

**United States
Department of
Agriculture**

**Natural
Resources
Conservation
Service**

**c/o USDA Forest Service
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Subject: Soils – RADAN for Windows training

Date: 24 October 2007

To: Patricia S. Leavenworth
State Conservationist
USDA-Natural Resources Conservation Service
8050 Excelsior, Suite 200
Madison, WI 53717

Purpose:

Training was provided to Mark Krupinski on the operation of the SIR-3000 radar system and procedure used to process radar data through the RADAN for Windows software program.

Participants:

Asghar Chowdhery, Soil Data Quality Specialist (CORR), USDA-NRCS, Indianapolis, IN
Jim Doolittle, Research Soil Scientist, USDA-NRCS-NSSC, Newtown Square, PA
Mark Krupinski, Soil Scientist, USDA-NRCS, Juneau, WI
Tim Meyer, MLRA Soil Survey Project Leader, USDA-NRCS, Altoona, WI
Tim Miland, Soil Scientist, USDA-NRCS, Altoona, WI
Chris Miller, MLRA Soil Survey Project Leader, USDA-NRCS, Juneau, WI
Karla Petges, Soil Scientist, USDA-NRCS, Juneau, WI
Jeff Talsky, Soil Scientist, USDA-NRCS, Juneau, WI
Kevin Traastad, Resource Soil Scientist, USDA-NRCS, Juneau, WI
Jesse Turk, Soil Scientist, USDA-NRCS, Stevens Point, WI

Activities:

All activities were completed on 21 September and 18 October 2007.

Background:

Wisconsin recently purchased a SIR-3000 ground-penetrating radar (GPR) unit and the RADAN for Windows (version 6.0) processing software from Geophysical Survey Systems, Inc. The SIR-3000 is a small, lightweight, state-of-the-art GPR system designed for field operations. The SIR-3000 has advanced signal processing and display capability. RADAN is a Windows based, post-processing software program. The included *3D QuickDraw* module provides enhanced three-dimensional (3D) viewing capabilities.

Summary:

1. Training was provided to Mark Krupinski on the use and operation of the RADAN for Windows software program. Mark is a quick learner and I am deeply impressed by his preparation, interest, and enthusiasm.
2. The first training period was spent on basic processing procedures contained in the RADAN for Windows program that are used to prepare, edit, display, and print radar data. During training, proper file management and storage were stressed. Procedures covered included color table and transformation options, display gain functions, surface position adjustments, and horizontal distance normalization.

Portions of radar records were selected and copied into the *Paint* utility where they were made into Bitmap images.

3. The second training period was spent on advanced signal processing procedures contained in RADAN for Windows. Procedures covered included signal migration, stacking, range gain functions, and high-pass horizontal filtration. Field procedures used for the construction of survey grids needed for 3D modeling were reviewed. Two small grids were established and 3D radar surveys were carried-out at each site. The radar data collected on these two grids were processed using the *3D QuickDraw* program. After a review of the processing sequence needed to construct 3D radar data, 3D pseudo-images of the subsurface at each of the two grid sites were prepared by Mark.

It was my pleasure to work in Wisconsin and with members of your fine staff. The National Soil Survey Center pledges its continued support to you and your staff in the developing the use of GPR within Wisconsin.

With kind regards,

James A. Doolittle
 Research Soil Scientist
 National Soil Survey Center

cc:

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