer status}. The Sole Source Aquifer Program only specifically requires that any federally funded projects be reviewed by EPA, which in itself is very little protection. There are, however, other programs that place a priority on these areas in dealing with hazardous waste facility permitting, spill prevention plans, etc.

Sharon Fidler, League of Women Voters: An area of concern is that recharge areas may be outside Tennessee's state borders as is true in West Tennessee. It should still be included in the assessment program. I would prefer to have the wellhead protection areas provide for a 40-year time of travel. As regards the wetlands and the aquifer in West Tennessee, there is an indication that some of the water flowing into the aquifer is only 30 – 50 years old. The Memphis Sands may not be as well insulated from pollutants as was assumed,

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: I am not qualified at this time to respond to this question.

2. What contaminants that are not currently regulated by EPA should be part of the state's SWAP program?

Dr. George Smith, UT Ag Extension Service: None

Tim Higgs, Army COE: I don't know of any.

Larry Lewis, Tn Assoc. of Utility Districts: The EPA is currently regulating many contaminates. The water systems now seem to be taxed to the limit trying to comply with current regulations. Additional regulation would be more than most water systems would be able to bear.

Tom Moss, TN Division of Water Supply: There is already a quite lengthy and costly ($16,000 for a sampling cycle) list of contaminants that must be monitored for. Not only is there a regulated compounds list, but also an unregulated compounds list to sample for that EPA may require to be regulated later. There is also going to be increased microbiological monitoring such as for the protozoa Giardia and Cryptosporidium. The Division does not feel that additional burdens need to be placed on water systems. The Division has the authority to require other monitoring if there is determined to be a specific threat not currently being addressed.

Sharon Fidler, League of Women Voters: Have you considered testing for the presence of Tritium, especially near TVA plants where this isotope of hydrogen is being manufactured?

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: I am not qualified at this time to respond to this question.

Moss followup: Tritium monitoring has not been considered. It is likely to be expensive. It is also quite short lived (on the order of weeks). If there are intakes near TVA plants it may be something to look into.

3. Should the state segment source water protection areas for more focused source inventories? What should be the basis for such segmentation?

Dr. George Smith, UT Ag Extension Service: 303d information; recharge areas in West Tennessee; data on problems from other sources.

Tim Higgs, Army COE: Areas with high density of industrial sources should receive more focused inventories.

Larry Lewis, Tn Assoc. of Utility Districts: Focused source inventories should be initiated only if inventories reveal additional concerns.

Tom Moss, TN Division of Water Supply: Our plans are to segment as essentially a time of travel concern with the most emphasis on the first five miles upstream of the intake (roughly eight hours or more time of travel) and to a lesser extent out to fifteen miles (twenty four hours or more TOT). If there are specific threats (confirmed releases) beyond that within the watershed, they will be considered as well. Obviously there will have to be more focus in the industrialized/high population density than there will be in rural areas.

Sharon Fidler, League of Women Voters: Perhaps those areas with known potential threats to the water system such as the presence of heavy industry, and area, which have the potential for problems due to population density, rapid growth or large commercial farming should receive more intense study.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: SWAP should segment subwatersheds to prior to their assessment of such subwatersheds, if it was deemed necessary. It would be deemed necessary if the original unsegmented subwatershed appears to be too large for any future remediative efforts or if prior water quality data indicated that only a portion of the subwatershed actually contributed the pollutant types of concern to the local water supply. SWAP would need to be certain that the remainder of the subwatershed area was indeed, not contributing to the overall problem.

4. How should the state define and identify significant potential contamination sources and how should the state undertake their inventory within source water protection areas?

Dr. George Smith, UT Ag Extension Service: Start with the 303d list and regulated contaminants then add feasibility considerations (technical and financial). The inventory should be coordinated with the state permit program and "new" watershed focus.

Tim Higgs, Army COE: Industries requiring industrial stormwater permits is one source to be used. Coordination with local fire department or emergency response groups could be another.

Larry Lewis, Tn Assoc. of Utility Districts: Potential sources should be determined by SIC codes and the Emergency Management Agency. The susceptibility of hazardous chemicals should include the health risks associated with them.

