

GROUNDWATER RESEARCH SUBCOMMITTEE MEETING RECORD

TIME AND DATE:

9:00 AM, Wednesday, April 23, 2014

LOCATION:

Texas Commission on Environmental Quality Campus Building F, Room 2210, 12100 Park 35 Circle, Austin, TX 78753

PURPOSE OF MEETING:

Second semi-annual regular business meeting

AGENCIES/ENTITIES REPRESENTED:

Texas Commission on Environmental Quality [TCEQ]
Texas Department of Agriculture [TDA]
Texas Groundwater Protection Committee [TGPC]
Texas Water Development board [TWDB]
Texas Water Resources Institute [TWRI]
United States Geological Service [USGS]

ATTENDEES:

Kevin Wagner	TWRI, Co-chair of the GW Research Subcommittee
Cary Betz	TCEQ, Chairman of TGPC
Alan Cherepon	TCEQ
Lynne Fahlquist	USGS
Janie Hopkins	TWDB
Joseph L. Peters	TCEQ
Jill Savory	General Public
Peter Van Metre	USGS
David Villarreal	TDA

MEETING SUMMARY:

Call to Order and Introductions

Dr. Kevin Wagner called the meeting to order at about 9:01 AM. Dr. Bridget Scanlon, the co-chair of the Subcommittee was not present. Dr. Wagner started the meeting by having everyone introduce themselves.

Discussion of Texas Groundwater Protection Strategy Update, Legislative

Recommendations, and Priority Research Needs

Dr. Wagner suggested that this probably should be a standing item on the agenda for the Groundwater Research Subcommittee, because every two years the Subcommittee's recommendations need to be updated. There is a research section, Chapter VI, in the *Groundwater Protection Strategy (Strategy)*. Dr. Wagner indicated that he, Dr. Scanlon, and Ms. Kristine Uhlman had worked together to make some substantial revisions to this section of the *Strategy*. At this point, Mr. Betz informed the meeting that it was likely that in the revised *Strategy* the research section would no longer be in Chapter VI, but would be pretty much verbatim incorporated into the recommendation portion of the document, which appears in the front. The proposed organization of the revised *Strategy* will be: an executive summary, a relatively brief introduction, and then the recommendations followed by an analysis of the outcomes of the recommendations of the previous *Strategy*. Dr. Wagner suggested that discussion move to the bulleted items of the proposed revised recommendation portion of the *Strategy*, reproduced here as follows.

- Water scarcity from limited water quantity and degraded water quality;
- Increasing demand to meet expanding Texas population growth;
- Irrigated crop production as a primary consumer of groundwater resources;
- Conjunctive use to off-set the reduction of statewide reservoir capacity to meet municipal, industrial, and energy demands;
- Water demand to support natural resource development, including oil/gas activities such as hydraulic fracturing;
- Water recycling technologies addressing municipal waste water, industrial, and oil/gas produced water treatment;
- Desalinization treatment technologies addressing brackish water resources;
- Managed aquifer recharge and aquifer storage and recovery (ASR) facility siting, permitting, and technology options;
- The water/energy nexus balancing between competing water demands to support resource extraction and facility cooling needs;
- Calibration and application of remote sensing tools to monitor groundwater resources;
- Ecological flow protections in river reaches dependent on groundwater base flow to protect endangered species;
- Natural and anthropogenic contaminant fate and transport, including treatment options to meet drinking water MCLs; and
- Sustainable production in context of land use change and drought.

