



Public Service Commission

State of North Dakota

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January 2, 2008

Mr. Joshua S. Rockwell
Office of Surface Mining
South Interior Building – Room 202
1951 Constitution Ave. NW
Washington, DC 20240

RE: FY 2008 Underground Mine Map Initiative

Dear Mr. Rockwell:

Attached is North Dakota's proposal for an Underground Mine Map Cooperative Agreement for fiscal year 2008. This proposal requests funds to continue development of North Dakota's Abandoned Mine Map and Information System (MMIS). The Public Service Commission received funds in fiscal year 2006 from OSM for the first phase under a similar cooperative agreement. The first phase involved scanning mine maps on file at the North Dakota State Historical Society. The current proposal is for a continuation of the next phase which involves mine map clean-up and manipulation, data copulation, and assembly of all relevant data into the main database. A Beta version of the existing database is slated to be released early in 2008. The Public Service Commission fully supports and endorses this project.

If you have any questions on the attached proposal, please contact Kraig Nelson or me at 701-328-4096.

Sincerely,

James R. Deutsch
Director
AML Division

Office of Surface Mining National Technology Transfer Team Face Page

Project Title: 2008 North Dakota Abandoned Mine Map and Information Database

Project Duration (in months; 12 month maximum): 8 months

Has this proposal been submitted elsewhere? No

Name and Title: Principle Investigator, Kraig Nelson, GIS Specialist II

Organization: North Dakota Public Service Commission, Abandoned Mine Lands Division

Mailing Address: 600 East Boulevard Avenue Dept 408, Bismarck, ND 58505-0480

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Federal Tax ID Number: 45-0309764

Funding

Funds requested from OSM: \$14,887.00 New Application

Funds provided by applicant: *Refer to Item 3(g) Continuation

Additional matching funds:

Value of in-kind services: \$50,000.00

Cash contribution: \$960.00

Total Project Cost: \$66,807.00

Applicant's Organization

Name: North Dakota Public Service Commission, Abandoned Mine Lands Division

Address: 600 East Boulevard Avenue Dept 408, Bismarck, ND 58505-0480

Certifying Representative's Name and Title: James R. Deutsch, Director, AML/Reclamation Divisions

Certifying Representative's Telephone Number: 701.328.2251

Kraig Nelson 1-2-08
Signature of Principal Investigator/Date

James R. Deutsch 1-2-08
Signature of Organization's Date
Certifying Representative

PI Assurance: I agree to accept responsibility for the scientific conduct of the project, to provide the required reports, to acknowledge OSM in any presentations and publications wherein the results of this project are used, and to provide copies of presentation abstracts and publications to OSM provided an award is made as a result of this submission. I also agree to allow this proposal to be reviewed by industry and/or academia and that proprietary information which has been properly identified will be used solely for proposal evaluation.

Certification & Acceptance: I certify that to the best of my knowledge, the statements contained herein are complete and true and I accept the obligation to comply with OSM terms and conditions provided an award is made as a result of this submission.

1. Project Abstract

The North Dakota Public Service Commission (PSC) is requesting funds to continue development of a North Dakota Abandoned Mine Map and Information System (MMIS) database that will be part of a Geographical Information System (GIS). This project is designed to combine and consolidate abandoned mine maps, mine inventory information, historic coal mine inspection data, and other information into interactive map(s) and a searchable database. The MMIS currently does, and will continue to, aid the PSC staff in identifying, prioritizing, and designing reclamation projects for abandoned coal mines that are a potential hazard to public safety. It will also allow property owners, mining companies, realtors, public planners, researchers, and the general public to quickly access locations and data for abandoned coal mines in North Dakota.

