Category 5 CAP Grant
Geographic Information Integration Project
Final Project Report

Cooperative Agreement Number: 06HQAG0096

Project Title: Pend Oreille County Geographic Information Partnership

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Lead Project Organization: Pend Oreille County,
625 West 4th Street
Newport, WA
www.co.pend-oreille.wa.us

Project Lead: James Marthaller
509-447-6462
jmarthaller@pendoreille.org

USGS Mapping State Liaison: Allyson Jason
253-552-1682
ajason@usgs.gov

Collaborating Organizations: **Spokane County**
Ian Von Essen
1026 W. Broadway Avenue
Spokane WA 99260
http://www.spokanecounty.org/

Kalispel Tribe of Indians,
Jim LeMieux
1500 W. Fourth Suite 505
Spokane WA 99212
http://www.knrd.org/

Pend Oreille Public Utility District #1
Dale Weathers
130 N. Washington
Newport, WA 99156
http://www.popud.com

Data Themes: Boundaries
                                                        Hydrography
                                                        Transportation
                                                        Orthoimagery
                                                        Elevations
                                                        Land Use
                                                        Structures
                                                        Geographic Names

Project Summary:

Pend Oreille County, working in partnership with Pend Oreille Public Utility District, Kalispel Tribe of Indians, Spokane County Geographic Information Systems, and Eastern Washington University, created a Geospatial Consortium to integrate and improve multiple spatial datasets into a format for use in *The National Map* through a USGS/NSDI/FGDC CAP Grant. This Final Project Report describes the 2006-2007 Category 5 – Pend Oreille Geographic Information Partnership Project.

The CAP Category 5 Award was the catalyst for improvement of several key datasets including:

Boundaries: County, Cities, PLSS;

Hydrography: Lakes, Streams, Wetlands;

Transportation: Roads, Railroads;

Orthoimagery: State DNR (purchase);

Elevations: Contours (USGS), DEM;

Land Use: Comprehensive Plan, Zoning;

Structures: Buildings, Parcels; and

Geographic Names: Points of interest.

The improvement and integration of these datasets will continue to improve the business function of Pend Oreille County through access to updated and maintained data, and has improved access to data by the public as well as Federal, State, and Local agencies.

Project Objectives:

The following were the original goals of the project, which have all been successfully fulfilled:

- Creation of integrated, maintained, and accessible GIS datasets

- Development of a consortium of local interests to establish a Geospatial Information System for Pend Oreille County using a community approach

- Integration of Pend Oreille County datasets into an Eastern Washington Regional database maintained by Spokane County

- Provided public access to Pend Oreille County data in an OGC-compliant format through *The National Map* server maintained by Spokane County

- Provided data and information to the U.S. Department of Homeland Security, U.S. Geological Survey, U.S. Forest Service, and other Federal, State, and Local Agencies

Additionally, through the course of the CAP Grant project, Pend Oreille County has updated existing road data to fit with the Washington State Department of Transportation's road data standards so that this dataset can be further integrated into the State's database.

Project Accomplishments:

Through the CAP Grant, Pend Oreille County was able to purchase ESRI software for county users, a large-format plotter to print county maps, and Orthoimagery to provide a basis for improving data. Pend Oreille County, through the assistance of Spokane County Geographic Information Systems, has been able to integrate and improve geospatial datasets.

Boundaries: Counties, Cities, PLSS

A county boundary layer and PLSS datasets were adopted from the Washington State Department of Natural Resources (DNR), and improved through the addition of survey control points. City boundaries were entered through legal descriptions and coordinate geometry methodology (COGO). City boundaries are continually being improved as Pend Oreille County identifies and works to fix legal description discrepancies.

Hydrography: Lakes, Streams, Wetlands

Hydrographic datasets were obtained from the U.S. Fish and Wildlife Service and from the State DNR. Lakes and streams were adopted from the State DNR and improved by adding GPS stream courses developed by Seattle City Light for their Boundary Dam project. Wetlands were integrated from the U.S. Fish and Wildlife Service's National Wetlands Inventory and from the State DNR. Wetlands were then improved by adding GPS data obtained from a study of wetlands near the Little Spokane River.

