Final Technical Report

National Geological and Geophysical Data Preservation Program
Award Number: G13AP00085

Project Title: **Oregon Historic Mine Data**

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Abstract

This report and the accompanying scans and catalog (database) were prepared to preserve data available from paper, vellum, and mylar oversized rolled and folded maps and other mine information, as well as maps interleaved with mine reports. A total of 1628 scans were prepared and catalogued. The original paper maps have been reorganized and curated for long-term storage in stable media. The digital files have been organized into a digital format that is easy to reorganize or search as needed. As digital files, the scanned maps and catalog (database) entries can be more easily made available to the public, either by printing on paper, transferring files on storage media, or transferring across the internet using FTP or our interactive website. The original paper maps will benefit from less handling now that digital versions are available. The digital database carries information on map scale and location coordinates needed as the first step to georeference and import the scans into geographic information systems (GIS). Using GIS techniques, the geographic distribution of the maps scanned for this project can be displayed and compared to other historic mine information.

Project Summary: Key Results for FY2014

- The entire collection of oversized historical maps housed in DOGAMI's Baker City Field Office has been scanned, organized, catalogued, and archived in map friendly storage media.
- A database describing the scans has been prepared.
- Original high-resolution .tif files are retained by DOGAMI.
- .pdf files will be served by the DOGAMI website at the URL listed below.
- The National Mine Map Repository(NMMR) scanned many of the maps and it retained a digital copy of each scan (http://mmr.osmre.gov/).
- Many DOGAMI database fields have been concatenated into the Abstract field of the National Digital Catalog to provide a robust description of each scan.
- Determination of scale and coordinates provides a "fit to display" starting point for georeferencing the images so that eventually they can be used in Geographic Information Systems (GIS).
- The long-term preservation of the original documents will be improved by the availability of digital copies as the originals will be handled less frequently.

Scanning that was partially funded by NGGDPP award number G13AP0085 is summarized here and represents one part of a multi-year project to scan historical mining and geology records held by the Oregon Department of Geology and Mineral Resources. A total of 1628 scans of delicate oversized historical mining records were assembled during FY 2014. Scans have resolution ranging from 230 to 400 pixels per inch (ppi). Image details are preserved by storing the data in low-loss .tif format files. These files will be placed on DOGAMI's website as .pdf files. The scans are supported by preparation of an in-house Excel® catalog (spreadsheet) that summarizes the location, subject, scale, source, author, affiliation, etc. information available for each image. Appropriate fields from the database have been entered into metadata for the National Digital Catalog administered by NGGDPP. Many of the fields have been concatenated into the abstract field of the metadata to provide a robust description for each scan. Figures 1 and 2 provide examples of scans and metadata entries provided as part of Oregon's NGGDPP deliverable for FY2013.

