**Groundwater Assessment and Protection Activities**

**Rick Cobb**

Deputy Division Manager

Division of Public Water Supplies & Manager, Groundwater Section

Illinois Environmental Protection Agency

1021 North Grand Avenue East, P.O. Box 19726

Springfield, IL 62794-9276

ph: 217-785-4787

e-mail:  [rick.cobb@Illinois.gov](mailto: rick.cobb@Illinois.gov)

Pursuant to the Illinois Groundwater Protection Act, the Interagency Coordinating Committee on Groundwater in coordination with the Groundwater Advisory Council and four priority regional groundwater protection planning committees, publishes a report containing a self-assessment of the previous two years of efforts and recommended actions for the next two years. This report describes the various activities that have been implemented across the state to assess and protect the groundwater resources of the state. The purpose of this short presentation is to highlight this process and provide an overview of the activities conducted and that will be conducted.

**Private Water Program Regulatory Update**

**David W. Johnson**

Private Water Program Manager

Illinois Department of Public Health

525 West Jefferson Street

Springfield, IL 62761

ph: 217-782-5830

e-mail: [Dave.Johnson@Illinois.gov](mailto:Dave.Johnson@Illinois.gov)

This presentation will include an update on the addition of closed loop well regulations to the Water Well Construction Code.

Details of how the regulations regarding water well construction got to where they are today will be given along with an explanation of what may be in store for the future.

**Illinois’ Hydraulic Fracturing Regulatory Act:**

**A 10-Month Status Update**

**Alec Davis**

Office of the General Counsel

Illinois Agricultural Association and Affiliated Companies

1701 Towanda Ave.

Bloomington, IL 61701

ph: 309-557-2096

e-mail: [adavis@ilfb.org](mailto:adavis@ilfb.org)

A look-back at Illinois’ Hydraulic Fracturing Regulatory Act, signed into law by Governor Quinn on June 17, 2013, and touted as establishing “the nation’s strongest environmental protections for hydraulic fracturing.” The statute will be outlined, including a discussion of the environmental and other concerns of the various interest groups that were involved in negotiating the bill, and what was included in the legislation to address those concerns. After 10 months of being “the law of the land,” actions taken to implement the Act will be discussed and some insights offered from the front-lines.

**Irrigation Withdrawals in Illinois: Current and Future Activities**

**Walton R. Kelly**

Head, Groundwater Section

Illinois State Water Survey

2204 Griffith Drive

Champaign, IL 61820-7495

ph: 217-333-3729

e-mail: [wkelly@illinois.edu](mailto:wkelly@illinois.edu)

**Steven Wilson, George Roadcap, and Karen Bridges**

Illinois State Water Survey

Agricultural irrigation is the major user of groundwater in the U.S. and the world, accounting for about two-thirds of groundwater withdrawals in the United States. Because rainfall is relatively abundant in Illinois and our soils generally hold moisture well, Illinois is not a major irrigation state, ranking 24th in the country in irrigation water withdrawals. However, irrigation in Illinois has increased significantly in recent years and is projected to continue to increase into the near future. A recent estimate is that there are more than 6,000 center pivots in Illinois. This increase is being driven by several factors, including (1) high commodity prices, especially corn; (2) recent drought and dry summers; and (3) a desire by seed corn companies to guarantee their crops in dry years. There is anecdotal information that irrigation well drillers in Illinois are currently booked out more than a year for installation.

In recent years, both the Illinois State Water Survey and U.S. Geological Survey have outfitted monitoring wells with pressure transducers to collect essentially continuous water level data in many parts of the state. Data collected during the 2012 drought showed major new cones of depression in several parts of central Illinois where there is significant new irrigation pumping. Irrigation pumping caused interruptions in service for some domestic wells during both 2012 and 2013. Most of these conflicts were remedied by lowering of pumps in affected wells. Once the irrigation season ended, water levels returned to normal levels.

