

New Jersey Geological and Water Survey Geoscientific Data Preservation Project

National Geological and Geophysical Data Preservation Program

**Award Number: G14AP00149
FINAL TECHNICAL REPORT FOR FISCAL YEAR 2014
September 15, 2014 to September 14, 2015**

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Abstract:

In fiscal year 2014, the New Jersey Geological and Water Survey (NJGWS) was awarded \$18,000 by the U.S. Geological Survey (USGS) under the National Geological and Geophysical Data Preservation Program (NGGDPP). This marked the fifth award presented to the Survey since 2007, with total funds of \$101,184 received under this program. In each grant year, the NJGWS has matched the USGS award on a one to one basis.

Using grant money awarded for fiscal year 2014, the NJGWS focused its preservation work on scanning a collection of 505 borehole maps, geologic logs and sounding maps (#P1099), 7 historic monzonite prospecting photographs (#P1300), 500 geologic mine logs (#P1293) and 4 field notebooks (#P1293). Additionally, data from the mine logs was entered into the mine log database created under the 2012 grant. Associated metadata for all four 4 projects was uploaded to the NDC.

Prior to fiscal year 2014, the NJGWS used grant funds received to identify 21 collections to target for preservation and preserved 94 rock cores (#P1294), 209 sediment cores (#P1651), 924 geochemical samples (#P1295), 133 paper maps (#P1099), 139 digital maps (#P1303), 285 paper well logs (#P1306), 230 digital well logs (#P1307), 7,581 paper lithology logs (#P1297) and 5,891 paper field notes (#P1293). All associated metadata has been uploaded to the NDC.

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FINAL TECHNICAL REPORT

FY2014

New Jersey Geological and Water Survey Geoscientific Data Preservation Project

Background

In total, since 2007, the New Jersey Geological and Water Survey (NJGWS) has been awarded \$101,184 by the U.S. Geological Survey (USGS) under the National Geological and Geophysical Data Preservation Program (NGGDPP) for the purposes of identifying, cataloging, securing and preserving at-risk data. The State of New Jersey has matched these funds 1:1.

In fiscal year 2007, under the Data Preservation Grant, the NJGWS conducted a survey of its geological and geophysical data collections and added 18 collections to the NDC. Three more collections were identified and added in fiscal year 2009. Since these collections were identified, the NJGWS has used its grant funding to preserve the most at-risk data in the inventory. This work includes preservation of 94 rock cores (#P1294), 209 sediment cores (#P1651), 924 geochemical samples (#P1295), 133 paper maps (#P1099), 139 digital maps (#P1303), 285 paper well logs (#P1306), 230 digital well logs (#P1307), 7,581 paper lithology logs (#P1297) and 5,891 paper field notes (#P1293). Associated metadata for all preserved items has been uploaded to the NDC. The items in the collections listed in the inventory have been made accessible to outside entities, including government agencies and the private-sector and are mainly used for research, education, land management, hazard mitigation and engineering studies.

In fiscal year 2014, the NJGWS applied for, and obtained, a one-year grant award of \$18,000 from the NGGDPP. The State of New Jersey matched this grant 1:1.

Goals and Objectives of the Fiscal Year 2014 Grant

The objectives of the fiscal year 2014 grant were to (1) scan and create a digital infrastructure for an estimated 500 borehole location maps, their associated borehole logs and Delaware River soundings maps (#P1099), (2) scan and create a digital infrastructure for 7 historic paper photographs illustrating the state's monzonite prospecting efforts, (3) digitize 500 penciled geologic mine cards, adding to the work started on this collection in fiscal year 2012, and (4) add to the NJGWS' digital field notebook collection by scanning 4 field notebooks from NJGWS Geologist Suhas Ghatge (#P1293). Metadata was to be created for all items preserved and uploaded into the NDC. NJGWS successfully met all the goals and deadlines of the grant.