Tom Moss, TN Division of Water Supply: The Division intends to make use of storm water permitting information as much as possible and other Departmental databases as well. In addition phone CD ROM with businesses selected by standard industrial classification (SIC) codes will be used. The storm water permit database also tracks SIC codes. The SIC codes selected {separate handout} were based on the top 100 facility releases to water as reported in the EPA Toxic Release Inventory for Tennessee for the years 1993 – 1996. There were a few SIC codes added that have been found to be a concern in the past such as automotive services (garages, service stations, etc.), trucking firms and auto salvage yards.

Sharon Fidler, League of Women Voters: The state should define as significant potential sources any activity, which results in the release of toxic chemicals either to water, air or ground. In this list should also be included the release of non-toxic chemicals or effluents that, when combined with other chemicals, could damage the ecology of the area. The communities, cities or counties in Tennessee could compile the inventory of these sources and forward to TDEC to compare with the databases created from the storm water permitting information. Some of the areas of concern are also feed lots, animal waste lagoons, mining sites, gravel pits, dredging of gravel from streams, underground septic tanks, small automobile body shops and dry-cleaning establishments.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: The state should use accepted terminology used by other water quality agencies (i.e., NRCS, TDEC-WPC, TDOT, TWRA and TDA) to describe the observed nps sources. The locations of such sources should be recorded with accurately determined latitudes and longitudes as well as placed upon topographic field maps for future use. These data should then be placed on a GIS database for easy retrieval. Field personnel assigned to the task of determining type, description, and locale of these pollutant sources must be trained by water quality agency personnel who are proven experts in this line of work (i.e., TDA-Ag Resources Coordinators).

Moss followup: The Division appreciates the field investigation information provided by Nonpoint Source and their offer for training.

5. How will the results of the susceptibility analysis be characterized?

Dr. George Smith, UT Ag Extension Service: I would like to see a risk – benefit analysis.

Tim Higgs, Army COE: Unknown. Assumed it will be used to prioritize risks to the water systems.

Tom Moss, TN Division of Water Supply: We are not really clear on this one ourselves. EPA is supposed to be having workshops on this. I will get any information on susceptibility out to the Committee as soon as I get it. {Donald Clark noted that the probability of contamination as well as impact/toxicity will need to be addressed}
The Source Water assessment requirement from the Federal Safe Drinking Water Act and guidance says we are to analyze the susceptibility of each water system to contamination. EPA is pushing for us to score each potential contaminant source or at least source category. We are considering doing this by SIC code. We are developing a checklist for our contractor which is essentially a pass/fail (fail needs additional investigation by the Division/Department) based on amount of material/waste stored, types of chemicals used, proximity to the stream/intake, etc. Susceptibility analysis is also something we will have to address for the ground water systems in addition to the existing Wellhead Protection Program to be brought into compliance with the Source Water requirements. For ground water systems, we will take into consideration the geology/hydrogeology as well. Ground Water systems are considered to be particularly vulnerable where the well or spring is determined to be under the influence (impacted by) of surface water.

Sharon Fidler, League of Women Voters: The potential of an immediate threat to the water source should be considered as should the amount of toxins released and the proximity to the wellheads, streams and rivers.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: I am uncertain as to whether I fully understand this question.

Moss followup: When these comments were made, the susceptibility analysis method had not yet been developed. The Committee has since seen the method and the only comments have been favorable.

IV. Boundary Waters, Multi-State Rivers, and the Great Lakes: Key Issues for Advisory Committee

1. What agreement should the state maintain or initiate with other states, tribes, or nations to gain more complete and consistent source water assessments?

Tim Higgs, Army COE: There should be a MOU that defines the SWAP program for each state to ensure consistency between states and sharing of information where warranted.

Larry Lewis, Tn Assoc. of Utility Districts: The State should act through the EPA regions to initiate agreements with other states.

