

Data tables and additional files for Minnesota soil, till, and ground-water geochemical data and Atlas.

Data from this project are being provided in two forms. Data that were used to plot the Atlas maps are provided in an ESRI file geodatabase format while original data sets are provided in Excel table format. All of the excel tables contain UTM coordinate fields (utm_e for easting and utm_n for northing). Projection for the tables and geodatabase is UTM, NAD83, Zone 15.

Data distribution in map form for soils, till and water are provided in pdf format grouped into five elements starting with Alkalinity and ending with Zirconium.

Files:

Geochemical landscape of Mn.pdf--Poster showing summary of results and how they relate on statewide scale with generalized geology of Minnesota.

metadata.zip--metadata in html format for the soil, till and ground water data indicated below.

data_tables.zip

Excel files:

AnalysesCompleted_byAgency.xls--file showing the list of elements analyzed for this project. However, not all elements were analyzed for each sample media. This table shows which element was analyzed by each agency for the particular media. MGS-till, USGS-soil and stream sediments, MPCA-ground water.

AOV_soil_samples.xls--Analysis of variance samples collected for soil data. Two samples collected within a short distance of a randomly selected regular soil sample. Sampling protocol same as for the regular soil sample; not plotted as part of the Atlas maps.

GWMAP_protocol_list--list of EPA protocols and labs that were used for the ground water analyses.

PCA_GWMAP_chemdata.xls--Data set provided by the Minnesota Pollution Control Agency (MPCA). Data includes the 'censored' data where detection levels have been reset to an arbitrary value, uncensored data, and VOC (volatile organic carbon) data. Additional data on minimum contaminant and health risk levels can be obtained from the MPCA web site. The accompanying file in this folder--gw-number.pdf provides information on the censoring limits, missing data, and concentration parameters. The file GWMAP Analytical Methods lists the EPA method codes.

readme_datatables.doc--this file

soil_lower.xls--Soil chemistry data as obtained from the USGS. Lower implies collection at approximately 0.5 m depth below the land surface. Minimum values have

not been altered and may indicate zero or negative (meaning less than) relative to detection limits.

soil_parent_chemdata.xls--Soil chemistry data obtained by the MGS from C-horizon till samples. Minimum values are half of the detection limit. Previously available as part of the MGS Mineral Indicator Study.

soil_upper.xls--Soil chemistry data as obtained from the USGS. Upper implies collection at approximately 0 - 0.2 m depth below the land surface. Minimum values have not been altered and may indicate zero or negative relative to detection limits.

stream_sed.xls--Stream sediment chemistry data obtained from the USGS. The majority of samples were collected during the 1978/79 NURE program (field:category-entry:NURE) and stored, although a few were collected for this project (field:category-entry:STATE). In the main area where stream sediment samples were available, soil samples were not collected. However, the soil sample and streams sediment results are plotted together on the soil map part of the Atlas. Some elements show a strong difference between soil and stream sediment sample media, while others do not. Both show affinity with associated glacial ice lobes.

geochemical landscape of Minnesota: A poster containing summary information about the geochemical data collected for this project and maps generalizing the geology of the state.

Geodatabase:

geodatabase.zip: contains: statewide_geochem.gdb -- the file geodatabase inturn contains:

Mn_counties--Minnesota county outlines

soil_data_plots--data used to make the soil map plots, this data set combines upper (0-0.2m) soil analyses, lower (about 0.5m) soil analyses, new analyses of previously collected NURE stream sediment, and results from stream sediment collected for this project. Where locations included multiple points, such as an upper and lower soil result, or duplicate stream sediment result the data were averaged for the purpose of showing a single value on the plot. For this reason, the number of sample sites shown on the Soil maps is less than the number of sample values in the table. Values below detection limit were recalculated to be one-half of the detection limit. Data for the separate sampling media can be found in the Excel tables. Analytical results for Al, Ca, Fe, K, Mg, Na, P, and Ti are in percent(%), the rest are in parts per million (ppm). Concentrations are listed with the element header.

soil parent_data_plots--data used to make the soil parent material (c-horizon till) plots. Till samples collected in cooperation with the former WMC Resources Ltd. Concentrations are listed with the element header.

water_data_plots--data provided by the Minnesota Pollution Control Agency from their Groundwater Monitoring and Assessment Program (GWMAP). This data set contains only the data censored for results below detection limit. To be consistent with the other data sets, when data was below detection limit, the value was set to one-half the detection limit. Zeros in the database table indicate that no data was available for that sample and they do not appear on the plots. Concentrations are in ug/l, (parts per billion (ppb)).

readme.doc--this document

Report_geochem_Mn--summary report of the sampling and results