

## DATA MANAGEMENT SUBCOMMITTEE MEETING RECORD

### TIME AND DATE:

9:00 a.m., Thursday, September 21, 2006

### LOCATION:

Texas Water Development Board Offices, Stephen F. Austin State Office Building,  
Room 465A, 1700 North Congress, Austin, TX 78711

### PURPOSE OF MEETING:

Regular meeting

### AGENCIES/ENTITIES REPRESENTED:

Texas Commission on Environmental Quality [TCEQ]

Texas Department of Agriculture [TDA]

Texas Water Development Board [TWDB]

University of Texas Bureau of Economic Geology [UTBEG]

### ATTENDEES:

Janie Hopkins	TWDB, Co-Chair
Chris Muller	TWDB
Radu Boghici	TWDB
Steve Musick	TCEQ
Mary Ambrose	TCEQ
Cary Betz	TCEQ
Chris Chandler	TCEQ
Richard Eyster	TDA
Bridget Scanlon	UTBEG
Andrew Tachovsky	UTBEG
Brian Reece	USGS
Jim Lester	GeoTechnology Research Institute (GTRI)
Stephanie Glenn	GeoTechnology Research Institute (GTRI)

### MEETING SUMMARY:

#### I. Call to Order and Introductions

Janie Hopkins (TWDB), Co-Chair, called the meeting to order at approximately 9:08 a.m. Members attending introduced themselves.

Handouts were provided. Handout #1 - Meeting Agenda; Handout #2 – Final workplan for monitoring strategy contract; Handout #3 – Ambient Groundwater Monitoring Strategy.

## II. Presentation

Bridget Scanlon gave a presentation on the first phase of the project *Occurrence of Nitrate in Groundwater in Texas*, and an update on the progress of the second phase of this project.

Nitrate is one of the most pervasive contaminants in groundwater in Texas, exceeding the maximum contaminant level for drinking water in many aquifers in the State. The purpose of this study was to assess controls on nitrate contamination in major porous media aquifers in the state by comparing groundwater nitrate concentration data with nitrogen loading and aquifer susceptibility parameters. Attributes characterizing nitrogen loading included atmospheric deposition, inorganic and organic fertilizers, land use, proxies for sewage and septic input, population density, precipitation, and irrigation. Attributes characterizing aquifer susceptibility to contamination included percent land surface slope, percent well drained soils, clay content, and organic matter content.

Multivariate logistic regression was used to relate the probability of nitrate concentrations in shallow wells ( $\leq 30$  m) exceeding a pre-specified threshold value of 4 mg/L nitrate-N with potential explanatory variables representing nitrogen loading and aquifer susceptibility. The final regression model included precipitation, percent agricultural land, low density residential land, and soil organic matter. Observed and predicted probabilities of elevated nitrate concentrations were highly correlated in calibration and validation data sets ( $R^2$ , 0.96; 0.98). The inverse relationship between precipitation and nitrate concentration may be related to dilution in high precipitation areas and possibly evapoconcentration in low precipitation areas.

Although nitrate loading is not explicitly represented in the final model, percent agricultural land may be considered a proxy for nitrogen loading from agricultural sources and low density residential land use may be considered a proxy for septic tank effluent. Percent organic matter may reflect the influence of denitrification in some regions. This GIS and logistic regression analysis described in this study provides valuable insights into controls on the distribution of nitrate concentrations in groundwater and should be supplemented in future studies with field sampling to ground reference the GIS and logistic regression analysis of this study and to assess the impact of different processes such as dilution and denitrification on nitrate concentrations.

The second phase of the project is underway, and includes some targeting monitoring and analysis. Data from other projects nearing completion is being incorporated into this report, and has required that the original completion schedule be moved back.

## III. Business Discussion and Possible Action

The first item was discussion of statewide groundwater quality monitoring strategy. Stephanie Glenn updated members on the status of the contract workplan. The workplan has been approved by the TCEQ contract administrators. The literature search (task 5.2)

is underway, if any member has knowledge of a particular publication, database or website that they wish to be included, please give that information to Stephanie.

Jim Lester asked about the philosophy behind the first phase of this project, in particular that no mention of risk to humans or human uses being a specific “driver” for the monitoring strategy, and asked if these were simply considered “fundamental” to the program. Members of the subcommittee responded that while human health and interests are fundamental, the strategy covers more than simply human health and use. Mr. Lester said that this view would affect the spatial distribution of monitoring points.

There may be two competing needs – first, we need to characterize the aquifers for future planning purposes. Second, assess risks to human health and uses, especially with respect to naturally occurring contaminants. The latter is more difficult to accomplish, and does not lend itself to completely random sampling. We have wanted to incorporate risk in sampling strategies. Risk may need to be defined, as it can mean economic risk, or risks other than human health.

Returning to the three different levels of monitoring, Basic, Reference and Targeted, Basic monitoring includes the more “random” sampling point selection. Each higher lever of monitoring reduces the “randomness” of the sampling locations accordingly. Members discussed this at some length.

Weighting input from various groups may be an issue. Jim Lester asked the members to consider how this should be done. Generally, requirements from TWDB, TCEQ and other members of the TGPC should take precedence. Start with the State Water Plan for insight into future water use and needs. The *Texas Groundwater Protection Strategy*, would provide additional guidance. The Joint Groundwater Monitoring and Contamination Report can also provide guidance on contamination monitoring.

Updating the data dictionary again appeared on the agenda. There may be some additional information that needs to be added, such as look-up tables. The question arose as to who uses it, and it was pointed out at the recent Texas Water Monitoring Congress that this document provides a useful method of exchanging data among interested parties. This provides guidance for agencies putting together cross-media projects. Mary Ambrose mentioned that the National Water Quality Monitoring Council has formed a steering committee looking toward the development of a national groundwater monitoring program, and documents of this type will be useful in their efforts. Members are encouraged to review the data dictionary to look for areas with the potential for needing change, and look at what needs to be done to update the document.

For the TGPC Report to the Legislature, agency staff has assembled a collection of accomplishments for the Subcommittee, and is preparing a write-up describing how the Subcommittee has helped to reach the short, medium and long term goals identified in the *Texas Groundwater Protection Strategy*.

Next meeting will be held at 10:00 a.m., Wednesday, October 25, 2006 at the Texas Water Development Board offices, Stephen F. Austin State Office Building, 1700 North Congress, Austin, Texas.

#### IV. Adjourn

There being no other business or information exchange, Ms. Hopkins adjourned the meeting at 12:08 p.m.

Minutes prepared by Cary Betz (TCEQ), December 6, 2006  
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