Dr. Wagner stated that these was an expansive list of potential groundwater research topics, many of which were probably derived from existing or proposed research at the University of Texas (UT) or Texas A&M University. Dr. Villarreal inquired whether these were purposely made general to cover just about anything that could come up as a possible research need. Dr. Wagner responded that, yes, this is for a five-year strategy

so the topics need to be quite broad while hitting on some of the key issues. He observed that most of the topics focus more on the water supply issues than quality since that is the driving factor at this time and it is likely that in five years it will probably be the same. Dr. Villarreal asked if biological contamination – viruses, cysts, etc. – would come under the topic of natural and anthropogenic contaminant fate and transport, which Dr. Wagner answered in the affirmative. Dr. Villarreal went on to mention specifically the topic of border issues, there perhaps being a need to investigate how different policies and laws on each side of the boarder can affect shared aquifers, and groundwater/surface water interactions. Dr. Wagner felt that the groundwater/surface water interactions issue is addressed by the third-from-last bullet, acknowledging that perhaps there was a better way to state the topic to make it more inclusive. Dr. Villarreal opined that probably this will become an even bigger issue when the feds redefine waters of the U. S. He then added that another possible issue would be invasive species that draw heavily on groundwater resources.

Mr. Betz suggested that the bullet titled, “Managed aquifer recharge and aquifer storage and recovery facility siting, permitting, and technology options”, needed to be reworded for FY 2015, since TCEQ is anticipating a project that would undertake a characterization of potential receiving zones for aquifer storage. The project would involve a certain amount of geochemistry. For instance, present rules require that injected water be treated to drinking water standards, which includes disinfection; and there are three primary methods of disinfection: chlorination, ozonation, and ultraviolet irradiation. Chlorination and ozonation are considered undesirable for water that is being injected into an aquifer because of the production of trihalomethanes (THM) and free metals, respectively. Therefore it becomes important to determine what the chemical interactions are with the rock matrix in the injection zone. The TCEQ will be working with the BEG in a research project using existing aquifer cores whereby they are subjected to waters of varying chemistry to determine possible undesirable consequences. Mr. Betz suggested that the “Managed aquifer recharge” bullet be modified to specifically mention injection zone geochemistry. Dr. Wagner at this point summarized the suggested subject additions and improvements to the *Strategy* recommendation bullets: injection zone geochemistry, characterization of transboundary aquifers, and impact of invasive species. He also encouraged the subcommittee attendees to continue to review the strategy recommendations and email him any additional comments and suggestions for improvement.

Dr. Wagner moved the discussion to exploring possible legislative recommendations. He thought that perhaps there were no issues that needed to be presented to the legislature as a line item, but maybe just a very broad statement that there are a lot of research needs that would help move our state to the next level, such as development of desalinization technology, conservation technology, or ASR related studies. Dr. Villarreal asked how this recommendation would exactly fit in to the *Activities and Recommendations of the Texas Groundwater Protection Committee: Report to the 83rd Legislature (Legislative Report)*. Dr. Wagner explained how it would be included as description that gives a little background, explains the need, and then the actual

