

**Final Technical Report for FY2011  
National Geological and Geophysical Data Preservation Program**

**Prepared for:  
The United States Geological Survey (USGS)**

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### 1.0 Abstract

The New Hampshire Geological Survey (NHGS) completed requirements set by the National Geological and Geophysical Data Preservation Program (NGGDPP) for FY2011. The primary objectives of this grant period were to: (1) perform a collection level inventory on one paper collection of maps and data collection of borehole/well videos, (2) create metadata for two previously inventoried collections of drill cores from 2 historic mining prospects and (3) Create or update digital infrastructure for a digitally converted collection of bedrock borehole videos, well completion reports and geologic reports and maps. This Final Technical Report describes FY2011 project details. In fulfillment of the grant requirements, this final technical report will be submitted to the USGS upon conclusion of this grant.

## 2.0 Project Summary

For NGGDPP FY2011, NHGS received full funding in the amount of \$32,559.00 to focus on three program objectives which include:

*Objective 1:* The first objective consisted of two tasks to inventory two collections, one of borehole videos and the second of mineral resource maps. The borehole videos were assessed, inventoried and stored in a temperature controlled cabinet. These videos were also converted to digital files under Objective 3 of this project grant. The second task involved inventorying sand and gravel resources maps. However, because these maps were preliminary in nature and reflected in the products created under the stratified drift mapping projects for New Hampshire, it was felt that this task was unnecessary and that additional well reports would better serve our community of users, in lieu of this task.

*Objective 2:* Conducting a collection-level inventory of bedrock cores from two different mining sites in New Hampshire. The two core collections are comprised of strategic mineral cores drilled in the 1970's in New Hampshire. One set of cores was drilled in Lyman, NH at the Copperville Mine (Collection ID P1683 - Photo 1), and the other was drilled in Milan, NH at the Paddock Lead Mine (Collection ID P1682). The Copperville Mine cores contain 229 20-foot long, 1.5-inch diameter cores, and the Paddock Lead Mine collection contains 112 25-foot long, 1-inch diameter cores. The two collections were inventoried and available assays were scanned. Metadata was created around each boring location.

Assays were only available for the Copperville Mine and so it was only logical to produce metadata around the locations of each borehole, as opposed to each assay result.

Photo 1. Copperville Core Collection



**Objective 3:** Digitally converting paper well completion reports (Collection ID P1611) to digital format for eleven towns (*Brentwood, Danville, Durham, East Kingston, Exeter, Fremont, Kingston, Lee, Newmarket, Newton, and Sandown*), located in the Seacoast Region, including metadata creation and upload to the NDC. Well completion reports were digitally converted from a paper document to a PDF/A-1b using the ISO 19005-1 standard: Document Management-Electronic document file format for long term preservation. In addition, NHGS is in the process of uploading all scanned well completion reports to the Department of Environmental Services (DES) ONESTOP website.

Well completion reports contain information on well construction including well location, total well depth, depth to bedrock, and water yield. Some reports also contain general lithologic descriptions. Real estate agents and lending institutions regularly use the well data during the course of property transactions. NHGS uses the data extensively in the process of mapping surficial and bedrock geology. The data also are a key component of both groundwater quantity and groundwater quality assessments, and aquifer mapping. Private sector hydrogeologic consultants find the data to be invaluable when siting new public drinking water supply wells or investing water quality issues and geotechnical engineers use the data when planning new construction projects. Ultimately, the data support a range of water resources and infrastructure planning activities and the development of public policy. NHGS receives several well report data requests per week, which often necessitate perusal of, and access to, existing archived information.

Well reports scanned for this project were made web accessible, immediately following quality control protocols, through the DES website. A total of 7,453 well completion reports were scanned and of those 3,543 contained georeferenced coordinates and were uploaded to the NDC in CSV format. These totals surpassed the grant requirements.

Two additional tasks under this objective were to digitally preserve 24 geologic publications and digitally convert bedrock borehole videos (see Objective 1). The publications and associated maps were scanned with procedures commensurate with ISO 19005-1 standard. The downhole bedrock well/borehole videos were transferred from digital tape media to digital format into Windows media file format and stored on an NHGS server.

### 3.0 Progress

FY2011 goals which were set by NHGS were exceeded. NHGS digitally converted 7,453 well completion reports, which included the ten proposed Seacoast towns and one additional town, Newton. Metadata was uploaded for 3,543 of the reports which contain georeferenced coordinates. This number exceeds the originally proposed number of 2,552 well completion reports. Geologic bulletins and associated maps were converted into 24 metadata files with bounding box centroids as georeferenced coordinates. Metadata was successfully created for the Copperville Mine and Paddock lead Mine rock cores. Thirteen bedrock borehole videos were also converted into metadata and uploaded to the National Digital Catalog.

**Table 1. NHGS Metadata Uploaded to the National Digital Catalog**

Collection Name	# Metadata records Created	USGS ID #	Status
Well Completion Reports	3,543	P1611	Geo-referenced and uploaded to NDC
Geologic Bulletins, Maps, Quadrangles	24	P1509	Geo-referenced and uploaded to NDC
Copperville Mine Core Logs, Assays, and field notes	10	P1683	Geo-referenced and uploaded to NDC
Paddock Lead Mine Rock Cores	8	P1682	Geo-referenced and uploaded to NDC
Bedrock Borehole Videos	13	P1681	Geo-referenced and uploaded to NDC

## 4.0 Goals

Funding through the NNGDPP has been critical in supporting NHGS geologic data preservation goals during the past four grant years. Should NHGS pursue future funding under NNGDPP, likely priorities for preservation and digital infrastructure development would be the GeoLogs Database. GeoLogs is a feature comprehensive relational database for capturing subsurface physical (e.g., soil and bedrock borings, wells, and test pit excavations) exploration data. There are several sources of data that are collected by New Hampshire state governmental agencies and bureaus that could be captured into this database or alternatively, developed into web services that can be presented to the user as one data source.

## 5.0 Conclusions

Requirements set by USGS for the FY2011 Data Preservation Grant were exceeded. Currently, NHGS has thousands of individual items entered as 10 individual collections in the USGS Inventory of Geologic and Geophysical Collections (Table 1). NHGS will continue to focus on creating digital infrastructure and metadata for collections in the online inventory and ensure the public has access to these items (Table 2) as soon as practicable.

**Table 2. NHGS Collections Included in the National Digital Catalog**

Collection ID#	Collection Name	Total Number in Collection
P1509	Paper Collection NHGS	170
P1517	Highway Maps	63
P1538	Rock Cuttings	195
P1611	Well Completion Reports	+118,000
P1652	Field Maps	61
P1655	Well completion reports and well logs for Ground Water Network	9
P1680	Strategic Mineral Maps	-
P1681	Bedrock Borehole Videos	13
P1682	Rock Cores	8
P1693	Rock Cores	10