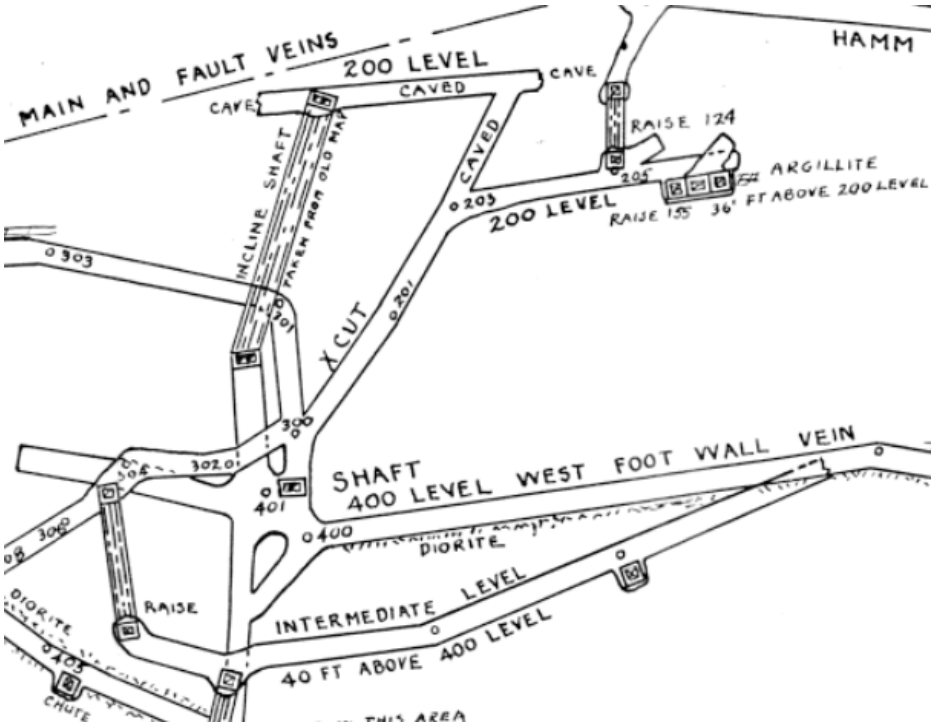

Figure 1. Example of detail included in 400 ppi scan of mine map

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collectionID|title|alternateTitle|abstract|dataType|supplement
alInformation|coordinates|alternateGeometry|datasetReferenceDa
te|onlineResource|date|verticalExtent
P38685|Collection of Mine Maps from Oregon, Eastern Oregon:
B0001|Eastern Oregon: ID Number B0001|Site Name: Eastern
Oregon;  District Name: N/A;  Map Title/Description: Map of
Eastern Oregon; Location/Reference: Mining Locations Map; Map
Scale: unknown; Author: DWC Nelson; County:
E.O.|Map|http://www.oregongeology.org/sub/milo/index-
minemaps.htm|-117.870000,44.650000|Township 6S-15S, Range 33E-
46E|2014|http://www.oregongeology.org/sub/milo/archive/minemap
s/B0001-MiningLocations1935.pdf|1935|nd
P38685|Collection of Mine Maps from Oregon, Amax Exploration:
B0002|Amax Exploration: ID Number B0002|Site Name: Amax
Exploration;  District Name: Cracker Creek;  Map
Title/Description: Surface Geology, Cracker Creek Project;
Location/Reference: nd; Map Scale: 1 in.= 200 ft.; Author:
E.K.P.-M.N.-D.B.L.; County:
Baker|Map|http://www.oregongeology.org/sub/milo/index-
minemaps.htm|-
118.190000,44.830000||2014|http://www.oregongeology.org/sub/mi
lo/archive/minemaps/B0002-
CrackerCrkGeologyAmaxCorp.pdf|1981|nd
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Figure 2. Pipe delimited text records describing scanned maps B0001 and B0002.

The coordinates and scale information for the scanned maps provide the information required as the first step (fit to display) in georeferencing a scan for use in GIS (Figure 3). This benefit was not anticipated at the time we prepared the proposal. Having scale and coordinates also allows users to quickly observe terrain in the image area by matching coordinates and scale in software such as Google Earth® and lidar bare earth DEMs. Maps created using U.S. Geological Survey topographic base maps have known datum and projection. Used in conjunction with lidar bare earth DEMs, historical maps can be georeferenced and then updated with additional information based on the nature and distribution of ground disturbance and relationships to geology. With lidar based elevation and location information for features recognized on historical maps, better 3D treatments of underground mine workings can be developed from the historical maps than by using the historical maps alone.