Tom Moss, TN Division of Water Supply: This is actually not required by the Source Water Amendments. Congress actually only required for assessments up to the state boundaries.
With the exception of Virginia, the other states Tennessee will be dealing with are within EPA's Region IV (we have no intakes on the Mississippi). Tennessee has a good working relationship with these other states. EPA could perhaps assist in developing more formalized arrangements.

Sharon Fidler, League of Women Voters: Mutual protection of drinking water should be sufficient reason for bordering states to work together. Perhaps there should be a federal overview of the agreements between states?

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: In many cases, neighboring states are also addressing watersheds for water quality purposes. By corresponding with the appropriate water quality agencies of these neighboring states, it is entirely possible that cooperative arrangements could be made to assure that parallel assessment efforts using the same standards, completing the assessments during the same timeframe, and agreeing to the exchange of all assessment information could be consummated.

2. What contingency plans should be pursued?

Tim Higgs, Army COE: There should be a spill notification procedure for multi-state waters (or aquifers with multi-state recharge areas).

Larry Lewis, Tn Assoc. of Utility Districts: The SWAP should be updated similar to the WHP program and water systems should update their Emergency Plans when needed.

Tom Moss, TN Division of Water Supply: There is currently no setup for notification on multi-state waters. A contacts list is something that needs to be developed for contamination of multi-state waters. Since emergency response will be a major emphasis for surface water systems, we will also have to develop a better level of communication among the Department, the Tennessee Emergency Management Agency and the water systems.

Sharon Fidler, League of Women Voters: Notification of potential and actual release of pollutants should be communicated to the appropriate state agencies of the bordering states. Yes, the Emergency Management Agency and water divisions must be notified. The means is more difficult.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: I do not know the answer to this question.

3. What coordination/facilitation activities should the state request of EPA?

Tim Higgs, Army COE: EPA should provide a review of each state's SWAP to help achieve consistency and attempt to negotiate agreements on pertinent issues.

Larry Lewis, Tn Assoc. of Utility Districts: The State of Tennessee should request the assistance of EPA only when necessary. The State should use the information gained from the SWAP assessments as a tool to assist water systems.

Tom Moss, TN Division of Water Supply: EPA's role should be to assist in negotiating agreements among the states with other assistance as requested.

Sharon Fidler, League of Women Voters: See #1

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: I do not know the answer to this question.

4. Are compatible and complimentary assessments being done in watersheds shared with other states and countries?

Tim Higgs, Army COE: I don't know about the programs in other states.

Tom Moss, TN Division of Water Supply: Since the states Tennessee will be working with are all within Region IV of EPA, we have a good idea of how the other states are doing. Comparable/compatible assessment programs are being developed in Alabama, Georgia, North Carolina and Kentucky. Mississippi is not really an issue – they have very few surface water systems and West Tennessee has very few as well. None in West Tennessee would involve Mississippi.

Sharon Fidler, League of Women Voters: I have not heard about this.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Assessments initiated by SWAP have yet to begin. There are a few watersheds that Tennessee shares with neighboring states where local water quality initiatives are taking place. Perhaps these watersheds would be appropriate locations for cooperative assessment efforts between Tennessee and its neighbor (Kentucky/Big South Fork of the Cumberland River, Georgia/Ocoee River, North Carolina/Hiwassee and French Broad Rivers). Three of these watersheds have recently had successful bi-state water quality technical committee efforts, while both Tennessee and North Carolina have separate efforts in the French Broad.

V. Making the Results of Assessments Available to the Public: Key Issues for Advisory Committee(s)

1. What should be included in the results of the assessments, what should be the format of an understandable report on results, and when should the results be made available?

Dr. George Smith, UT Ag Extension Service: The public wants to know the bottom line first (and perhaps only the bottom line) – is it safe? What are the major sources of risk? What is being done to address priority problems. Should coordinate with the new public reporting to be done by systems.

Tim Higgs, Army COE: A brief discussion of the procedures used including sources of information in laymen's terms. A map illustrating protection zones and potential sources of contamination within these zones. Draft assessments should be made available for public review as this might identify other issues for consideration.