recommendation. Sometimes it would be very specific like the one for the water well drillers for whom there has been a recommendation included for a number of years requesting that a well plugging fund be set up. Mr. Betz explained that the TGPC is charged to prepare a biennial report (the *Legislative Report*) to the legislature which discusses TGPC activities over the previous biennium and recommendations that the TGPC might have for the legislature concerning groundwater quality. He emphasized that it would be nice to have some recommendations for the real pressing issues. He also went on to explain the *Strategy* which is a document which contains some level of recommendation, but also is a policy statement of what the TGPC intends to do to protect groundwater. He also gave a little history of the TGPC starting with its ad hoc initial formation as the Groundwater Protection Committee (GPC) which volunteered recommendations to the legislature, to its officially legislatively codified existence, in 1989, as the Texas Groundwater Protection Committee (TGPC), when it was obligated to make legislative recommendations. Dr. Wagner suggested that at this point perhaps we just need a general awareness recommendation concerning groundwater issues, especially considering that many of the surveys performed by AgriLife Extension and the University of Texas indicate that the general populace has a very deficient knowledge of water issues even in the drought situation in which we find ourselves. Ms. Fahlquist commented that the USGS has defined some national groundwater research priorities and that she thought that we had covered them in our discussion, but she would like to verify with Dr. Wagner and Mr. Betz after the meeting. Also, she wasn't sure that data gaps, such as aquifer extent and resource availability, needed to be treated as a separate recommendation. Ms. Hopkins commented that the TWDB had a very broad data-gap-filling type of legislative appropriation request that includes surface water and groundwater: however, it's focused on resource definition rather than quality. Dr. Wagner next focused the group on priority research needs. He asked everyone what they thought might be the primary research needs. Dr. Villarreal brought up the developing problem of pharmaceutical and personal care product contamination of state waters including groundwater. He opined that it was probably a bigger issue than pesticides and therefore should get at least equal funding for research. He also brought up as a research subject biological contamination from viruses, prions, spores, and parasites – exacerbated by things like increasing international trade, issues with sharing groundwater with Mexico, and border security. So far there hasn't been any real focus on these potential problems. Mr. Betz brought up the problem of endangered species especially those that are dependent on groundwater. This is a problem which we cannot overlook especially since this is an area where the agency often gets sued under the Endangered Species Act. This is becoming a growing problem, and we will need to be prepared to deal with it. Dr. Villarreal commented that he had recently seen a map showing areas of endangered species in the US. It showed California as being almost fully covered, but Texas by comparison had only pockets of critical habitat. So, California is already there with 95% coverage, and Texas can probably look forward to an increasing coverage over time. Mr. Betz commented on how some of the endangered species problems in California have considerably damaged agriculture in some areas. Ms. Fahlquist commented on the pharmaceutical and personal care products research needs, and that the USGS had recently, in their National Water Quality Assessment

(NAWQUA) program, expanded their list of constituents for which they are sampling. She was not sure if it included all the products to which Dr. Villarreal was referring, but she felt sure that some of the expansion was for pharmaceutical and personal care products. They are focusing their sampling right now on public supply wells. Last year they completed work on the Gulf Coast Aquifer system throughout the state, and now they are doing work in the Rio Grande alluvial aquifer system. There are plans to do sampling in the High Plains aquifer system next fiscal year. She said that she can provide the expanded constituent list for those interested. Ms. Hopkins asked if the USGS sampling was the only work for pharmaceutical and personal care products taking place in Texas. Ms. Fahlquist answered that on a large scale, as far as she knew, yes, but that there have been small scale research projects, such as by Texas State University, that have been done from time to time. Dr. Villarreal added that the Edwards Aquifer Authority and the University of Texas at San Antonio (UTSA) have done a project in the Edwards. Ms. Hopkins asked if the USGS sends all their samples to their own lab and about the expense of doing analyses for pharmaceuticals and personal care products. Ms. Fahlquist responded that the methods are somewhat expensive and furthermore there are very few labs that can perform the methods. Dr. Villarreal commented that in recent years there has been a general decline in pesticide use through restricted use and limited use labeling, increased regulation, increased stewardship by farmers, etc. which is continuously decreasing the pesticide contamination threat, but the opposite is happening with pharmaceuticals which are being prescribed in every increasing amounts. Ultimately, these are excreted through wastewater systems into the environment. At this point there is no one really looking into this, but in the case of pesticides money is being spent for monitoring even though we get only minimal detects. Perhaps some of this money should be shifted over for pharmaceutical monitoring, especially since it seems that pharmaceuticals can be detrimental at much lower concentrations than pesticides. Mr. Betz added that there was a large agricultural component for pharmaceuticals that were being used in confined animal feeding operations. Dr. Wagner suggested that ASR research was becoming a big priority in the state. Mr. Betz also pointed out that injection for aquifer storage was regulated by TCEQ, but as yet there were no specific rules for aquifer storage; aquifer storage projects thus far must be regulated under existing injection well rules which are not specific to aquifer storage, but are designed for waste injection. One big difference is that aquifer storage water is not a waste but a resource. Furthermore EPA does not have any specific rules for aquifer storage. Mr. Betz mentioned that he chaired the ASR Task Force for the Groundwater Protection Council. But the Task Force hasn't meet in a year because at first EPA said that they were considering a new class of well for aquifer storage, but then they seemed to change their minds. So the Task Force has not had any appropriate feedback with which they could work, even though interest in ASR is growing phenomenally in much of the nation and particularly in Texas, especially since the last Legislative Session. There has been an increasing number of inquiries where municipalities, river authorities, or other entities are considering ASR, but they encounter the problem of the expensive involved, especially for a smaller entities, to perform the required characterization of the aquifer to the extent that TCEQ feels is necessary to permit a project. Therefore this is not a solution for a small town, which

