MEMORANDUM

To:   Groundwater Advisory Council
From:   H. Bokuniewicz
Re:   Minutes of the meeting of 19 December 2011
Date:   December 20, 2011

PRESENT

N. Bartilucci     M. Alarcon
H. Bokuniewicz    R. Alvey
R. Busciolano    S. Colabufo
M. Scorca     L. Koppelman
W. Spitz     R. Liebe
              M. Nofi
              D. Paquette
              A. Rapiejko
              K. Roberts
              S. Terracciano

REGRETS

1. There were minor, editorial comments on the minutes of the last meeting. The discussion of the summer demand was deemed to be helpful.

2. Rob Alvey had sent daily precipitation data from Mineola. It may be that changes have occurred in both the amount and distribution of precipitation. These data had been examined statistically by the USGS in the preparation of reports on the drought index. They appeared to show that the distribution of precipitations was more uniform fifty or sixty years ago. Design storms that were used fifty years ago for the construction of drainage systems may no longer be valid, perhaps contributing to flooding. In recent years it seems that precipitation events have become more episodic. The last five or six years have seen above average precipitation; this is the longest such stretch on record. This year, summer water demand was high during dry months in June and July but wetter than normal in August.

A representative of an Association of Irrigation Professionals (Dennis Realmuto or Ms. Patricia Palmieri, 631-789-0500, proirrigation631@aol.com) will be speaking to the Nassau County Water Commissioners. They are concerned with the possibility of new state regulations of the industry. The Jericho Water District does require rain gages and/or soil moisture sensors be installed with irrigation systems but the sensors tend not to be maintained and, therefore, become ineffective. Other devices were briefly discussed; it seems that some systems use a cork or sponge stopper that swells when wet, shutting down the system. Other types of sensors measure the impact of individual
raindrops rather than to rely on the collection of water, but these might be imaged to be expensive and difficult to maintain.

I will try to schedule the representative of system installers to speak at one of our meetings in the spring.

3. In August, 2011, the Governor signed revisions to the State Water Resources Law, Article 15, governing regulations for well permitting. The changes are not significant for water suppliers on Long Island but do change the rules in the rest of the state. Wells on Long Island that have an installed capacity (not production) of more than 45 gpm (64,800 GPD) are all required to get a DEC permit and to report pumpage. This has been, and still is, governed by the Long Island Well Law.

Upstate wells with installed capacity of more than 100,000 GPD will need a permit and are subject to reporting requirements. The value of 100,000 GPD was set to be consistent with requirements of the Great Lakes Compact. This is set out in section 601; section 602 governs Long Island and is unchanged. The new regulations apply not only to public water suppliers but most commercial, industrial and private entities. Geothermal wells are exempt but are defined as extraction wells. Certain irrigation wells are also exempted although new (or replaced) irrigation wells on Long Island are still required to obtain a permit and are subject to reporting requirements.

As we have discussed in the past, some form of electronic reporting would be very helpful. If pumpage was reported electronically rather than on paper, a database could be easily created. (Do any districts do this now?). Completion reports also are submitted on paper but many had been put on microfilm. It may be that the paper records of those microfilmed had been destroyed. It would be useful to have these scanned into an electronic medium but it would be an engaging task. Some intelligent discrimination would have to be exercised in the process to collect only the necessary and important documents.

4. The annual summary (attached) of the Groundwater Institute was presented. The Institute has been created in State law so its existence at the University is not in jeopardy. Money, as always, continues to be an issue. We do have four Ph.D. students and three Master’s students working on projects with four or five new master’s students starting the Hydrogeology program. The new students will be looking for projects in the spring. At earlier meetings, we had discussed possible research topics including issues concerning geothermal systems, summer water use, precipitation design storms, mounding and recharge basins biochar, ZVI, among other things.

Faculty serve as members of (at least) 14 committees, although it has been my experience in the past year that many of these committees have not been very active lately. A new addition is the Groundwater Guardian Team of the National Groundwater Foundation. This team is discussing initiating public service announcements in the spring, concerning summer water demand.
The on-line graduate course continues to be offered. In addition to the outreach done by SCWA in elementary schools, we have also offered a few programs at schools in Nassau County and other districts in Suffolk. Revisions to the Hydrogeology Master’s program in the Department of Geosciences are still pending.

We have a grant proposal into the National Science Foundation for “sustainability” of groundwater resources and are working on another to US AID. The USGS and the National Institute for Water Resources have a RFP out too that we will consider. The Federal programs tend to be focused these days on climate change and sustainability especially in more rural and water stressed areas.

The Institute will consider approaching the Pine Barrens Commission again for support for local projects. In the past, a requirement for a bidding process has been an obstacle. We may also consider potential collaboration with the National Weather Service. In the past, we did research on the use of weather-radar to document the distribution of rainfall on Long Island. Other projects might be appropriate for the sponsorship of Friends of the Bay or the Long Island Sound Study.