Larry Lewis, Tn Assoc. of Utility Districts: After the assessment has been completed, the water system should include this information in their next Consumer Confidence Report. The data should be available in their office as soon as it has been completed.

Tom Moss, TN Division of Water Supply: There probably need to be two levels of assessment – a basic executive summary-type document ("the bottom line") and a more detailed assessment report. The general public will likely not be interested in the detailed information, but it will be available for those who are interested. The Departmental webpage will also have the assessment information available, hopefully in a GIS format. Each water system is also required to address the source of their water in the Consumer Confidence Reports that they are required to send to each customer and discuss the availability of the assessments.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Answers to the five questions in this section are more programmatic, so I have decided to leave them unanswered.

2. How and when should the state make available all the information collected during each assessment when someone requests it?

Dr. George Smith, UT Ag Extension Service: All the information? Is this feasible? Legal? Desirable?

Tim Higgs, Army COE: A brief summary report may be warranted, unless more detailed information is requested.

Larry Lewis, Tn Assoc. of Utility Districts: The water system should maintain a file in their office containing the completed assessment and the State should make this information available to the public libraries and on the Internet. This information should contain the latitude and longitude of the sites included in the inventory. This information should be made public by the State at the end of the quarter following the completion of the assessment. The method used should be determined by the State.

Tom Moss, TN Division of Water Supply: We would like to make the completed assessment reports available on an annual basis. If draft information has been reviewed and is available for a specific water system, we would supply it on request. We are looking at quarterly reports/assessments from our contractor. The reports will also be available on the Department's webpage. A copy will also be available at the local library (which would also have internet access) and the water system.

Sharon Fidler, League of Women Voters: I do not know whether there is money in the budget to mail a copy of the information as each person requests it? It would be easier and cheaper to direct the person to the WebPages.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Answers to the five questions in this section are more programmatic, so I have decided to leave them unanswered.

Moss followup: The Division will mail as resources allow, but hopes the Webpage will be the predominant access. There will also be copies for review at the library and TDEC Environmental Assistance Centers.

3. What type of maps should be developed to display the results of the assessments?

Dr. George Smith, UT Ag Extension Service: Could the data be used in a GIS system to provide alternative mapping possibilities?

Tim Higgs, Army COE: Maps showing the protection zones and potential sources identified.

Tom Moss, TN Division of Water Supply: The assessments will all center around GIS mapping. This will allow basically customized maps, particularly if interested persons will access the Department's webpage. Typical base maps will have roads and streams and the defined assessment area.

Sharon Fidler, League of Women Voters: The maps might have marked on them the recharge area, floodplains, wetlands, streams.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Answers to the five questions in this section are more programmatic, so I have decided to leave them unanswered.

Moss followup: Information will be made available as it is completed, not less than yearly when summaries are provided to EPA.

4. How and when should the state make public all information collected during each assessment for a PWS(s)?

Dr. George Smith, UT Ag Extension Service: See response to #2.

Tim Higgs, Army COE: Via the Internet and copies should be distributed to the local water systems and libraries.

Karen Stachowski, League of Women Voters: In EPA's guidance document, some suggestions include the internet posting and free call-in number. Notification can occur through bill stuffers directing the public to the internet or toll-free number. Another good idea is allowing the public to request a copy of the assessment and/or brief report on assessment through postage free return mail cards. *State Source Water Assessment and Protection Programs Guidance – August 6,*

1997, United States Environmental Protection Agency, Office of Water EPA 816-F-97-004 Chp. 2 p. 22. Of course, the copy of the assessment should be free so that it is accessible to all people of Tennessee.

Tom Moss, TN Division of Water Supply: See response for #2.

Sharon Fidler, League of Women Voters: See #2. Also the media should be utilized to help "market" the assessment plan through a news release. I would assume that the state would make the information public as soon as the work has been completed. The WebPages should be updated as necessary.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Answers to the five questions in this section are more programmatic, so I have decided to leave them unanswered.

5. How should the state or delegated entities provide wide notification of the availability of the results and other information collected?

Dr. George Smith, UT Ag Extension Service: Internet. Again, part of the public reporting by water systems.

