

MEMORANDUM

To: Groundwater Advisory Council
From: H. Bokuniewicz
Re: Minutes of the meeting of 9 May, 2005
Date: June 3, 2005 (**REVISED**)

PRESENT

J. Altorfor
N. Bartilucci
H. Bokuniewicz
C. Clapp
S. Colabufo
G. Hanson
S. Jones
B. Nemickas
D. Paquette
G. Proios
S. Robbins
K. Roberts
W. Spitz

REGRETS

M. Alarcon
D. Irwin
L. Koppleman
R. Liebe
R. Mazza
M. Nofi
K. Willis

1. The minutes of the last meeting were distributed. Steve Colabufo had been inadvertently left off the list of attendees and will be added. Any other revisions or corrections can be sent to me.
2. We had our next meeting scheduled for Monday 13 June, but instead of a regular advisory meeting, we will use this date to hold a day-long workshop on modeling. (This had been scheduled for May but had to be postponed and the 13th seemed to be the next acceptable date).
3. The turf management session for the LI Water Conference education services is scheduled for Thursday 29 September. We're working with Joe Baier and the Cornell Cooperative Extension to set this up.
4. Gil Hanson spoke about the group of graduate students doing nitrate studies at Stony Brook. Linda Liu just graduated with her Master's degree having developed a model of cation exchange in sewage plumes in groundwater. The calculations are done in MATLAB and should soon be available on the Web. The model treats the aquifer as a chromatographic column and can accommodate any cations and trace elements.

Jennie Munster is continuing on for her Ph.D. studying now the use of bromide, iodide and boron as more-or-less conservative tracers in groundwater. The intention

is to use these elements to “fingerprint” sources of contamination. The research will be done using a technique known as isotope dilution to nanogram resolution. Stony Brook has one of the most sensitive instruments in the world for this work. Other anions can be explored including perchlorate.

Other students are working on issues of denitrification. We had originally thought that denitrification was not an important factor in the reduction of nitrate levels. We have no new measurements of dissolved oxygen but previously reported values in LI groundwater are around 9 or 10 ppm. In the lysimeters, however, nitrate was sometimes found to increase with depth indicating remineralization, and sometimes to decrease suggesting denitrification. At the chemically fertilized site at both Stony Brook and at the organically fertilized site in Oakdale nitrate concentrations decreased with depth in the soil but in the chemically fertilized site in Oakdale nitrate was found to increase. Valerie Slonecki plans to take cores to a depth of about 4 or 5 feet to examine the biota that may be controlling the nutrient levels in the soil water. We have some concern that there may be bacteria actually on the lysimetric collection cups.

Sunny Xu is another new student who is formulating a thesis topic on denitrification in a sewage plume. We would like to find a shallow septic system that could be monitored with a series of wells. A site at a park or some similar, open space with a water table about 20 feet below the surface would be preferred. The DEC has residences in Ridge (Rt 25 and the William Floyd Parkway); there’s a barracks and single family house there and the water table is perched fairly near the surface. There’s also a residence at the county park in Sayville where the shallow water table is not perched and may be less complicated.

Some work along these lines may have been done in the late 60’s by the Department of Health Services. There was also a study done on Cape Cod a few years ago (in the Journal of “Groundwater” by people from Waterloo) that showed denitrification of groundwater as it seeped through the sediments on a stream bed. In addition, one of the first proposals assembled by LIGRI was to look at sewage plumes around septic systems; it was done with Keith Porter at Cornell but didn’t get funded.

It was pointed out that we don’t even have good flow information for the behavior of septic systems and that such a study may help in determining the effective distance required between the cesspool and the water table. The state requires three feet, designed to get nitrification, but the SCHD allows two feet. The issue could also be important in determining the importance of submarine groundwater discharge in supplying nitrogen to the bay and the Sound.

5. Some progress continues to be made on the Groundwater Clearinghouse. Chris Clapp has been working with the monitoring wells to simplify and relate the data tables. We have some trial pumpage data from the DEC and we’re looking into ways of handling those data. Annual pumpage may be available electronically back to 1986. Paper records go back to the 1930’s. Monthly data is not available in an electronic format but could be important especially on the Forks and on Shelter Island. There is also the idea that the difference between warm season pumping and cold season pumping causes changes in direction of groundwater flow and plume migration.