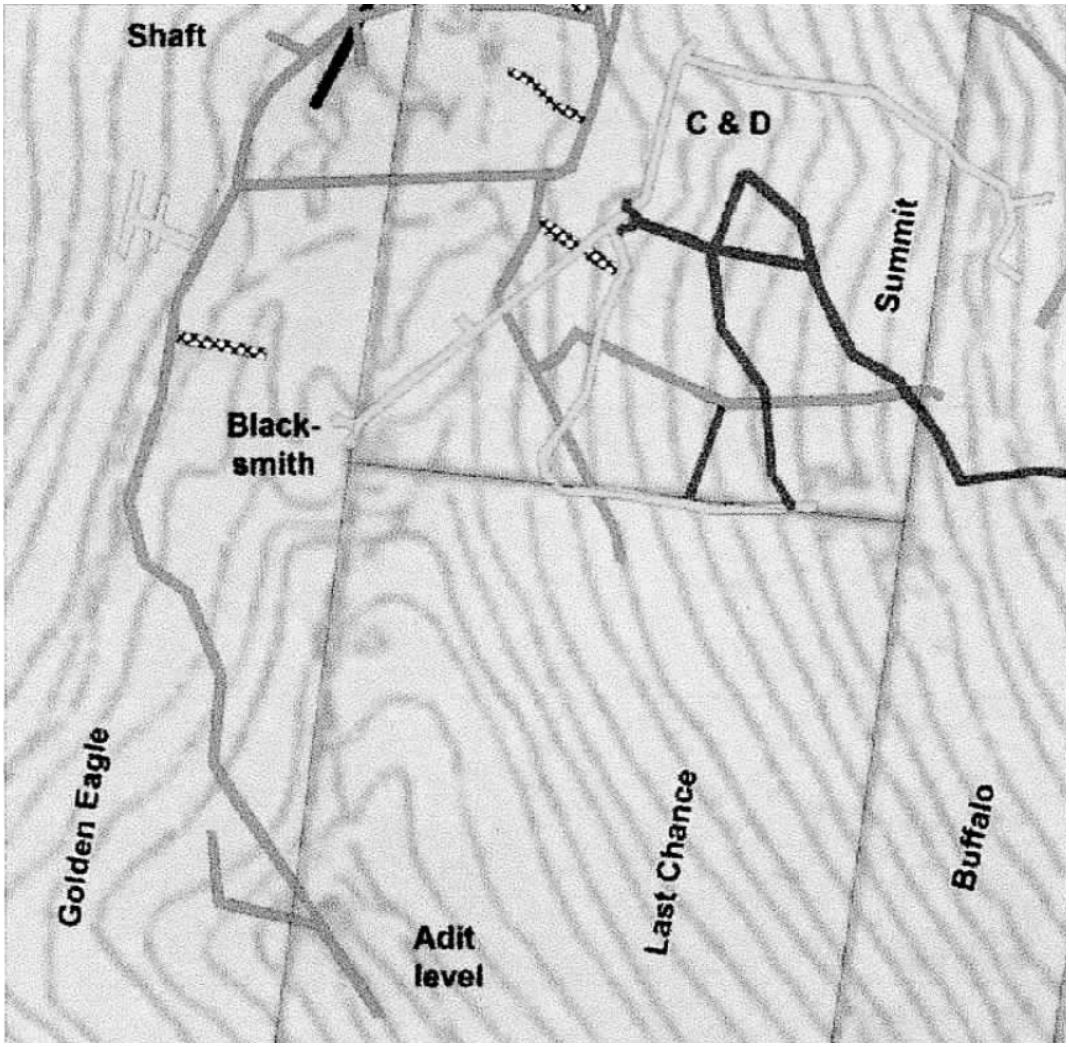

Figure 3. Map prepared using GIS to superimpose mine map, claim map, and topographic map

Original Tasks

Task 1: Scan the collection of oversized mine maps and other maps, figures, diagrams, etc. related to mining and geology that are housed in DOGAMI's Baker City Field Office.

Task 2: Prepare a spreadsheet with information related to the mine maps, figures, diagrams, etc. to serve as an in-house catalog of the Baker City collection. Design the spreadsheet so that records inform metadata required by NGGDPP such that it can be prepared as a subset of the catalog to meet the requirements of delimited text file for inclusion in the national database.

Accomplishments

Task 1: The complete collection of oversized maps housed in DOGAMI's Baker City Field Office has been scanned. Grayscale and color scans depicting the Baker City Field Office collection have pixel densities ranging from 230 to 400 ppi. A sample is shown above (Figure 1).

Task 2: A spreadsheet has been prepared that contains information on each archived scan of mine maps, diagrams, sections, and related figures. A robust subset of the spreadsheet is used to prepare pipe-delimited text records as metadata for inclusion in the National Digital Catalog as required by NGGDPP (Figure 2).

Deviations from planned accomplishments

1) We prepared 1628 scans including all the oversized mine and claim maps, figures, diagrams, sections, etc. in DOGAMI's Baker City Field Office collection. This contrasts with our original estimate that the collection held 2000 documents.

2) After receiving the award, DOGAMI acquired access to a large plotter located in the same building as most of the maps. Accordingly, maps that could be scanned without shipping were. These maps were handled once rather than three times and the risk of loss was eliminated.

Website locations where scanned maps can be accessed:

Oregon Department of Geology and Mineral Industries
http://www.oregongeology.org/sub/milo/index-minemaps.htm