would find it much more economical to buy water from another nearby entity and build a pipeline. The process could be facilitated, perhaps considerably, if pertinent data, developed with the proper research, could be provided. Ms. Hopkins asked about the Barton Springs project, if they had to obtain a permit for their aquifer recharge structure on Onion Creek. Mr. Betz responded that they did not have to get a permit because the sink hole which they were using was not physically altered; they just cleaned it out and put a filtration system on it. If there had been any alteration at all of the sinkhole it would have required a Class V injection well permit. Ms. Jill Savory (in the audience) commented that USGS had funded an injection well for an ASR project in South Carolina. One of the things she was looking at was the case where the ASR water is not used for drinking water but for irrigation, and perhaps after additional studies the water could then be approved for drinking water. Mr. Betz responded that the obstacle to injecting irrigation water in Texas is our present rules and policies. The state policy is non degradation with respect to use, so nothing can be injected into an aquifer which could be used for drinking water, unless it meets drinking water standards.

Discussion of Restructuring Subcommittee (i.e., adding members)

In introducing this topic Dr. Wagner mentioned some past discussion that the Subcommittee has had on the topic such as adding some additional members. He asked everyone if they knew of any other universities or other entities that did groundwater research that would be valuable additions to the Subcommittee. He brought up again Texas State which had been discussed earlier as having done work on the Edwards Aquifer through the Edwards Aquifer Research & Data Center (EARDC). He also mentioned the Houston Advanced Research Center (HARC) which has done some good research on groundwater in the past. He asked if entities such as these could be possible additions to the Subcommittee. He mentioned possible travel problems, especially for an entity such as Texas Tech, which is located in Lubbock. Dr. Villarreal suggested that if an entity such as Texas Tech were to be added, it also should be added to other subcommittees, such as the Agricultural Chemicals Subcommittee, that meet on the same day; then they might be more inclined to make the trip a couple of times a year. Dr. Wagner restated the question again by asking if we should add new members and, if so, who should we ask to join the Subcommittee. Dr. Villarreal endorsed the possibility of inviting Texas State and HARC to join the Subcommittee, but also mentioned the Texas Alliance of Groundwater District (TAGD) which should be aware of some of the research needs. He then added that Parks and Wildlife would probably be a good consideration especially from the standpoint of endangered species. Mr. Betz responded that in the last *Legislative Report* it was recommended that the Legislature add Texas Parks and Wildlife to the full TGPC, which would have given them an easy route to participate in any subcommittee. Parks and Wildlife was willing to participate. The Texas General Land Office (GLO) was also considered for TGPC membership, but they declined. It was also recommended to the Legislature that Texas Department of State Health Services (DSHS) no longer be a member of the TGPC. The Legislature did not act on these recommendations. Mr. Betz explained that the recommendations that the TGPC has always put into the *Legislative Report* and the *Strategy* have always

