MAGIP VECTOR

News from the Field- December, 2006

Using GIS for the Department of Revenue Agricultural and Forest Land Valuation Process

By Ted Chase, GIS Manager, Montana Department of Revenue

During the 2005 Legislative session, the Montana Department of Revenue Property Assessment Division requested funding to migrate the department's existing manual agriculture and forest land valuation processes into a GIS. The proposal was ultimately approved and since July 2005, the department has been working on the project.

Using a multitude of existing data sources, the project needs to convert only a fraction of the data that would normally be required for a project of this size. Existing source data used for the project include:

- Statewide Cadastral data
- Natural Resource Conservation Service (NRCS) SURRGO and NASIS data
- Farm Service Agency (FSA) common land unit (CLU) data
- Imagery
- Department of Revenue (DOR) Computer Assisted Mass Appraisal (CAMA) data
- Various forest land delineation datasets (mostly USFS, existing DOR data)

While using existing data sources has eliminated duplicate effort, customizing and standardizing the data to meet the department specifications is still a significant effort. Additionally, accounting for 55 million acres of agriculture and forest lands at an "individual taxpayer mapping scale" is also a challenge.

Thus far, Department of Revenue GIS Technicians have completed preliminary desktop agricultural reclassifications in thirty-one Montana counties. GIS Technicians use imagery and other data to classify FSA CLU data in accordance with the five current agricultural land use classifications. Those land use classifications are grazing land, summerfallow farmland, continuously cropped farmland, dryland hayland, and irrigated land. After the initial desktop classification work is completed, agricultural maps will be generated and sent to the Department's county offices for additional office and field verification. While staff is in the field, mobile mapping technology is sometimes used in the field verification process to complete data editing. A process using GPS technology is employed to document field work. Over 3,000 GPS points have been collected in seven counties where field validation has been completed.

Once the agricultural line work has been classified and field checked, the data is merged with cadastral and NRCS soil survey information. An application is run with these three datasets that ultimately generates an MS Access database that lists each geocode in a

county, the acres associated with each land use classification, and the productivity or yield (in NASIS) for each soil type based on that classification. Access tables will eventually be imported into the CAMA database where the value of each land use acre will be calculated for each parcel of agricultural land.

Forest land acres are being accounted for differently than agricultural land. University of Montana, School of Conservation and Forestry (UM) is developing a productivity model to run against all taxable acres that have been classified by the Department of Revenue as commercial forest lands.   Once the Department completes building a county dataset that delineates commercial forest land, as that is defined by statute, the data will be populated with productivity information from the UM productivity model. That information will be imported into the CAMA database where the value of each forest land acre will be calculated.

After the project is completed in December 2008, the data will be maintained in the new digital environment. As the different data sources used in the project are maintained and improved by the appropriate data custodian, the Department will be able to leverage those same updates and improvements to increase the quality of the department's processes.

Ted Chase has worked for the past 6 years as the GIS Manager for the Montana Department of Revenue. Prior to joining the State workforce, he worked 12 years in Denver, Colorado as a project manager managing numerous gas and electric utility GIS implementations.