Fiscal Year 2014 Accomplishments

Borehole Location Maps, Associated Borehole Logs and Delaware River Sounding Maps (#P1099) Under the fiscal year 2014 grant, the NJGWS scanned 505 borehole location maps, their associated borehole logs, and Delaware River sounding maps. These maps were created by entities outside the NJGWS for purposes of investigating underlying geological conditions in order to build major infrastructure projects, such as (1) the proposed, but never built, Intracoastal Canal between Bordentown and Cheesequake Creek, (2) Interstate 80, (3) the Bergen Passaic Expressway, (4) the Garden State Parkway, and (5) the New Jersey Turnpike. The maps were produced over the 99 year period, 1879 – 1978. These borehole studies and Delaware River sounding maps were commissioned by various state and federal agencies such as the United States Engineers Office and New Jersey Highway Authority, the forerunner to the New Jersey Department of Transportation. The collection, in its entirety, is solely held by the NJGWS.

The paper maps and logs in this collection were converted from paper to digital media using a flatbed Colortrac Smart LF Gx+ T42 scanner. The documents were scanned at 300 dpi and saved as individual tiff files. Additionally, the NJGWS created a digital infrastructure by creating a searchable library with files organized by county, project and type of map. Metadata for each of the 505 records was then compiled in Microsoft Excel[®], saved as a comma delimited file, and uploaded to the NDC.

Note that several of the logs associated with proposed building projects did not contain specific locational data beyond township and county. Where locational data was missing, a combination of resources, such as Google Maps and several free websites designed to provide latitude/longitude information were used to approximate locations or center points. In some instances, the building projects proposed in the logs and maps were never undertaken. In these instances, location was determined by pinpointing two cross streets near the proposed building site as a proxy for location.

Monzonite Prospecting Photograph Collection (#P1300) The NJGWS scanned and created a digital infrastructure for 7 black and white paper photographs that illustrate the State's efforts to prospect for the radioactive ore monzonite in the mid-1960's. These photographs of prospecting efforts in Chester Township provide important historical information regarding the State's natural resource inventory.

The photographs were scanned at 300 dpi using a HP ScanJet 8200 scanner and were saved as tiff files. The scanned copies were then added to the NJGWS' digital archives which are available to the public. Each photograph was assigned a unique number for ease of identification and access in order to efficiently respond to future research requests. Metadata was created in Microsoft Excel[®], saved as a comma delimited file and uploaded into the NDC.

Geologic Mine Logs (#P1293) The NJGWS scanned and digitized 500 penciled, historic geologic mine logs from New Jersey's mines, pits and quarries. The data contained on the paper index cards dates back to the 1980's. This was the second of three batches in this collection to be preserved. In 2012, using NGGDPP funding, the first 500 logs

were scanned. The final batch of 500 logs will be preserved under the recently awarded 2015 NGGDPP grant. In addition to scanning the index cards, the information contained on the cards was added to the existing database of mine logs created under the 2012 data preservation grant.

The mine logs were converted from paper index cards into a more secure digital format. Each mine log was scanned at 300 dpi using a Ricoh Aticio MP 6001 copier/scanner and saved as individual .pdf files. Under the 2012 grant, a database was created in Microsoft Access[®] in which the information contained on each geologic mine card was entered. The data contained on this second batch of 500 logs was entered into this database. As with the previous batch of logs, each of these 500 logs was assigned a unique number for ease of identification and access in order to efficiently respond to future research needs. Metadata was then created in Microsoft Excel[®], saved as a comma delimited file and uploaded to the NDC.

Geologic Field Notebooks (#P1293) The NJGWS continued the work it started under the 2012 NGGDPP grant by preserving an additional four geologic field notebooks. This collection is comprised of handwritten historic observation notes made by staff geologists while working in the field. The field books preserved under the 2014 grant contain raw gravity and magnetic data taken from areas in Bergen, Camden and Mercer Counties. Data was collected during the six year period 1985 to 1991 by staff geologist Suhas Ghatge.

The notebooks were scanned at 300 dpi using a HP ScanJet 8200 flatbed scanner. All scans were saved as .pdf files and the scanned copies were added to the existing digital infrastructure. Metadata for the four books was created and uploaded to the NDC.

