**Glen Carleton – Hydrologist, GS-12**

***Saltwater-intrusion modeling***

- Cape May County, N.J. ~300 $mi^2$ area, Coastal Plain, 5 aquifers
- Constructed, calibrated, interpreted shallow-system (3 aquifer) model and integrated results with results from new simulations using pre-existing deep-system (2 aquifer) model
- Used SEAWAT, simulated saltwater intrusion in confined & unconfined aquifers, forecasted future intrusion rates
- Evaluated GW/SW interactions, possible effects on water table and ecosystem of future pumping scenarios

***Contaminated-site and fractured-rock modeling***

- Pohatcong valley, N.J. ~30 $mi^2$ area, fractured dolomite aquifer overlain by unconsolidated aquifer
  - Constructed, calibrated, interpreted model showing contaminant transport from a known site to unknown down- gradient receptors, calibrated in part with age-dating results
  - Parameter estimation assisted calibration effort, particle tracking to show pathlines, receptors of contamination
  - Simulation of solute transport (MODFLOW-GWT) to show simulated plume corresponded well with observed
- Site-scale simulation of 3 tracer tests in a fractured sedimentary-rock aquifer
  - Constructed, calibrated transient model to multi-day, 15-well aquifer test, further calibrated using particle tracking to simulate tracer tests
  - Showed MODFLOW could successfully simulate relatively small-scale transient events in a fractured-rock setting

***Other Coastal Plain models***

- Upper Maurice River Basin, N.J. ~100 $mi^2$ area, Coastal Plain, unconfined aquifer
- Assisted with model construction, including framework, stream base-flow, water-use
- Camden, NJ area, ~400 $mi^2$ area, Coastal Plain, 5 aquifers
- Assisted with framework, water-use

***Additional experience***

- Construction of GW model for combination with DAFLOW to simulate GW/SW interactions, Ramapo River, NJ
- Aquifer-test analysis, stream base-flow estimation

***Modeling and Coastal-Plain Study Publications***

- Lacombe, Carleton, Pope, and Rice, in review, Feasibility of existing and alternative potable and ecological water supply, Cape May County, NJ, 2006-2050: USGS SIR 2007-xxxx

- Carleton and Gordon, 2006, Hydrogeology of, and simulation of ground-water flow in, the Pohatcong Valley, Warren County, NJ: USGS SIR 2006-5269, 74 p. http://pubs.usgs.gov/sir/2006/5269/
- Carleton, Gordon, and Wieben, 2005, Aquifer properties, stream base flow, water use, and water levels in the Pohatcong Valley, Warren County, NJ: USGS SIR 2004-5127, 72 p. http://pubs.er.usgs.gov/usgspubs/sir/sir20045127
- Cauller, S.J. and Carleton, G.B., 2005, Hydrogeology and simulated effects of ground-water withdrawals, Kirkwood-Cohansey Aquifer System, Upper Maurice River Basin area, New Jersey: U.S. Geological Survey Scientific Investigations Report 05-5258, 48 p.
- Lacombe, P.J. and Carleton, G.B., 2002, Hydrogeologic framework, availability of water supplies, and saltwater intrusion, Cape May County, New Jersey: U.S. Geological Survey Water-Resources Investigations Report 01-4246, 151 p.
- Carleton and others, 1999, Design and analysis of tracer tests to determine effective porosity and dispersivity in fractured sedimentary rocks, Newark Basin, New Jersey: U.S. Geological Survey Water-Resources Investigations Report 98-4126A, 80 p.
- Cauller, S.J., Carleton, G.B., and Storck, M.J., 1999, Hydrogeology of, water withdrawal from, and water levels and chloride concentrations in the major coastal plain aquifers of Gloucester and Salem Counties, New Jersey: U.S. Geological Survey Water-Resources Investigations Report 98-4136.
- Navoy, A.S. and Carleton, G.B., 1995, Ground-water flow and future conditions in the Potomac-Raritan-Magothy aquifer system, Camden area, New Jersey: New Jersey Geological Survey Report GSR 38, 184 p.