

SOIL AND PLANT SCIENCE DIVISION

Technical Soil Services

Northeast Soil Survey Region



Morgantown, WV, and Marietta, OH, Soil Survey Offices: MLRA 124 Western Allegheny Plateau and Mountains, MLRA 126 Central Allegheny Plateau, and MLRA 127 Eastern Allegheny Plateau and Mountains

Updates to Western Pennsylvania Soil Survey Data: Focus on Mine Soils

Purpose

On April 12, Pennsylvania National Resources Conservation Service (NRCS) hosted a Western Pennsylvania Soil Survey Update meeting with a focus on mine soils. The meeting provided an opportunity to update users in the area about what the soil survey offices in the area are working on and to obtain feedback from partners about additional data needs. In all, about fifty-five people attended, including state agencies, conservation districts, private consultants, universities and NRCS staff.

Background

Marietta Soil Survey Office Leader Dan Benyei gave an overview of the mine soil survey update projects in Pennsylvania. Both the Marietta and Morgantown office are correlating mined miscellaneous areas into soil series. They are also updating areas that have been mined since the last soil survey publication as well as updating the linework and tabular data. Benyei walked through the process of premapping using remote sensing, including lidar, Google Earth images, and U.S. Geological Survey topographic maps (see figure 1).

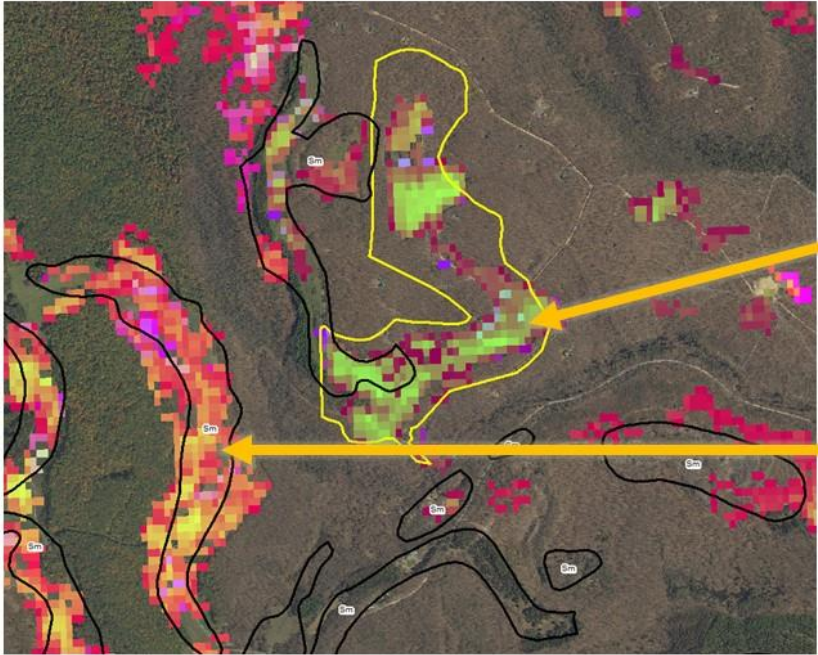
Morgantown Soil Survey Office Leader Ann Tan then talked about field work and recent findings. She mentioned the need for access to known mined areas and told them about the ownership maps in the Geospatial Data Gateway. She gave examples of updated areas in Cameron and Elk Counties, Pennsylvania. The Strip Mines map units were correlated to Fairpoint-Bethesda complexes, which are two soil series that differ by reaction class.

Pennsylvania Department of Environmental Protection District Mining Manger David Thomas followed with a talk about mine soil reclamation in Pennsylvania. He went over the process of how topsoil and subsoil can be removed and then replaced after mining. In the case for prime farmland, it is important that each horizon is put back in order and that the yields are the same as before mining.



USDA United States Department of Agriculture

Updating Soil Mapping of Potential Recent Mining – Centre County, PA, with More Remote Sensing Data



Use LandTrendr scripts in Google Earth Engine to show areas of vegetation disturbance

Permit issued 1999, vegetation disturbed in 2000

Mapped “strip mine” shows vegetation disturbance in 2014, reclaimed or re-mined: from trees to grass shown on Google Earth

Natural Resources Conservation Service
nrcs.usda.gov

Disturbance layer algorithm courtesy of LandTrendr, Oregon State University

Figure 1. A slide from the Soil Survey Office presentation illustrating the use of available spatial resources for the remote sensing of surface mined areas.

Key Outcomes

Fifty-five users of soil surveys learned about the ongoing updates to mine soil mapping in Pennsylvania, and after the talks, the users provided important feedback about mine soil mapping. There was a lively discussion about mine soils and mapping conventions. Users requested traditional slope breaks, as some of these reclaimed areas are being farmed, and with the addition of special management, are being treated like native soils. Some users talked about the importance of updating the taxonomy, so they can query all the mined soils in SSURGO. They also talked about the importance of saturated hydrologic conductivity as it is used to evaluate how the soil is draining. Tan explained how a Dynamic Soil Properties (DSP) project on these mine soils can help with getting information on saturated hydraulic conductivity and that she plans to do a DSP project in the future. The meeting helped the soil survey office leaders know what meaningful projects to focus on.