

VPR&PS Outreach Scholarship Grant Report
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**Expansion of the NH Historic Map Digital Collection to Meet the Needs of
Researchers, Practitioners and Citizens**

Team Leader:

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Team Members:

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data repository),

Christina Bellinger (Head of UNH Library Technical Services Department)

External Partner:

Richard Chormann (Hydrogeologist, NH Department of Environmental Services)

Attachments to text document:

Figure 1. Map showing distribution and number of quadrangles processed

PowerPoint attachments on separate CD:

ACRL Poster “Developing a Collaborative Map Scanning Project”, April 2006

NEMO PowerPoint “University of New Hampshire Topographic Map Digitization
Projects”, June 2006

Scope of Project:

The UNH Library and the NH GRANIT System have collaborated on an effort to collect, process, and make available an enhanced collection of historic USGS maps covering the state of New Hampshire (see Figure 1). In addition to providing higher resolution images more easily navigated by users of web browsers, the project's second objective was to process the images in a manner suitable for their subsequent use with commonly used digital mapping tools. The resulting georeferenced images and associated metadata, or data documentation will be available to the public. The grant has allowed us to make significant progress in the complex process of transforming paper maps to readily accessible and usable digital-format images and to present them on the GRANIT and Library web sites in slightly different forms, targeting two different user groups.

Our initial project proposal involved identifying, locating, scanning and geoprocessing up to about 150 maps of the standard US Geological Survey 15-minute and 7.5-minute topographic map series concentrating on the northern portion of the state. As the project unfolded, it became clear that it was more efficient to target completion of the entire state based on the 15-minute map series (dating from the 1890s through the 1950s), and to defer the generally more recent 7.5-minute maps for a later project.

Accomplishments to Date:

We have exceeded our initial goal to scan and process at least 150 maps, and have assembling a collection of 210 tiles (see Table 1). Our project accomplishments include:

- a) **Developing standards to govern the data development and archiving flow.** Standards were established describing scanning resolutions and protocols, georeferencing protocols, image compression formats, metadata development, and various data management aspects (including filenaming conventions);
- b) **Locating the source documents.** Source documents were retrieved from the UNH Library (186 maps) and Dartmouth College Library (24 maps). (We are still making arrangements to obtain the remaining 17 maps from the Harvard University Library or other institutions.) For each quadrangle up to six separate versions exist, reflecting editions published at different times as well as, in some cases, versions showing vegetation cover or shaded relief.
- c) **Scanning, georeferencing, clipping, documenting, and archiving the quad data.** The suite of 210 quads was fully processed to allow for their eventual utilization in GIS and other mapping environments. In addition to scanning, the processing flow included indexing the maps to a single band image using Photoshop, georeferencing the images (to register them to known geographic coordinate systems) using ArcGIS, clipping the images (to allow adjacent images to be mosaiced) using ArcGIS, and compressing the images (using LizardTech).
- d) **Conducting outreach activities.** Outreach to date has occurred in the form of presentations at meetings, as well as displays at conferences (see section below). As the images are made publicly available on our respective websites, we will undertake more extensive outreach efforts.

Project Assessment

We have assessed the quality of the scanned and processed images by making sample images available to our external partner at the Department of Environmental Services, to the UNH Library Digital Librarian and Digital Committee, and to the larger GIS and library communities through the presentations that are described in this report. The responses from those viewing the sample images have been positive.

Because the scanned images that we are creating here at UNH are of high quality, it is very likely that they will be eligible for inclusion in a national-level USGS digital project currently in pilot stage, thus providing even wider distribution of our work.

Final assessment of the entire project will take place when both repositories make their images available to their users.

Outreach to Date Regarding this Project:

The team leader has presented two posters (each targeting different user groups and different aspects of the project) as well as a talk to an association of map professionals.

The first presentation, “Digital Historical Topographic Maps: New Options”, at the UNH GIS Day in November 2005, summarized the technical aspects of the procedures and the value of the project for geographic information system practitioners and researchers. (Because the display included original maps and numerous other images a copy of the accompanying PowerPoint poster is not included in this report.)

The second poster, “Developing a Collaborative Map Scanning Project”, was presented at the annual conference of the New England Library Association in April 2006. Its purpose was two-fold: (1) to introduce librarians from the region to the digital topographic map resources of the UNH Library and (2) to discuss the process of developing collaborations, which may be applicable to many kinds of projects. (A copy of this poster is on the attached CDROM).

In June 2006 the team leader prepared a PowerPoint presentation for the annual meeting of the North East Map Organization (NEMO), comparing the existing scanned maps with the new images created by this project. This talk was part of a panel devoted to digitization of historical topographic maps. Other panel members included the person in charge of creating the national-level cooperative digitization program to be coordinated by U.S. Geological Survey (USGS), and map/GIS librarians from Harvard and the University of Connecticut describing projects in their states. The panel was moderated by a GIS/geoscience librarian from MIT. (A revised version of this presentation, reflecting work completed since May, is found on the CD that accompanies this report.)

Figure 1. Distribution of quads processed in NH.

