New Innovations in Soil Survey Publications

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National Cartography & Geospatial Center
Major Emphasis FY2002

- ESRI-Authorized Learning Center
- 3 ESRI-Authorized Trainers at NCGC
- Geodata Refreshed ???
- Announce NRCS Gateway Delivery Point
- Partnership with FSA-APFO
- NRI & Soils Support
- GIS Helpdesk Support
- Minimizing Security Risks

- USDA GPS Contract Support and Training
- FGDC Clearinghouse
- Pilot and Implement Geospatial Data Warehouse/Gateway
- GeoData Replication
- GPS, Dig. Camera, PDA, Mobile Comp.
- Remote Sensing Support to NRCS
NCGC provides technical leadership for NRCS in:

- Cartography
- Remote Sensing
- NRI Support
- Global Positioning Systems (GPS)
- Geographic Information Systems (GIS)
- Soil Survey Support
- Archiving of Information
- Technical Publication Edits and Reviews
Training Team

Approximately 200 CD-ROMs delivered to State and Field Offices.

How many reproduced in the states?
Status of Soil Survey Mapping and Publications

Current status/trends

Mapping/updating:
- Mapping/updating about 24.6 million acres a year (last 8-year average)
- Refresh rate of once every 94 years.

Publishing:
- publishing about 45 surveys per year (average in the 90’s),
- Refresh rate of about once every 73 years
- Many of our published products are out of print.
Status of Soil Survey Databases and SSURGO

- **Database:**
  - about 1188 legends certified for distribution in NASIS
  - this is only a third of the surveys

- **SSURGO:**
  - 1265 surveys certified and archived for distribution, but the initiative is funded at ½ the recommend level
  - Take until the end of 2009 to complete.

- **Need for new products:**
  - traditional soil surveys on CDs, Interactive GIS type soil surveys on CD, web products, pixel based soil survey, 3D-Products, etc.,
  - We are in the initial stages of production.
Project soil surveys with mapping complete and updated soil surveys with a correlation date.

(From Soil Survey Schedule, NCGC Report, Editor’s database, DMF records and NPSS spreadsheet)

5/01/02

<table>
<thead>
<tr>
<th>Description</th>
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<tr>
<td>Surveys with maps at NCGC or complete *:</td>
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<tr>
<td>Surveys with no detailed maps at NCGC:</td>
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* Includes 33 with maps to printer, but not text
**Publication Pipeline**  
(From Soil Survey Schedule, NCGC Report, Editor’s database, DMF records and NPSS spreadsheet)  
5/01/02

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<th>Narrative</th>
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<tbody>
<tr>
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<td>A Sent to GPO</td>
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<td>C_Kind of Close</td>
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<td>E_Distant</td>
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<td>E_Distant</td>
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<td>Maps not at NCGC nor Text to editor</td>
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<td>G_Distant</td>
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Improvements to the Process

• Reduce the number of hard copies printed for each survey and supplement with CDs or other electronic media
  – Current average is around 1500 copies
  – Reduce to 500 copies and 1000-2000 CDs
  – Significantly reduces cost of printing allowing for more soil survey areas to be printed
Improvements to the Process

- Automate as many of the publication processes as possible
  - Digital Map Finishing
  - General Soil Maps
  - Soil Survey Manuscripts
Improvements to the Process General Soils Maps

- NSH cites STATSGO as base for GSM
- 93 products pending at NCGC, 2 are STATSGO based
- GSMs are averaging 80+ staff hours to process to the point of making a negative ready to send to printer
General Soils Map – Digital (non-SSURGO)
Soil Surveys on CDs and other media

- CD Summit and report
- Multiple formats available
Pdf example -- new
Html example
horizon. Reaction is slightly acid or medium acid.

The 82 horizon is dark brown, dark reddish brown, or reddish brown (7.5YR 4/3, 4/4, and 5YR 3/2, 3/3, 3/4, 5/3, and 4/3) loam and is gravelly, stony, or cobbly. Coarse fragments make up 35 to more than 75 percent of this horizon. Depth to fractured basic igneous bedrock ranges from 10 to 20 inches.

**151-Hambright-Rock outcrop complex, 2 to 30 percent slopes.** This complex consists of areas of Rock outcrop and soils on plateaus and uplands mainly in the Atlas Peak and Soda Canyon areas. The soils formed in material weathered from basic rock. The areas are so intermingled that it was not practical to separate them at the scale used in mapping.

This complex is about 50 percent Hambright soils, 25 to 30 percent Rock outcrop, and 15 to 25 percent Forward, Guenoc, Kidd, and Sobrante soils. Rock outcrop is in areas 1 to 5 acres in size. It consists of basic igneous boulders, cobbles, rhyolitic material, stones, or outcrops.