Tim Higgs, Army COE: Statements added to the water bills and via the local media.

Tom Moss, TN Division of Water Supply: Water systems are required to address the availability of the assessment in the Consumer Confidence Reports that are required to be mailed to each customer. The assessments will also be available on the Department's webpage. Source Water Protection will also be addressed in the Watershed Management Program which has public hearings on a five year cycle in each HUC 8 watershed and the assessment information will also be a part of the watershed management plan for each watershed.

Sharon Fidler, League of Women Voters: Utilize the media and placing information in the water bills is very appropriate. Allowing the public to request a copy of the report by mailing postage free cards is an excellent way to provide information. However, again I wonder about the budget constraints?

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Answers to the five questions in this section are more programmatic, so I have decided to leave them unanswered.

VI. State Program Implementation: Key Issues for Advisory Committee(s)

1. What should be the timetable for state SWAP program implementation?

Dr. George Smith, UT Ag Extension Service: Again, we should be realistic – what will the budget and resources available allow?

Tim Higgs, Army COE: I assume EPA details this?

Larry Lewis, Tn Assoc. of Utility Districts: The SWAP should be completed in 3 or 4 years

Tom Moss, TN Division of Water Supply: With the number of intakes (180) across the state, we intend to take the maximum time allowable if we are to produce quality work. We hope to have our contractor wrap up their work in early 2003 to have the reports to EPA ready by May of 2003. The Division will also have to update wellhead protection plans to coincide with Source Water Protection, which will be a considerable amount of work as well.

Sharon Fidler, League of Women Voters: I would rather that the maximum allowable time be taken to complete the project.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Answers to the six questions in this section are more programmatic, so I have decided to leave them unanswered.

2. How much should the state spend on SWAP program development and implementation, and should the resources come from the DWSRF and/or other resources?

Dr. George Smith, UT Ag Extension Service: What is needed to be spent for an optimum program? Are there graded possibilities with smaller price tags?

Tim Higgs, Army COE: Unable to answer this.

Larry Lewis, Tn Assoc. of Utility Districts: The State should spend the necessary funds to develop and maintain this database.

Tom Moss, TN Division of Water Supply: The State will be spending all of the money available under the Source Water Assessment setaside of the Drinking Water Revolving Fund, which is approximately 1.27 million dollars. In addition, approximately $190,000 of Wellhead Protection setaside will be used to assist in developing GIS for the Departmental webpage and $30,000 from carryover from the EPA Ground Water protection Grant. There are no state dollars available – if it were not for the Public Water System Supervision setaside, the Division of Water Supply would have even lost approximately 1/3 of its staff.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Answers to the six questions in this section are more programmatic, so I have decided to leave them unanswered.

3. Should the state delegate aspects of the assessments? If so, to whom? Should funding be provided to delegated entities?

Dr. George Smith, UT Ag Extension Service: TVA and the COE have responsibilities (and data?) now that should be utilized. Unfunded mandates are never popular.

Tim Higgs, Army COE: Some aspects could be delegated to the local governments who are more familiar with sources.

Larry Lewis, Tn Assoc. of Utility Districts: The State could use a private contractor for this work and the Division of Water Supply should coordinate this data with other agencies and the EPA.

Tom Moss, TN Division of Water Supply: The Division of Water Supply does not have the staff available to perform the assessments. The Division has received sole source contractor approval to contract with the Tennessee Association of Utility Districts for the assessments.

Sharon Fidler, League of Women Voters: Since the Division of Water Supply does not have the staff for all of this work, there is no question that a contractor must be hired. I assume that the contractor will be paid for the work.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Answers to the six questions in this section are more programmatic, so I have decided to leave them unanswered.

4. How should state agencies coordinate with each other and with other state, federal and local stakeholders when implementing SWAPs?

Dr. George Smith, UT Ag Extension Service: The lead agency personnel should push information out relentlessly and request participation/ response in meaningful areas. This is a continual problem for all programs, not just SWAP of course.

