

**United States  
Department of  
Agriculture**

**Natural Resources  
Conservation  
Service**

**5 Radnor Corporate Center,  
Suite 200  
Radnor, PA 19087-4585**

**Subject:** SOI -- Electromagnetic Induction (EMI) Assistance

**Date:** 28 September, 1999

**To:** Richard D. Swenson  
State Conservationist  
USDA-NRCS,  
The Galleries of Syracuse  
441 S. Salina St., Suite 354  
Syracuse, NY 13202-2450

**Purpose:**  
To meet with members of the St. Regis Mohawk Tribe (SRMT) and discuss the results of an EMI survey conducted in June 1999.

**Participants:**

Les Benedict, SRMT Environmental Division, Hogansburg, NY  
Angela Benedict-Dunn, SRMT Environmental Division, Hogansburg, NY  
Robert Crce, SRMT Environmental Division, Hogansburg, NY  
Jim Doolittle, USDA-NRCS, Radnor, PA  
Tom Debo, SRMT Environmental Division, Hogansburg, NY  
Joe Francis, Mohawk Council of Akwesasne, Cornwall, Ontario, Canada  
Jim Haklar, USEPA, Edison, NJ  
Mark Martin, SRMT Environmental Division, Hogansburg, NY  
Shawn Martin, SRMT Environmental Division, Hogansburg, NY  
Aimee Mitchell, SRMT Environmental Division, Hogansburg, NY  
Peggy Pyle-Thompson, SRMT Environmental Division, Hogansburg, NY  
Heather Robinson, SRMT Environmental Division, Hogansburg, NY  
Lornie Swamp, SRMT Environmental Division, Hogansburg, NY  
Dawn Thompson, SRMT Environmental Division, Hogansburg, NY  
Ted Trevail, USDA-NRCS, Plattsburg, NY  
Craig Wakelin, Mohawk Council of Akwesasne, Cornwall, Ontario, Canada  
Larry White, Mohawk Council of Akwesasne, Cornwall, Ontario, Canada

**Activities:**

On the morning of 11 September 1999, at the request of the St. Regis Mohawk Tribe, an informal meeting was held in Hogansburg, New York, to discuss the results of an EMI survey conducted in June 1999 (my trip report of 30 June 1999). I discussed the use electromagnetic induction methods and the operation of the GEM300 sensor. The trip report and interpretative plots were reviewed and results discussed. The limitations of survey were discussed and plans were made for improving the results of this survey. The St. Regis Mohawk Tribe Environmental Division was pleased with NRCS's assistance and the results of this survey.

**Major Points of Discussion:**

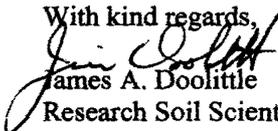
1. The EMI survey conducted in June 1999 at the St. Regis Mohawk Reservation was the first opportunity for the USDA-NRCS to operate the GEM300 sensor. Intervening studies have provided a better understanding of the operation and use of this geophysical tool. Depths of observation reported in my trip report of 30 June 1999, though based on a nomogram developed by the designer of the GEM300, are believed to have been overestimated. The maximum depth of observation

is presently believed to be less than 50 feet.

2. Plots of data measured at 390 Hz indicate areas of moderate to high apparent conductivity. These patterns may reflect areas affected by salt-affected groundwater. These areas could also reflect the distribution of dissimilar lithologies (shale versus dolostone). Areas surrounding both contaminated and uncontaminated wells should be surveyed with EMI. Electromagnetic induction data should be compared with the water sample data from these wells. Comparison will help to verify whether EMI is detecting salt-affected groundwater, changes in lithology, or both.
3. Representatives of the St. Regis Mohawk Tribe discussed the presence status of groundwater contamination and the occurrence of multiple aquifers and extensive faulting in the area.
4. Because of limited time and sampling, areas of high apparent conductivity (measured at 390 Hz) were not traced back to the casino's well. If possible, additional EMI surveys should be conducted around the casino's well.
5. Tyrone Goddard has already submitted a request for geophysical assistance from the National Soil Survey Center for fiscal year 2000.

It was my pleasure to discuss the results of this survey with members of the Mohawk Tribe.

With kind regards,

  
James A. Doolittle  
Research Soil Scientist

cc:  
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