As part of the Water Use Act Amendment of 2010, major irrigators are required to begin reporting their withdrawals to the Water Survey starting in 2015. Withdrawals can be estimated, but the estimation method must be approved by the Water Survey. The Water Survey is currently taking several steps to collect irrigation withdrawal data, including: (1) identifying irrigation wells and irrigated agricultural acres; (2) communicating with irrigators and farming organizations; and (3) evaluating withdrawal estimation methods.

**PrivateWellClass.org –**

**An Online Technical Assistance Program for Private Well Owners**

**Steven D. Wilson**

Hydrologist

Illinois State Water Survey

2204 Griffith Drive

Champaign, IL 61820-7495

ph: 217-333-0956

e-mail: [sdwilson@illinois.edu](mailto:sdwilson@illinois.edu)

**Jennifer S. Wilson**

Illinois Water Resources Center

**Cassia R. Smith**

Illinois State Water Survey

An innovative, email-based class that helps private well owners better understand the geology, hydrology, and construction features of their wells has been developed at the University of Illinois at Urbana-Champaign. A series of ten lessons, delivered via email using a staggered, self-paced approach, provide guidance on dealing with common well maintenance issues and problems. Other topics include source water protection, sampling, interpreting results, home treatment, and emergency situations.

The lessons were developed to be a basic, but comprehensive, class that well owners could use to become better stewards of their wells and nearby groundwater. One lesson is sent to the participant’s email address each week for 10 weeks. Pre- and post-tests, as well as an evaluation, allow students to provide feedback for improving the class.

The program has been marketed through state agencies responsible for well construction and driller registration, cooperative extension, and public health agencies, all of which were contacted by phone and/or email. The Rural Community Assistance Partnership has marketed the program throughout their network of technical assistance providers and trainers. Social media provide additional marketing and a more personal approach to participants who have questions. The website includes an email address for participants to ask specific questions.

In the first year of the project, over 2,750 people nationwide have signed up for the lessons. Participants include private well owners, sanitarians from local health departments, operators of small water systems, and other interested stakeholders. We will provide an overview of the material covered, discuss how marketing and social media have been used to support the project, and provide results from the pre- and post-testing. We will also share results from participant evaluations, which describe what they liked/ didn’t like, what they would change, and their suggestions for improving this new well owner education program.

**Introduction to Vapor Intrusion Modeling**

**as Part of TACO (35 IAC 742)**

**Alan G. Stone**

Hydrogeologist and Independent Consultant

224 Leland Street

Bloomington, IL 61701

ph: 309-678-0316

e-mail: [agshydro@aol.com](mailto:agshydro@aol.com)

Effective July 13, 2013, Illinois law (35 IAC 742) requires evaluation of the Indoor Air Exposure Route during site investigation and corrective action. TACO uses equations (35 IAC 742 App. C Table L, Tier 2 analysis - J&E-series) to calculate Tier 2 indoor air, soil gas, and groundwater remediation objectives, and soil vapor saturation limits. Equation S30 was also added to 35 IAC 742 App. C Table A to calculate soil gas remediation objectives for the outdoor inhalation exposure route from Tier 1 or Tier 2 soil remediation objectives. Tier 2 soil gas and ground water remediation values are compared to Tier 1 remediation objectives for the indoor inhalation exposure pathway on Tables H (advection and diffusion) and I (diffusion only), App. B.

Groundwater analytical data within the current plume (not R-26 modeled extent) can theoretically be used to calculate theoretical soil gas concentrations by algebraic rearrangement of equation J&E6. Analysis not required beyond current extent of groundwater impact. These calculated soil gas concentrations can then be used to calculate theoretical indoor air concentrations by algebraic rearrangement of equation J&E 4. Algebraic rearrangement of equation S30 can also be used to calculate soil remediation objectives from actual or theoretical soil gas concentrations. IEPA may consider these as Tier 3 analysis.