

**Agency of Natural Resources  
Department of Environmental Conservation**

**Water Supply Division  
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**MEMORANDUM**

To: Groundwater Coordinating Committee

From: Rodney Pingree, Acting Chair

Date: March 5, 2010

Subject: Minutes from the February 18th Meeting

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**Next Meeting:** *Thursday March 18, 2010 at 1:00 pm to 3:30 pm in the Water Supply Division Conference Room, Old Pantry Building*

**Attendees**

Dennis Nealon, ANR DEC Water Supply; Rodney Pingree, ANR DEC Water Supply; Michael Smith, ANR DEC Waste Management; Jeff Comstock, Agency of Agriculture, Food, and Markets; Eric Hanson, Vermont Rural Water Association; Liz Royer, Vermont Rural Water Association; Larry Becker, ANR Geology Division; Jon Kim, ANR Geology Division; Kevin Macleer, Weston and Sampson; Elizabeth Hunt, ANR Secretary's Office; Marcel Belaval, EPA Region I; Kira Jacobs, EPA Region I; Jim Siriano, ANR DEC Water Supply; Don Maynard, Johnson Company.

**Groundwater Case Studies**

Marcel provided the committee with an overview of groundwater studies involving New England EPA, Region I and the Vermont Geological Survey. He mentioned that technical assistance from EPA has come in the form of funding, laboratory support and quality assurance, investigating and monitoring, along with providing a forum for ground water issues. Recent case studies involving Vermont included radionuclides in a septic system, aquifer mapping at the Brandon Fire District, nitrate investigation in East Montpelier, and nutrient migration in the Johns River.

**Radionuclides**

Marcel touched upon the occurrence of radionuclides in the United States, New England, and Vermont. He mentioned uranium hot spots occurred in Vermont and that treating and disposing was problematic.

### Brandon

In 2007 EPA investigated the aquifer serving the water sources of Brandon Fire District #1. This investigation was due in part to Ray Counter's, Brandon's water operator, quest to designate the Brandon Source Protection Area as a Sole Source Aquifer. A purpose of the study was to determine the recharge to the wells from the Neshobe River.

Three monitoring well clusters at 2 locations were installed to a depth of 52 feet. Core samples were taken and water levels along with vertical gradients were measured. The information gleaned from this study suggested that the wells serving the water system were not drawing surface water from the river, although, the river recharged the aquifer. Also, a discontinuous clay layer was found in the valley that acted as a semi-confining layer.

Jon also discussed the groundwater situation in Brandon and thought there was a second aquifer in Town. Jon assisted EPA with the installation of geo-probes and also performed gravity and seismic surveys. The study found that the surficial material, likely deltaic in origin, were very diversified.

### East Montpelier

Funding was provided from Non Point Source monies to examine nitrate contamination of groundwater at an East Montpelier farm. The sources of nitrate included nutrients spread on the farm fields and a liquid manure pond. Jeff sampled a number of wells quarterly over several years and found three distinct patterns regarding nitrate concentrations. One pattern showed no change in nitrate concentration, another showed slow change, and the third had rapid change.

Jon stated that fractures in the area control the groundwater flow in bedrock and this was responsible for the various patterns of the concentrations in nitrate.

### Hinesburg Thrust

Jon along with a number of Middlebury College students examined the Hinesburg Thrust. They observed big folds and through the thrust higher aquifer yields were found. The lower aquifer is distinct from the upper aquifer which is separated by the thrust. Wells were sampled and in the upper aquifer higher concentrations of gross alpha were discovered. Jon was successful in obtaining funding from EPA for future sampling of uranium and radium.

### John's River

Jon discussed work that involved the Vermont Geological Survey and the Water Quality Division. The study concentrated on tributaries of the John's River near Lake Memphremagog. These tributaries had high nitrates and it was thought that groundwater was influencing the surface water. High conductivity and low temperature measurements were found in both upstream springs and several bedrock wells. Groundwater from the two sources were determined to be the same. The bedrock was not near any anthropogenic sources and was clean in respect to nitrates. This left the groundwater within the surficial material as the probable source of nitrate.