There should be some way to document wells that have gone out of service. The historical data is especially important to deal with problems of saltwater intrusion. The USGS (Beau Kilburn ?) did a study of pumpage in Nassau County in the 1970's. The H2M Comprehensive Study may have documented wells that went off -line (we should have these reports at Stony Brook).

It would also be useful to scan in the completion reports for public supply wells. Errors have been found in the SWAP reports in such parameters as the screened intervals and depth. Having the actually completion reports would help check these data.

6. There seems to be some tendency for the Towns to use the SWAP capture zones superimposed on the tax maps for zoning and development issues. While it is encouraging that groundwater issues may be considered early on in the process, this may not be entirely a good trend. The SWAP maps are snapshots in time and while they are guides to the capture zones the actual capture zones will change in time especially in the future time to a planning horizon. For immediate zoning decisions we might try looking for supply wells screened less than 200 feet and SWAP capture zones with a travel time of less than 10 years. These are sensitive areas and SCDHS will not allow STPs, (or SPDES).

Zoning based on deep flow recharge should be the basis for siting and zoning, not specific SWAP results. The SWAP results, however, do support the deep recharge areas. The Department of Health Services rules are among the strictest in the county and it does not seem possible to impose further regulations. The sanitary code is well-designed to protect the well fields and SWAP should not be used to relax the sanitary code. SWAP results, however, are consulted when siting sewage plants.

In considering applications of the SWAP capture zones, it should be appreciated that those for long travel times (25, 50, 200 years) will change and the deep recharge zone is the appropriate planning zone. The shorter term capture areas designated by SWAP (5, 10 years) may be useful but zoning boards should not be required to use the SWAP results. They should be aware of them and all the caveats and it would inject the groundwater issues earlier into the planning process and serve as a vehicle to more closely connect the SCDHS with town zoning board approvals.

We will consider a workshop at the University for the Towns or the appropriate uses of the SWAP results. The American Planning Association runs training programs in the fall. This may be an opportunity to run a SWAP advisory for town zoning boards.

7. There was some technical discussion of the tax maps. The Comps Study will compare capture zones to the centroids of the tax parcels but, for the most flexible and site specific applications, the tax parcels are best specified as polygon features in the shape files. For the SWAP capture zone, it would be useful to have separate shape files for the capture zone of different time intervals (There would be some 11,000 files, however). It would be helpful to be able to go to a tax parcel and discover if it is in a capture zone, which wells may be affected and the travel time.

Another technical problem is the lack of standardization. For example, S-number are sometimes given with hyphens and sometimes not; sometimes with initial zeros or

with different number of decimal places. These are assigned by the DEC but different users have adopted their own conventions. Dates are also given in a variety of formats making comparisons less easy and the vertical datum on well depths are not always specified or used consistently among all wells.

Well information is available on the Web in other states and the DEC (Albany) is considering a proposal to begin in NY. Interest may be being heightened by the Brownfield Legislation requiring the mapping of plumes. It was suggested that we look into the BNL wells database. This database was designed to store information on well construction, geology, and survey data. We will try to set up a meeting with Amy Ramsdell and Bill Dorsch of BNL. Sy Robbins would also like to attend.

8. The Suffolk County Comprehensive Water Resources Management Plan is intended to take 30 months although the contract is not yet signed. The Towns will be involved and invited to submit future development scenarios for evaluation.

SWAP was originally taken on with the intention of determining disinfection and monitoring waivers (i.e. to show that the travel times were more than sufficient). There was no planning or implementation money earmarked. CDM will also review the sanitary code (Article 12).

9. The modeling workshop will be on Monday 13 June at Stony Brook. Our next regular meeting will be in September. I'm planning on the following dates:

- 26 September
- 24 October
- 21 November
- 19 December
- 17 January

All are on Mondays 9:30 – 11 AM except 17 January which is a Tuesday after Martin Luther King Day.