Benefits

Since 2007, the NJGWS has preserved thousands of pieces of data housed on paper that was in jeopardy of being lost to deterioration. Much of this valuable data can no longer be acquired or replicated without substantial cost due to significant commercial and residential development across the state. The work done under the NGGDPP grant helps to fulfill New Jersey's data preservation goal to provide all its raw field data online, making it accessible to all users. As a result of funding from the NGGDPP, much of this data has been converted to digital format and is used on a daily basis by staff geologists. In addition, the data collections and the supporting geological and geophysical records are primary resources used by external entities, including geologists, engineering and environmental firms, non-governmental organizations, educational institutions and government agencies working on water supply, pollution remediation, environmental compliance, natural-resource inventory, mine safety hazard mitigation and construction and research projects.

One way in which the Survey measures the use of its data by external users is through web statistics and orders received for print publications. (See Attachment 1 for a detailed metrics table). Below are some examples of the way in which our data, preserved under NGGDPP funding, has been used successfully by external agents.

- Digitized borehole geologic logs were used for New Jersey beach resiliency planning that has become a priority following the devastation to the coast by 2012 Superstorm Sandy. Using this data, a program was developed to determine the location of natural inlets and to track the changes in coastlines over the past 100 years.
- The NJGWS recently worked in conjunction with FEMA and the New Jersey police to assess the risk posed by New Jersey's abandoned mines in order to prevent possible disaster. Information from digitized permanent notes and field notes, as well as from the Christy Bell Mine Log collection, was used to identify and locate abandoned mines and assign each a risk rating. These ratings are being used to prioritize the State's hazard mitigation work.
- Geological consultants frequently make use of NJGWS data, and in particular, its digitized historical documents. Field notebooks, permanent notes and scanned maps are often used for site remediation projects. Additionally, our digital data has been used to prepare several presentations and publications. A recent talk on copper mines of New Jersey relied heavily on our collection of digitized permanent notes. In addition, access to our digital data has been helpful in several environmental legal cases.

See Attachment 2 for a letter from Mark Zdepski, a geological consultant who frequently uses our data, commenting on the NJGWS paper data he used in 2008. As he alludes to, the permanent notes had suffered some damage due to flooding but the value of the data is immeasurable. Since that time, these permanent notes, using NCGDPP funding, have been scanned and are readily available to outside users.

Summary

The NJGWS used its fiscal year 2014 grant money to satisfy its goals under Grant Objective 3. Specifically, a digital infrastructure was created for 505 historic borehole maps, associated geologic logs and sounding maps (#P1099) and 7 monzonite prospecting photographs (#P1300). Already existing digital infrastructures were updated for 500 geologic mine logs and 4 field notebooks. Metadata associated with all these items was created and uploaded to the NDC. NJGWS successfully fulfilled all its goals and met all its deadlines under the grant.

This report, and the uploading of metadata to the NDC, fulfills the non-financial elements of the fiscal year 2014 NCGDPP grant requirements.

Web Statistics for NJGWS Data Available Online*

Year	2012	2013	2014
Website Hits	43,764	39,898	40,309
Data Download Hits	77,524	99,123	135,971
Publication Download Hits	1,724,709	2,467,447	1,921,040
Total Download Hits	1,802,233	2,566,570	2,057,011

*Data is current as of February 2015

Attachment 2

June 24, 2008

Richard Dalton
NJ Geological Survey
25 Arctic Parkway
PO Box 427
Trenton, NJ 08625-0427

RE: Use of the Permanent Notes

Dear Dick:

Yesterday my use of the Permanent Notes of the State Geologist was extremely productive. I want to thank you heartily for your assistance in directing my attention to the pertinent parts of the file. The green Commodity file-folders were especially useful, even though they have suffered through a flood.

The detailed-factual observations in hand-written notes made by scientists over 110 years ago was not just exciting to me, but it also makes an enormous contribution to my client's project. I am not one to use superlatives in business correspondence, so in this instance you can be assured that the files you led me to were absolutely the best.

Thank you again for your assistance. The NJGS is a tremendous resource for the professional geological community and the type of public outreach you performed yesterday is of the greatest value.

Sincerely,

J. Mark Zdepski, CPG
President

Cc: Karl Muessig,
State Geologist