included a research component with suggested specific research activities, and it has always included coordination of research efforts, especially in the *Strategy*. He expressed his opinion that it would be helpful if the Subcommittee would become more inclusive. He suggested that one way of achieving this would be to send out a questionnaire to a list of what we would think to be good prospects for potential membership. The questionnaire would delve into such things as their interest in serving on the subcommittee, their involvement in groundwater research, their concerns about funding, etc. Mr. Betz went on to say that he thought that the discussions of the subcommittee have always been held up on monetary issues; thus, it might be a good thing to get someone from the Comptroller's Office or from the Legislative Budget Board (LBB) to sit in on the Subcommittee's meetings so they can hear what the state's groundwater research needs are and realize that funding is the biggest obstacle. Mr. Betz informed us that he had gotten a number of calls from the LBB over the last year and a half asking about program and subcommittee activities, but they have never really made clear the purpose of these inquiries. Mr. Betz added that the Comptroller's Office had recently funded a Bureau of Economic Geology (BEG) study on the economic impact of listing freshwater mussels as endangered. Dr. Villarreal opined that it was because of the Comptroller of Public Accounts, Susan Combs, that the Comptroller's Office has become so proactive. Ms. Fahlquist at this point added her approval to expanding the Subcommittee since she felt that the search for new ideas and the involvement of new people is always a good thing. She felt that all the possible new additions mentioned would be reasonable, especially TAGD. Dr. Villarreal asked if there were any other Federal Agencies in Austin (besides the USGS) with groundwater interests, that could easily come to meetings. After some discussion it was decided that there weren't, except for the US Fish & Wildlife Service. Ms. Savory followed up by commenting on the US Army Corp, which actually had a groundwater monitoring system in California. Information is available to the public, with some published research, on their California website. Mr. Cherepon commented that the State Comptroller's Office, in developing state water plans, has been involved with groundwater in the past, which should strengthen the case for having them participate in the Subcommittee. Dr. Villarreal followed up by stating that the Comptroller's Office definitely has been involved with water; two of their main policy people were present just recently at a meeting with the NRCS. He indicated that Ms. Combs sends these policy people out to important meetings and that they probably would be happy to join the Subcommittee. Dr. Wagner asked Ms. Hopkins about any entities, not counting consultants, with which the TWDB collaborates on groundwater. Ms. Hopkins responded that it would primarily be BEG. Dr. Villarreal threw out the idea of perhaps having a river authority join the Subcommittee or a chair from one of the regional planning groups since they are so close to some of these issues. Mr. Betz responded that the TGPC approached the regional planning groups back in 2003 when the last *Strategy* had been completed, since one of the recommendations or actions in the *Strategy* was to improve the interaction with the regional water planning groups. They basically all responded with the same lack of enthusiasm in the idea. So, he concurred that it would be a good idea, but getting the regional planning groups to reciprocate would be another matter. Dr. Wagner, in summarizing, proposed that, since the list of potential new

members had gotten rather large, we trim it down to the top three candidates and determine their willingness to serve first. He proposed that he would send out the list of all the possibilities discussed at this meeting for everyone to prioritize. Then we can contact the top three or work down the list, and make the final determination at the next meeting. He also proposed that there could be one meeting a year (or periodically) where we could send out invitations to a wider group to seek input from entities that wouldn't necessarily be official members of the Subcommittee, but could occasionally have some input.

Information Exchange

There was no information exchange.

Public Comment

Dr. Wagner at this point asked if there was any input from the audience. Ms. Savory responded with a question for Ms. Hopkins about the loss of funding for the TWDB groundwater level recorder sites. Ms. Hopkins explained that even though there has not been any specific funding over the last three fiscal years – the dedicated \$30,000 which originally had been budgeted each year – they have managed to scrape together enough funds to repair and operate existing recording sites; and furthermore, a number of groundwater districts have bought additional equipment for additional sites. She added that the funding is expected to be resumed in the 2015/2016 budget. Ms. Savory then opined that this would be an additional reason for the Comptroller's Office to take part in our meetings, to make sure that they are aware of these type of funding problems. At the end there was discussion on the problem of putting together a coordinated effort to establish and fund the recording water level sites for both ground and surface water. The more financially secure groundwater districts can provide funding for recording sites in their districts, but less financially secure districts cannot and thus go without recorders even though they may have an equal or greater need for them.

At the end of the meeting it was announced that TCEQ was putting on an Earth Day event in the parking lot between buildings A, B, and C. and everyone was welcome to participate after the meeting.

Adjournment

The meeting adjourned at 10:22 AM.

Minutes prepared by Dr. Joseph L. Peters, June 17, 2014

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