Transportation: Roads, Railroads

Through the CAP Grant project, Pend Oreille County has integrated two distinct transportation datasets that had been previously created and maintained by the Pend Oreille County Roads Department and the County's Sheriff/E911 Department, into a single county-wide dataset. Road centerlines were improved to match existing 2005 Washington State Department of Natural Resources Orthoimagery, and upon availability 2006 USDA NAIP Orthoimagery. This single dataset has been loaded into *The National Map*, and integrated into an Eastern Washington Regional database maintained by Spokane County. The dataset can also be integrated into the Washington State Department of Transportation's (DOT) road database.

Railroads were adopted from an existing State DOT dataset.

Orthoimagery: State DNR (purchase)

Orthoimagery (2005 flight) was purchased from the State DNR in summer 2006 for populated areas of Pend Oreille County. This imagery became the common land base to which the remaining datasets were conflated in conjunction with the PLSS. When the USDA NAIP 2006 imagery became available in fall 2007 it was mosaicked and color balanced for Pend Oreille County use. The two Orthoimagery datasets were based on the same 10-meter U.S. Geological Survey DEM and were therefore remarkably coincident.

Elevations: Contours, DEM

A U.S. Geological Survey 10-meter DEM was obtained in 1:24,000 tiles and mosaicked into a single DEM. A hillshade raster and contour lines were generated from the 10-meter DEM.

Land Use: Comprehensive Plan, Zoning

Pend Oreille County's existing land use datasets were improved by correcting for topological errors. These datasets will be further improved as Pend Oreille County completes its parcel layer. These datasets are not represented in *The National Map* at this time.

Structures: Buildings, Parcels

Still in progress are a county-wide parcel dataset and subsequent structures dataset.   The CAP Grant enabled Pend Oreille County to improve the existing parcel dataset by developing a parcel creation model and by adjusting existing parcels to new control points. In the future, Pend Oreille County staff will be able to add parcels using a consistent methodology, which will ensure the success of the parcel dataset. The parcel dataset will be uploaded to *The National Map* upon its completion.

Geographic Names: Points of Interest

Pend Oreille County adopted the U.S. Geological Survey's Geographic Names Inventory System data for points of interest. That dataset was improved by addition of several points of interest maintained by the County's Sheriff/E911 Department; these new points will be formally submitted to the U.S. Geological Survey for review and acceptance.

These datasets, with the exception of Land Use layers and Structure layers, have been loaded into *The National Map* via a server maintained by Spokane County. Updates to datasets will be sent from Pend Oreille County to Spokane County on an as-needed basis. Spokane County will then update *The National Map*.

Challenges:

The primary challenge to this project was the condition of existing data, especially road data. At the start of this project, there existed two roads datasets both in MapINFO format. These datasets were maintained by two different county departments, the county Roads Department and the Sheriff/E911 Department. Neither dataset was spatially superior, and each dataset contained integral attributes that the other dataset did not contain. For instance, the E911 road file contained highly accurate addressing data that was not included in the Roads Department file. The Roads Department file contained county road numbers and mile-posting data that was not included in the E911 file. Spokane County developed a methodology based on the Washington State DOT geodatabase framework for integrating these two files into a single file without losing any pertinent data and for efficiently managing updates.

The existence of two separate spatial datasets maintained by two different departments is indicative of an issue faced by many counties when adopting a Geographic Information System. Prior to GIS, county departments typically create map products independently of one another. When a Geographic Information System is developed, it requires the integration of many business functions across departments. Pend Oreille County is still adapting to this change, but making progress.

A second challenge to this project was that Pend Oreille County staff had historically created GIS data using MapINFO. Pend Oreille County had a desire to transition to ESRI software since the ESRI platform is used by all Washington State

agencies and by neighboring Spokane and Lincoln Counties, but had never purchased the software. The CAP grant enabled Pend Oreille County to make that purchase. Spokane County then provided ESRI training to Pend Oreille County staff. Most Pend Oreille County staff members have made the transition to ArcGIS Desktop.

Relationship with U.S. Geological Survey:

Pend Oreille County is grateful for the opportunity provided by the CAP Grant to work with USGS. Pend Oreille County will continue to provide updates for *The National Map*, which will be reviewed and uploaded by Spokane County. Pend Oreille County took advantage of an existing USGS *National Map* server located at Spokane County. Spokane County upgraded the server with new software provided by USGS in order to host an OGC-compliant map service for Pend Oreille County.