



### Fields of Expertise

- Geographical Information Systems (GIS)
- GIS Programming
- Database Design and Development
- Application Development
- Cartographic Presentation
- Remote Sensing
- Natural Resource Management
- Graphics

### Professional Summary

Tony Thatcher is the co-founder and current owner of DTM Consulting, Inc., a Bozeman, Montana –based GIS and natural resource consulting company. He has a M.S. in Geography with 18 years experience in collecting, analyzing and presenting spatial and non-spatial data using Geographic Information Systems (GIS), Remote Sensing, CAD, GPS, and various other digital techniques. With DTM, Mr. Thatcher has participated in numerous environmental monitoring and evaluations projects throughout North America where he has designed custom data management applications. Mr. Thatcher’s strengths reside in his ability to integrate diverse technologies, data, and software to create innovative solutions to meet client needs. He has extensive experience in developing custom mapping techniques, tools, and user interfaces for data management and presentation in both GIS and database environments. Prior to starting DTM, Mr. Thatcher was a GPS project specialist at the Jet Propulsion Laboratory where he helped coordinate and execute regional and global scale GPS geodynamics surveys in North, Central and South America.

### Education

- **M.S. in Geography** – Oregon State University, Corvallis, Oregon. Emphasis on geographic techniques, analysis and cartography. Second focus in Geomorphology.
- **B.A. in Communication** – University of Colorado, Boulder, Colorado. Second focus in Earth Sciences

### Key Project Experience

- **Clark Fork River Channel Migration Zone Map, Missoula County, Montana.** DTM teamed with Applied Geomorphology, Inc. to develop a Channel Migration Zone study for twenty miles of the Clark Fork River from the Bitterroot River confluence, downstream to Huson, MT. Deliverables included a final CMZ map, a detailed project report and associated GIS data layers.
- **Yellowstone River Channel Migration Zone Map, Missoula County, Montana.** This study involved creating Channel Migration Zone maps for the entire Yellowstone River corridor (565 miles) from Gardiner, Montana to the confluence with the Missouri River. This effort built on previous work performed on the Yellowstone River that included a geomorphic assessment, imagery acquisition and rectification, GIS-based inundation modeling, and physical feature mapping. Deliverables included a series of county-level tiled maps showing the CMZ mapping, a detailed report and associated GIS data.
- **GIS-based River Restoration Design Tool, Mainstream Restoration, Montana.** Currently developing a GIS-based tool for designing and documenting river restoration designs. The tool includes the reporting of geomorphic parameters such as channel length, sinuosity and bendway radius of curvature. Output includes tables and CAD data that can be used to engineer the final channel design.

- **Web-based 310 Permit Database, Montana Department of Natural Resources and Conservation.** Over the past four years I have been under contract to develop, maintain and support a web-based database for storing, editing and displaying information associated with 310 Stream Permits in Montana. The system utilizes GoogleMaps to display the location of permits, AJAX-enabled web pages to dynamically display permit information, query and reporting functions, and password protected editing of permit information. This system is being utilized by Conservation Districts across Montana to manage 310 Permit information.
- **Web-based Stream Inventory Mapping Application, Milwaukee Metropolitan Sewerage District, Wisconsin.** Developed a web-based mapping application for exploring sediment transport modeling, hydrologic modeling and inventory information for the Menomonee, Root and Kinnickinnic Rivers. The tool relies on the ASP.NET framework for developing a database driven GoogleMaps application. Features include display of field photographs, cross section, modeling, stream bank condition and infrastructure for the surveyed river corridors.
- **Agricultural/Forest Lands Valuation Program, Montana Department of Revenue.** Currently developing an ArcGIS-based application to value agricultural and forest lands in the state of Montana. This application integrates ownership, land use, and soils information to calculate a productivity value for each polygon based on the modeled productivity of the underlying soils. The resulting data is output directly to a custom MS Access database that contains specific queries for adjusting and summarizing the data for eventual input into Montana's taxation system. The GIS application contains custom editing and attributing tools to streamline the data creation process.
- **Yellowstone River Cumulative Effects Study, Yellowstone River Conservation Districts Council.** For the past 7 years I have been involved in several data creation and analysis projects in support of a federally-mandated cumulative effects study for over 600 miles of the Yellowstone River from Gardiner, Montana to its confluence with the Missouri River in North Dakota. This work has included the georeferencing and mosaicing of hundreds of historic aerial photographs, digitizing river features from the suites of photography, assessing geomorphic function, and analyzing the resulting data for human impacts over time.
- **Water Rights Mapping Program (WRMapper), Montana Department of Natural Resources and Conservation.** This ongoing project originally involved developing an ArcView-based mapping system to allow water resource specialists to convert paper-based water rights claims and mapping to a GIS-based mapping system. The program includes modules for digitizing water rights claim polygons, ditches, and points of diversions. WRMapper was designed to interface with the current revisions to the master water rights database. In the past two years, we have converted the original WRMapper to work in the ArcGIS environment, and ported the existing data structure from Shape File to Personal Geodatabase. Current efforts include porting the entire system to work in an Enterprise GIS environment with SDE, remote access, and custom versioning routines.
- **Vegetation Change and Impacts to the Annual Water Budget, Big Hole River, Montana; Big Hole Watershed Committee.** This study provided research and analysis on upland vegetation change over time in the upper Big Hole watershed and the impact of this change on the availability of water for in stream flow and irrigation. This study also included recommendations for forest management that could improve stream flows. Historic imagery was assessed and compared to current imagery to assess the extent of conifer encroachment in three upland watersheds. The results of this mapping were then used as input into the SWAT water model to generate simulated hydrographs showing the likely impacts from the observed vegetation changes.
- **Flood Inundation Potential Mapping and Channel Migration Zone Delineation, Big Hole River, Montana.** This project was funded by the Big Hole River Foundation, Big Hole Watershed Committee, Montana Department of Environmental Quality and the 4 counties along the Big Hole River. The primary goal of this project was to produce approximate 100-year floodplain maps for the main stem of the Big Hole River, along with associated river corridor geomorphic hazard zones. The resulting locally-led, 4-county effort forms the foundation for land use planning along the entirety of the Big Hole River corridor.