Tim Higgs, Army COE: There needs to be close coordination with other state and federal programs that have oversight of the sources of contamination in the watersheds. A SWAP newsletter or some means of providing periodic updates would be beneficial.

Tom Moss, TN Division of Water Supply: Communication will be the key factor here. The Division sees the development of GIS on the Department's webpage as critical to coordination of the effort. Since all of the other environmental programs have a role to play in Source Water Protection and their data will be incorporated into the assessments, GIS will assist them as much as the Source Water Protection Program. The Source Water Protection effort is closely tied to the Watershed Management Program, which also has a strong coordination theme looking at the health of the watershed as a whole.

Sharon Fidler, League of Women Voters: As you say, communication is vital to implementing SWAPs. Email, the Webpages, regular mail and sometimes phone calls could be used. When

state agencies coordinate with each other, which agency makes the final decision or is the goal to reach consensus?

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Answers to the six questions in this section are more programmatic, so I have decided to leave them unanswered.

5. How and what should the state report to EPA regarding SWAP implementation?

Dr. George Smith, UT Ag Extension Service: Whatever meets EPA's demands/ needs.

Tim Higgs, Army COE: Annual updates on the numbers of systems assessed.

Larry Lewis, Tn Assoc. of Utility Districts: The State should determine what information is provided to EPA. Only the information required by Federal Mandate should be provided to them.

Tom Moss, Division of Water Supply: All of the assessment information will be available to EPA; however, the flexibility needs to be there so that EPA reporting is not so burdensome as to conflict with getting the job done. The plan is to have assessments available annually to the public, that should suffice for EPA as well. They will also have the same access to the Department's webpage as the general public.

Sharon Fidler, League of Women Voters: Copies of the material prepared for the WebPages could be sent to EPA with updates.

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Answers to the six questions in this section are more programmatic, so I have decided to leave them unanswered.

Moss followup: Yearly progress updates will be provided.

6. When and how should the state update assessments?

Dr. George Smith, UT Ag Extension Service: Ideally, updating will be a continual process so the assessments are dynamic, up to date information evaluation sources. Realistically, the resources required won't be available, what about updating on a 5 year cycle the watershed approach is using?

Tim Higgs, Army COE: Five years cycles may be appropriate. The assessment will continually be out-dated to some degree as sources changes within the area.

Tom Moss, Division of Water Supply: Since the Source Water Assessments will be closely linked with the Watershed Management Program, assessment updates will be tied into the five year cycle for each HUC 8 watershed that the Watershed Management Program uses.

Sharon Fidler, League of Women Voters: Would updates be made as new information replaces the old? If a situation changes in a wellhead area or watershed, should not that information be updated on the WebPages as soon as possible rather than wait for the five years until the SWAP is updated?

Greg Upham, Dept. of Agriculture, Nonpoint Source Program: Answers to the six questions in this section are more programmatic, so I have decided to leave them unanswered.

Additional Comments

Karen Stachowski, League of Women Voters: I still believe that the wetlands program should be brought under the "umbrella" of Source Water Protection Plan like the other programs such as Underground Storage Tanks (so that the program is included in the information and input loop for the Source Water Plan).
"Wetland protection programs often need to access the overall health of watershed ecosystems in order to estimate the impacts of proposed man-made changes to wetlands and other waters… Wetlands can provide a wide range of different functions and benefits to local communities including the interception and filtration of pollutants thereby improving source water quality and possibly reducing treatment costs… Integrating wetlands protection and restoration into source water protection programs can highlight the importance of targeting wetlands and source waters as high priority areas for protection and can reduce duplication of efforts and conflicting actions." *State Source Water Assessment and Protection Programs Guidance – August 6, 1997,* United States Environmental Protection Agency, Office of Water EPA 816-F-97-004 Chp. 5 p. 15. When I asked the question about wetlands as a ground water issue, your response {Tom Moss's} dealt with karst areas that have sinkhole wetlands. Karst aquifers are found in Middle and East Tennessee. Middle and East Tennessee do not rely heavily on ground water as a drinking water source. However, West Tennessee contains sand aquifers and relies almost exclusively on ground water as its primary drinking water source. *The Status of Water Quality in Tennessee 1996 305b Report,* Tennessee Department of Environment and Conservation, Division of Water Pollution Control p. 91 – 95. In Shelby County, the Wolf River's "floodplains and wetlands play an important role in replenishing the amount and quality of our local drinking water." A recharge area for the Memphis Sand coincides with a large portion of the Wolf River. "Wetlands along the river help to resupply our underground water sources by holding water, allowing it to be absorbed into the ground rather than diverting it to surface bodies like the river." *Wolf River Wilderness Area*, August 15, 1991, p. 3 (copy of map and page included).

