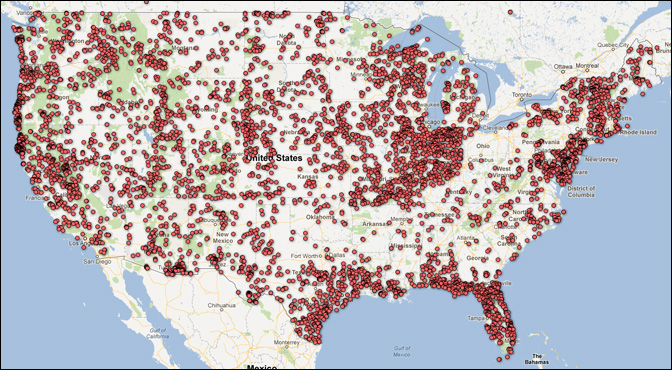
*memorandum*

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| **Environment & Natural Resources** |

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| **Date** | October 1, 2015 |
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| **To** | Theresa Pella, Executive Director, CenSARA |
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| **From** | Jonathan Dorn, Associate/Scientist |
|  |
| **Subject** | Silt Database Documentation |

This memorandum describes the methodology Abt Associates used to develop county-level, average silt content values for surface soil. The soil sample data are from the National Cooperative Soil Survey Microsoft Access Soil Characterization Database.[[1]](#footnote-1) This database contains the most commonly requested data from the National Cooperative Soil Survey Laboratories including data from the Kellogg Soil Survey Laboratory and cooperating universities. Figure 1 below shows the locations of the sampled pedons included in the database. This database defines total silt content of surface soil as the percentage of particles (mass basis) of diameter smaller than 50 micrometers (µm) found in the surface layer (master horizon A or O).

**Figure1. Locations of Sampled Pedons**



Abt Associates applied specific selection criteria to the database to ensure that all samples are comparable and relevant to this analysis. The selection criteria included selecting only samples taken inside the United States with a preparation code of S and a horizon top of zero centimeters or a master horizon of A or O. A preparation code of S signifies that the sample is the air-dried whole soil passing through a 3 inch sieve and a horizon top of zero or master horizon of A or O ensures that the sample is taken at the surface.

In some cases, the sample metadata did not indicate a county, but included latitude and longitude coordinates. In these cases, the state and county information were reverse geocoded from the lat-long coordinates and added to the sample entry in the database.[[2]](#footnote-2)

After gap-filling the missing state and county information, the average silt content for a county was calculated by summing the total silt content of all the samples in the county and dividing by the number of samples in the county. For counties without samples, the average silt content was calculated by summing the total silt content of soil samples in neighboring counties and dividing by the number of samples in the neighboring counties. If neighboring counties also lacked sample data, then the county was assigned the average silt value of soil samples within the state.

The final Excel workbook contains the soil sample information for all samples used to generate the county averages as well as the final county-level average silt values for surface soils. The county-level table lists the number of samples used to calculate the average as well as the derivation code and description from Table 1 below.

**Table 1. Derivation Codes and Descriptions**

| **Derivation\_Code** | **Derivation\_Code\_Description** |
| --- | --- |
| 0 | Average of samples within county. |
| 1 | Average of samples from neighboring counties. |
| 2 | Average of samples from state. |

1. U.S. Department of Agriculture, National Cooperative Soil Survey, NCSS Microsoft Access Soil Characterization Database, http://ncsslabdatamart.sc.egov.usda.gov/ , accessed September 2015. [↑](#footnote-ref-1)
2. Batch Conversions of Latitude/Longitude to Address (Reverse Geocoding), Stephen P. Morse, <http://www.stevemorse.org/jcal/latlonbatch.html?direction=reverse> (accessed September 2015). [↑](#footnote-ref-2)