Runoff is medium to rapid. The hazard of erosion is slight to moderate.

This complex is used for wildlife habitat, watershed, and limited grazing. Capability unit V1e-1 (15); Very Shallow Rocky range site.

**152-Hambright-Rock outcrop complex, 30 to 75 percent slopes.** This complex consists of areas of rock outcrop and steep and very steep soils on uplands mainly in the Atlas Peak area. The soils formed in material weathered from basic rock. The areas are so intermingled that it was not practical to separate them at the scale used in mapping.

This complex is about 50 percent Hambright soils, 30 to 40 percent rock outcrop, and 10 to 20 percent Forward, Guenoc, Henneke, Kidd, and Sobrante soils. The Hambright soils have the profile described as representative of the series. Rock outcrop is in areas

1 to 5 acres in size. It consists of cobbles, stones, rhyolitic masses, or outcrops.

Runoff is rapid to very rapid. The hazard of erosion is high.
GIS_ArcExplorer example
GIS_SOILView example
Stone Harbor, Cape May County, New Jersey

Total Area in Meters: 37681.71260
Perimeter in Meters: 749.60264
Detailed Soil Survey Map Unit: Fob8
Publications

• Generally speaking, IF the soils information is ready to put onto CD-ROM for distribution, it is ready to be sent for hard copy publication.

• Some of the issues to consider:
  – What constitutes an “official” soil survey?
  – If CD releases supplement the hard copy, can they be different from the hard copy, i.e.. Other thematic maps.
New Innovations and Products

- DMF issues
- Resource Data Gateway and Soils Data Warehouse
- New GIS tools
DMF quad overlap/DMF by Survey area

- Print 300 meter overlap on quads.
  - Soil lines over print on top of a dashed white quad neat line
  - Roads where used shown in white with fine black lines edges. Soil lines over print on top of roads.
  - Hydro - where a blue plate is used make all water polygon edges blue.
FRAMEWORK for ORGANIZING and MANAGING GEOSPATIAL DATA

**ACQUISITION AND INTEGRATION**

- **Spatial/Non-spatial Data Sources**
  - Operational
  - External

  - Flat Files, Hardcopy File Conversion

**STORAGE & MANAGEMENT**

- **(Subject) Data Integration Warehouse**
  - Spatial/Non-spatial Metadata Catalog
  - Tabular Data
  - Spatial Data
  - Imagery Data

- **Data Marts**
  - Data Gateway Data Mart
  - Conservation Data Mart
  - Commodities Data Mart

- **Replicated Data Integration Warehouse**
  - Replicated Demographics Data Marts

**ACCESS**

- **OLAP Clients**
  - Order
  - View
  - Analyze

- **OLTP Clients**
  - Report
  - Desktop, Client/Server, Web, Removable Media
The Geospatial Data Gateway provides Internet-based, One Stop Shopping for natural resource or environmental data. It offers a single access point to a vast store of data, allowing you to browse through what is available, choose only the area that is needed, order it in the desired projection and format, and have it automatically delivered electronically or via CD.
Soil Data Warehouse

Resource Data Gateway

Natural Resource Data Warehouse

Fort Collins Web Farm / Fort Worth Data Center
Soil Data Warehouse

- Single source for distributing soil data
  - Deliver consistent soil data for all products
  - Build infrastructure and implement warehouse in FY2002

- Integration of Other Resource Databases
  - Plant information
  - Climate information
  - Orthoimagery
Resource Data Gateway

- Single access to data
  - Catalogue of all resource data for a specific geographic area
  - Data may be located at multiple physical locations

- Select and order data
  - Select one or more data sets
  - Specify delivery options: ftp, CD-ROM
Soil Landscape Visualization with ArcScene
Example of Navigation
Example of Navigation
Quantification of Slope Inclusions

Example of Soil Map Unit Inclusion Determination Using Slope Derived From 10 Meter DEM

Extent and acreage of Apison-Sunlight complex, 5 to 12 percent slope for the Tranquility Quadrangle, McMinn Co., TN

<table>
<thead>
<tr>
<th>Slope Range</th>
<th>Acres</th>
<th>Percent of Map Unit</th>
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<tbody>
<tr>
<td>2 to 5%</td>
<td>4.4</td>
<td>1.6</td>
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<tr>
<td>5 to 12%</td>
<td>64.0</td>
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<tr>
<td>12 to 20%</td>
<td>294.5</td>
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<td>20 to 30%</td>
<td>83.8</td>
<td>18.4</td>
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<tr>
<td>30 to 60%</td>
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<td>0.1</td>
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<tr>
<td>&gt;60%</td>
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THE END