2. Project Description

- a) **Objective:** The objective of this project is to further the development of the North Dakota Abandoned Mine Map and Information System (MMIS). This will include a searchable database and interactive GIS-based map(s) that will allow users access to historic mine maps and information regarding those mines.
- b) **Background:** In the past, North Dakota mine maps and information have been stored in various locations. Some have been lost and deteriorated with time. There is a need to preserve these maps and information and organize them into a user-friendly format. The data contains important information about hazardous and potentially hazardous abandoned mines. The maps can be used in abandoned mine land reclamation and for outreach to the public about hazards of past mining.
- c) **Preliminary Efforts:** Work on the North Dakota Abandoned Mine Map and Information Database began in 2002. Approximately 420 mine maps from the ND State historical archives and 1,500 pages of text were scanned and converted to Adobe PDF Documents. Maps were linked to the textual information and arranged by bookmarks. This information, approximately 1GB, is contained on the PSC network server and is being used by AML staff. The approximate cost of the scanning and conversion was \$4,700, not including PSC staff time. In 2006, the PSC applied for OSM cooperative funding for additional work on its Abandoned Mine Map and Information Database. This request was for \$82,000 and was proposed in three phases. The first phase was approved by OSM and \$6000 was awarded. Positive steps toward development of the North Dakota Abandoned Mine Map and Information System (MMIS) were made as a result of this project. Work is continuing on this project as of the date of this request.
- d) **Significance to OSM Underground Mine Map Initiative:** The North Dakota Abandoned Mine Map and Information System (MMIS) is a significant contribution to OSM's Underground Mine Map Initiative. Prior to this project, the NMMR had only five North Dakota abandoned mine maps and documents on file. As a result of the cooperative effort on this project, the PSC has supplied the NMMR with nearly 500 more abandoned mine maps and 1,500 pages of mine information in digital format. When this project is completed, it will combine mine maps and information in a geographic database and allow users to access mine-related information while viewing mine maps in relation to their geographic location and setting.
- e) **Description of Resources:** In the initial map and document scanning (2002-05), the PSC contracted with Fireside Technology Group of Bismarck, ND. Mine maps were generally scanned grayscale at 300 dpi. Maps and documents were converted to Adobe Acrobat (PDF) format and organized by bookmarks into a linked database. In the 2006-2007 Project, remaining maps were scanned by personnel from the North Dakota State Historical Archives at 400 dpi RGB, 24 bit mode. Since most of these maps were large and/or in fragile condition, State Archives requires scanning at its facilities. Currently, the PSC also has a Graphtec CS600 large media scanner and some additional maps are being scanned in-house. The PSC has the majority of the hardware and software required for geo-referencing, mapping, and database creation but with the addition of the GIS assistant, some new hardware is required. This application includes a request for funds to hire a part-time temporary GIS assistant to scan, format, and catalog mine maps and other mine related information. In addition it includes the request to purchase of one copy of Adobe Photoshop Extended C3, one copy of Adobe Acrobat Professional and one stand alone Desktop PC to aid in formatting and manipulating the scanned maps and data.

