**NGGDPP Final Technical Report – FY 2013**
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**Name of State Geological Survey:** Kentucky Geological Survey

**Project Title:** 2013 National Geological and Geophysical Data Preservation for Kentucky

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**Abstract:**
KGS is legislatively mandated to archive and make available oil and gas records for wells permitted through the Kentucky Division of Oil and Gas. Records are transmitted from the Division to the KGS Lexington office where they are scanned and prepared for online access. The KGS western Kentucky office maintains a separate file of historical well records that has been compiled from a variety of sources. This collection is known to contain some original documents not in the main office, as well as working copies that have valuable annotations that have been made over the years. The only access to these unique documents is by visual inspection of the original documents at the western Kentucky office. KGS has lacked resources to make significant progress with the comparison of the two collections to identify unique documents to scan and append to the online repository. There are estimated to be 80,000 document folders that need review, and this constitutes a multi-year effort. We proposed to employ students both in the western Kentucky and the Lexington office to begin this significant effort. The approach was to review, scan, and rebuild the online file as a single process so the work will have immediate benefits. As soon as they are processed, the scanned documents are made available online through the Kentucky Geological Survey oil and gas well search (http://kgs.uky.edu/kgsweb/DataSearching/OilGas/OGSearch.asp).

The 2012-13 NGGDPP project to catalog limestone sampling sites and associated chemical analyses, led to identification of several storage areas of original sample materials, including rock samples, powdered materials, and thin sections. KGS proposed to inventory these samples, and create metadata for them so that they can be made available through our Well Sample and Core Facility. This work was done as part of the matching effort.

**Objectives**:
1. Review 15,000 folders of oil and gas records for documents missing from the Kentucky Oil and Gas Repository, and add digital images to the existing online resource.

2. Inventory, catalog, rebox, and create metadata for twelve sample cases of limestone/dolomite sample materials.
3. Update the KGS collections folder in the USGS ScienceBase catalog to include recently identified collections, and update metadata records for select collections that have changed since originally entered.

**Results:**

1. Oil and gas record folders were reviewed for documents missing from the Kentucky Oil and Gas Repository. Missing documents were scanned at the KGS western Kentucky office, which resulted in scanning of 40,100 pages of documents for 12,384 oil and gas well records. This scanning process also resulted in 1083 new oil and gas record data records added to the KGS oil and gas database. These scanned documents and new records are now available online through the KGS oil and gas well search.
2. Inventory of the 12 storage cases of limestone samples resulted in identification of 1,233 individual samples. All but 190 of these samples were tied to localities with known coordinate locations and having associated measured sections, field notes, or chemical analyses. The thin section inventory yielded 666 identifications, all but 38 being tied to localities.
3. KGS has a web application which generates a USGS ScienceBase-compatible XML file from the most current data in the database for each collection. The intent of this application is for a user to login to the USGS catalog, and use the update functionality to replace the catalog items with the most current update. To-date, KGS has been having issues accessing the USGS ScienceBase catalog to update the KY collections.

**Future work**:

Work still needs to be done in order to update the KY collections in the USGS ScienceBase catalog. Once KGS has appropriate access to the system, KGS will do a complete revision and update of the KY collections in the catalog.

Scanning of missing documents from the Kentucky Oil and Gas repository is an on-going process, and KGS is currently funded for the FY2014 through the Data Preservation program to continue this work. KGS anticipates scanning of approximately 20,000 well records during this phase of the project.

**Data Preservation Success Story**

The Kentucky Geological Survey received a request for information from an international company looking for ultra-low magnesium limestone resources in Kentucky. This company specializes in precipitated calcium carbonate products used in a variety of specialty industrial applications. If they can find a source of stone that meets their specifications, they would hope to build a processing facility near the mines to supply product to the U.S. domestic market. Requests like this would normally be forwarded to the KGS staff member with expertise in the field. In this case, our industrial limestone expert, Garland Dever, retired a number of years ago, and the program became inactive—an increasing problem in geological surveys with shrinking budgets and staff. Fortunately, geologists at KGS had spent the past several years digitizing all the field and laboratory data obtained by Garland and his predecessors since 1949. These data

contain a tremendous collection of foot-by-foot chemical analyses and descriptions of carbonate rock from quarries across Kentucky. Field notes showing the geologic context of the samples have also been digitized for easy access. Much of this digitizing and preservation activity was made possible through the USGS National Geological and Geophysical Data Preservation Program. Specifically, this program funded KGS to examine 15,254 limestone sample analyses which were identified, associated with measured section sites, and entered into the KGS database, along with the scanning of 456 field note folders. The availability of these electronic data allowed KGS staff to quickly focus on a single geologic horizon with high potential for stone with the right chemical composition, and a number of active quarries that produce it. This was just in time for a meeting with managers of the company, who happened to schedule a visit to the U.S. Since then, KGS staff have visited a quarry with company managers and facilitated sample collection to be used for further testing. The ability to respond quickly to this request has positioned Kentucky as a strong candidate for this new development.

This scenario reminds us of the important economic development role that geological surveys can play across the nation. It also reinforces the critical need to preserve geoscience data of all kinds to facilitate geologic investigations for resource development and environmental stewardship. KGS participates in a national program administrated by the U.S. Geological Survey called the National Geological and Geophysical Data Preservation Program. Established in the 2005 Energy Policy Act, this program provides funds to geological surveys to catalog, curate, and store geoscience holdings of all kinds for the benefit of the nation. The vision of this program was to build and expand facilities to house rock and mineral specimens and associated data collected by surveys. The low level of appropriated funds has limited the work to inventories and data management, but, nevertheless, has resulted in many success stories like this one.