5. The issue of mounding at seepage pits was briefly discussed. There has been a GIS inventory of recharge basins; it is probably accurate in Nassau County but may be out of data in Suffolk where new basins have been added as development proceeds. Leach-fields used for STP’s will behave differently than recharge basins because the recharge from STP will be continuous while storm-water recharge will be episodic. Most of the storm water recharge basins are dry much of the time. The Suffolk County Department of Health Services requires monitoring wells at some sites. One STP recharge field at Shoreham was shown to contaminate a public supply well. This appeared to be due to the presence of clay layers in the vadose zone rather than to a contaminant plume originating at the water table under the pits. While local mounding can influence the direction of plumes, these conditions are routinely taken into account during spill investigations. They will go into great detail to document local conditions, including wells, recharge and the local geology.

6. The fate of Stony Brook’s Civil Engineering Program is uncertain. I will check on its status.

7. The meeting schedule for the spring is pending.

Long Island Groundwater Research Institute

Highlights of 2011

Research Activity:

- Denitrification in Long Island’s aquifer (Caitlin Young, Ph.D. student)
• Groundwater coastline typology for Nitrogen Inputs to Manhasset, Huntington, Port Jefferson and the north shore of Long Island in collaboration with the USGS (Woods Hole) (T. Pick, Ph.D. student)

• Groundwater links between land use and surface waters (R. Coffey, Ph.D. student)

• Use of zero-valent iron for denitrification (Caitlin Young, Ph.D. student and Weida Zhang, Undergraduate)

• Geology and hydrogeology in the vicinity of the Brookhaven Landfill (Omkar Aphale, MS student)

• Electrical resistivity measurement and SGD (Josephine Durand, Ph.D. student)

• Synthetic groundwater and arsenic uptake by calcite (Dr. Rich Reeder)

• Mapping nitrate levels in well water in Eastern Long Island (Dr. Jaymie Meliker)

• Health effects from drinking water arsenic (Zorimar Rivera-Nunez, Ph.D. graduate, University of Michigan and Kathy James, Ph.D. graduate, University of Colorado).

• Degradation of PAHs at (Bayshore) MGP sites (Kevin Taylor, MS student)

Professional Services:

• Nine meetings (2011) of the Advisory Council (Suffolk County Water Authority, U.S. Geological Survey, US EPA, NYS DEC, Suffolk County Health Department, Brookhaven National Laboratory, Stony Brook University’s Center for Regional Policy Studies, Long Island Water Conference, Nassau County Department of Health, Nassau-Suffolk Water Commissioners Association, Nassau County Department of Public Works). Minutes of the meetings are available. <http://www.somas.stonybrook.edu/institutes/ligri.html>

• We co-sponsored the 16th Annual Pine Barrens Research Forum (October 6-7, 2011 at BNL). Field Trip was to Hubbard County Park.

Institute Faculty served on the following technical and advisory committees:

• International Society of Exposure Science

• Science of the Total Environment, Editorial Board

• CAREX: Surveillance of Environmental and Occupational Exposures for Cancer Prevention, Drinking Water Contaminants Committee

• Pine Barrens Technical Advisory Committee

• NYS DEC Technical Advisory Committee for the Long Island Pesticide-Use Management Plan

• Committee for Open-Space Acquisitions, Town of Brookhaven
• Education Committee for the Long Island Water Conference
• Scholarship Committee, New York Section, American Water Works Association
• Town of Brookhaven Beaverdam Creek Advisory Committee
• Suffolk County Wetlands Management Workgroup
• Town of Huntington Conservation Board.
• Environmental Roundtable at Suffolk County Community College (January 2010)
• Suffolk County Groundwater Guardian Team
• Pine Barrens Twinning Cooperative Committee

**Education and Outreach:**

• Internships for students at USGS and Dr. Mahajan’s design students (Kun Tan, Zhenguang Tang, Yun Ying and Canxian Wu) with the Suffolk County Water Authority.

• The August Guerrera Award is presented each year to a graduate student to encourage the study of groundwater hydrology and chemistry on Long Island. The recipient in 2011 was Omkar Aphale who is studying groundwater contamination in the vicinity of the Brookhaven landfill.

• On-line, graduate course in Long Island Groundwater was offered through the University’s School of Professional Development. Twenty three students, mostly teachers, completed the course. This brings the total number of students for the course to 128.

• Educational sessions at the Abbey Lane School (Levittown), the Candlewood Middle School (Dix Hills), and the Burr Intermediate School (Commack), approximately 600 students, 4th and 5th grades.

• Internship with the USGS, Coram, NY. Omkar Aphale.
Sources of Support:

- Suffolk County Water Authority
- Town of Brookhaven
- New York Sea Grant Institute
- National Science Foundation
- National Cancer Institute
- Roux Associates

Publications, reports, and presentations at professional meetings:


Bokuniewicz, H.J., 2011. Submarine groundwater discharge, the subterranean estuary and climate change: Quo vadis? Goldschmidt Conference, Prague, 15 March. KEYNOTE PRESENTATION.


Young, C. 2011. Improved Understanding of Nitrogen-Climate Interactions and Nitrogen Sources American Geophysical Union, San Francisco, 5-9 December.

Caitlin Young, Long Island Geologists Meeting April 9, 2011, Nitrogen Loss in a Barrier Island Shallow Aquifer System. Stony Brook University, Stony Brook, NY 11794.