Tom Moss, TN Division of Water Supply: Recharge areas are an integral part of the hydrogeologic considerations that are required in delineating the wellhead protection areas. Wetlands are not specifically targeted unless they fall within the recharge area. For West Tennessee, water systems are required to model ground water flow and base their wellhead protection area on a minimum of a 10 year time of travel. If a water system/municipality so chooses they can have a larger area. Shelby County is also unique in having a Ground Water Management Board that could address this issue. Germantown, Collierville and Arlington went with 40 year time of travel so as to consider potential growth.

The time of travel from the wetlands to Memphis's wellfields would probably be on the order of hundreds of years. It would be considerably closer to Collierville and their 40 year TOT may include some – I haven't checked. The wetlands probably do provide recharge on a regional basis, but this might be better handled in a Sole Source Aquifer petition for the Memphis Sand aquifer. The Sole Source Aquifer Program only specifically requires that nay federally funded projects be reviewed by EPA, which in itself is very little protection. There are, however, other programs that place a priority on these areas in dealing with hazardous waste facility permitting, spill prevention plans, etc.

David Moses; Chief of Permitting; SWM: Susceptibility Analysis discussed with Glen Pugh, Chief of SWM Section – not aware of any impact landfills would have as far as 15 miles downstream. He felt tha t 5 – 10 miles would provide adequate protection.

Sharon Fidler, League of Women Voters:

> The League of Women Voters supports:
>
> Water resource programs and policies that reflect the interrelationships of water quality, water quantity, ground water and surface water, and that address the potential depletion or pollution of water supplies;
>
> Measures to reduce water pollution from direct point-source discharges and from indirect non-point sources;
>
> Policies to achieve water quality essential for maintaining species diversity and populations of aquatic species, including measures to protect lakes, estuaries, wetlands and in-stream flows;
>
> Stringent controls to protect the quality of current and potential drinking-water supplies, including protection of watersheds for surface supplies and of recharge areas for groundwater.

Comments on Susceptibility

Dr. George Smith, UT Ag Extension Service

I have no significant comments or suggestions for improvement. The pie chart is an excellent way to visually summarize and present the information. Congratulations on your inspiration and creativity!

I think it can be used as is. If you do decide to revise it, here are two points to consider:

1. Five miles upstream may be more appropriate than 15 miles for agriculture and forestry, urban and, perhaps, NPDES sources. However, factors like the

particular contaminant and dilution as influenced by stream size and flow volume may make 15 miles a "better" distance in some situations.

2. Including the Impacted Stream factor will result in some double counting since other factors, like NPS impacts from agriculture, forestry and urban sources, are reasons a stream is on the 303(d) list. On the other hand, EPA undoubtedly would like the 303(d) list to be considered and the list may not be complete so there are arguments for including it and other factors as well.

Considering all sides of these two points, I cannot see a strong argument for changing the materials.

Mike Bradley, U.S. Geological Survey: The susceptibility analysis approach looks pretty good. It's straightforward, simple and a useful way to prioritize the various water systems. I have no real comment on using 15 miles versus 5 miles for some of the parameters. Travel time would probably have been better, but much more difficult to get at. Distance is probably better in that regard.
Impacted ground water on the ground water pie chart is ¼ of the pie and pretty heavily weighted. Of course, if the water system is already impacted, then its definitely susceptible.
It might be worthwhile to pick a few systems that are susceptible and some that aren't and try this out.
This {susceptibility analysis} is a good yes/no approach.