3. Statement of Work:

- a) **Issue Identification:** This project is addressing the need to continue the assembly of North Dakota mine maps and complimentary information into a useful GIS database.
- b) **Work Tasks:** Personnel work tasks and timeframes for this project include but are not limited to:
- Scan remaining mine maps and documents as they are located and identified by reliable sources. Document scanning will be done in-house by PSC employees using OCR software when possible. Map scanning using the PSC's Graphtec SC600 large media scanner. Some map scanning may also be done by North Dakota State Historical Archives personnel if necessary. Scanning activities for the MMIS may extend beyond 2008 if additional mine maps and documents are discovered.
 - Digitally manipulating mine maps and data using Adobe Acrobat, Adobe Photoshop, and other software applications to improve, clarify, and facilitate their incorporation into a GIS database. This is currently being done by the PSC GIS Specialist and is scheduled to be completed by the winter of 2008.
 - Catalog the remaining mine maps and information into the MMIS database. This is currently the primary responsibility of the PSC GIS Specialist who works together with AML staff, data processing staff and the ND GIS Hub. This work began in mid 2007 and will extend into late 2008.
 - Provide assistance in serving portions of the North Dakota Mine Map and Information GIS Database to the public via the World Wide Web. A Beta version is scheduled to be launched early in 2008. This work will be done primarily by the GIS Specialist and data processing staff in consultation with the North Dakota Information Technology Division (ITD) and the North Dakota GIS Hub. This will allow easy access to the maps and related data by property owners, residential and commercial developers, realtors, local governments such as county and city commissioners and zoning authorities, other state agencies, utilities and the general public. Please note that each of these steps is dynamic and will continue as long as necessary to achieve project goals.
- c) **Time Allocation:** Refer to Item b)
- d) **Resource Allocation:** Refer to Item b)
- e) **Quality Assurance/Quality Control:** Quality is of the utmost importance in this project. The PSC has already hired a GIS Specialist and will be hiring a Programmer to support the project. Proofreading, map and data review, technical and overall project supervision will be the responsibility of the AML director and assistant director. Budgets, financial management, and recordkeeping and reporting will be conducted by the PSC accounting division's administrative staff officer. PSC data processing personnel will be consulted when needed, as will the North Dakota Information Technology Division, the North Dakota GIS Hub, and the North Dakota Historical Society. Individuals from other states that have completed a similar GIS AML database, including Indiana, Kentucky, and West Virginia will continue to be consulted for technical advice.
- f) **Determination of Goals:** An assessment of the effectiveness of meeting the overall project goal and that of each work task will be made each quarter and will be a part of the quarterly report. These assessments will be based initially on the completeness and technical accuracy; and eventually on the usefulness and user-friendliness of the MMIS database.
- g) **Cost Sharing/Funds and Resources Contributed by Applicant:** The PSC is dedicated to the completion of this project. It has provided considerable time, money, and effort toward it and will continue to do so. The PSC has reclassified positions and successfully recruited a full-time GIS Specialist who is currently working on this project. The PSC has also initiated the process to hire a Programmer whose primary responsibilities will work in support of GIS development at the PSC. The PSC has actively pursued input on this project from other state agencies, mining companies and other non-federal sources. This request for funding is for costs related to hiring a part-time temporary GIS assistant to scan, format, and catalog mine maps and related information for the PSC's MMIS database. As previously noted, the PSC is providing the GIS Specialist and a Programmer to support the project as well as the required computer hardware. The value of the in-kind services over the 8-month period is estimated to be at least \$50,000. The PSC is also willing to pay 10% of the cost of hiring the part-time temporary GIS assistant. If awarded, the funds requested in this project would greatly expedite the completion of the North Dakota MMIS.

Budget Page

Project Title: Fiscal year 2008 Underground Mine Map Cooperative Agreement
Principal Investigator: Kraig Nelson
Organization: North Dakota Public Service Commission Abandoned Mine Lands Division

Budget Page: 1
Requested Duration: 8 months

Item	Hours	Rate/Hour	Total Salary	OSM Contribution	Applicant Contribution	Other	Total
1. Salaries (List each person or position separately.)							
GIS Office Assistant Part-Time Temporary - 90%	600	\$ 16.00	\$ 9,600.00	\$ 8,640.00	\$ 960.00		\$ 9,600.00
Total			\$ 9,600.00	\$ 8,640.00	\$ 960.00		\$ 9,600.00
2. Benefits (List benefits rate per person/position.)							
GIS Office Assistant - Temporary = Does Not Apply		Fringe @ 30%	\$ -				
Total			\$ -				
3. Supplies							
Software Adobe Photo Shop CS3 Extended - 1 copy			\$ 999.00				
Software Adobe Acrobat Professional - 1 copy			\$ 449.00				
Total			\$ 1,448.00				
4. Equipment							
Desktop PC - Designed for Mine Map Manipulation			\$ 4,799.00				
Total			\$ 4,799.00				
5. Subcontracts							
None			\$ -				
Total			\$ -				
6. Other Direct Costs							
None			\$ -				
Total			\$ -				
7. Total Direct Costs							
Salaries, Benefits, Supplies, Equipment, Subcontracts, and Other Direct Costs			\$ 14,887.00				
Total			\$ 14,887.00				
8. Indirect Costs							
Indirects Calculated at 40% of Total - Salary & Fringe							
Total			\$ -				
Please see the Attached proposal							
9. Total			\$ 14,887.00				
10. Cost Share Percentages			See Section 3(g)				