



The Idaho-Montana Geopositioning Cooperative

Idaho

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Montana

Stewart Kirkpatrick, Montana State Library

Bob Holiday, Montana State Library



Geopositioning Cooperative

Federal Geographic Data Committee (FGDC)

Category 4 CAP Award

(March 2011-February 2012)

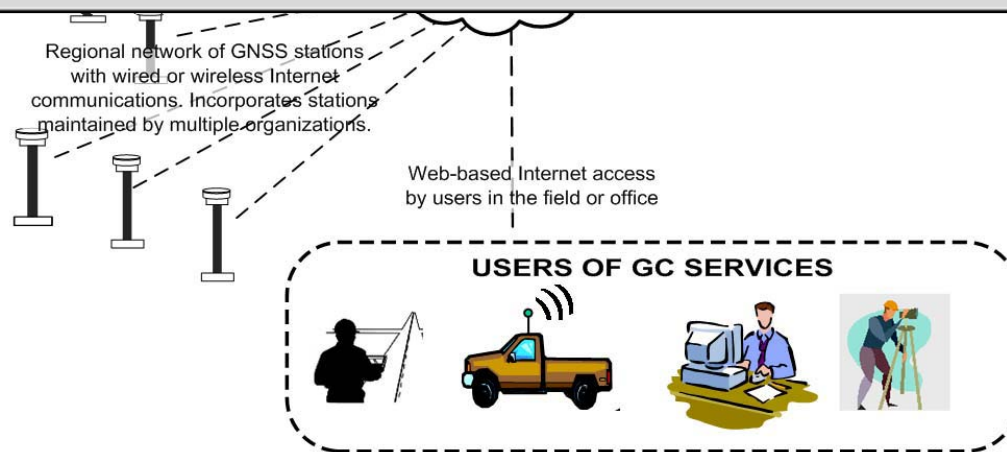
- Business Plan for Geopositioning Cooperative
 - Global Navigation Satellite Real-time Network
 - Enhanced Multi-state Control Point Database

Geopositioning Cooperative Mission

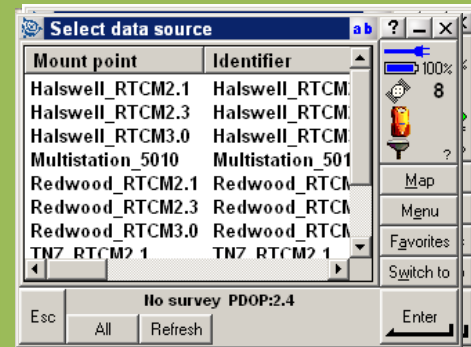
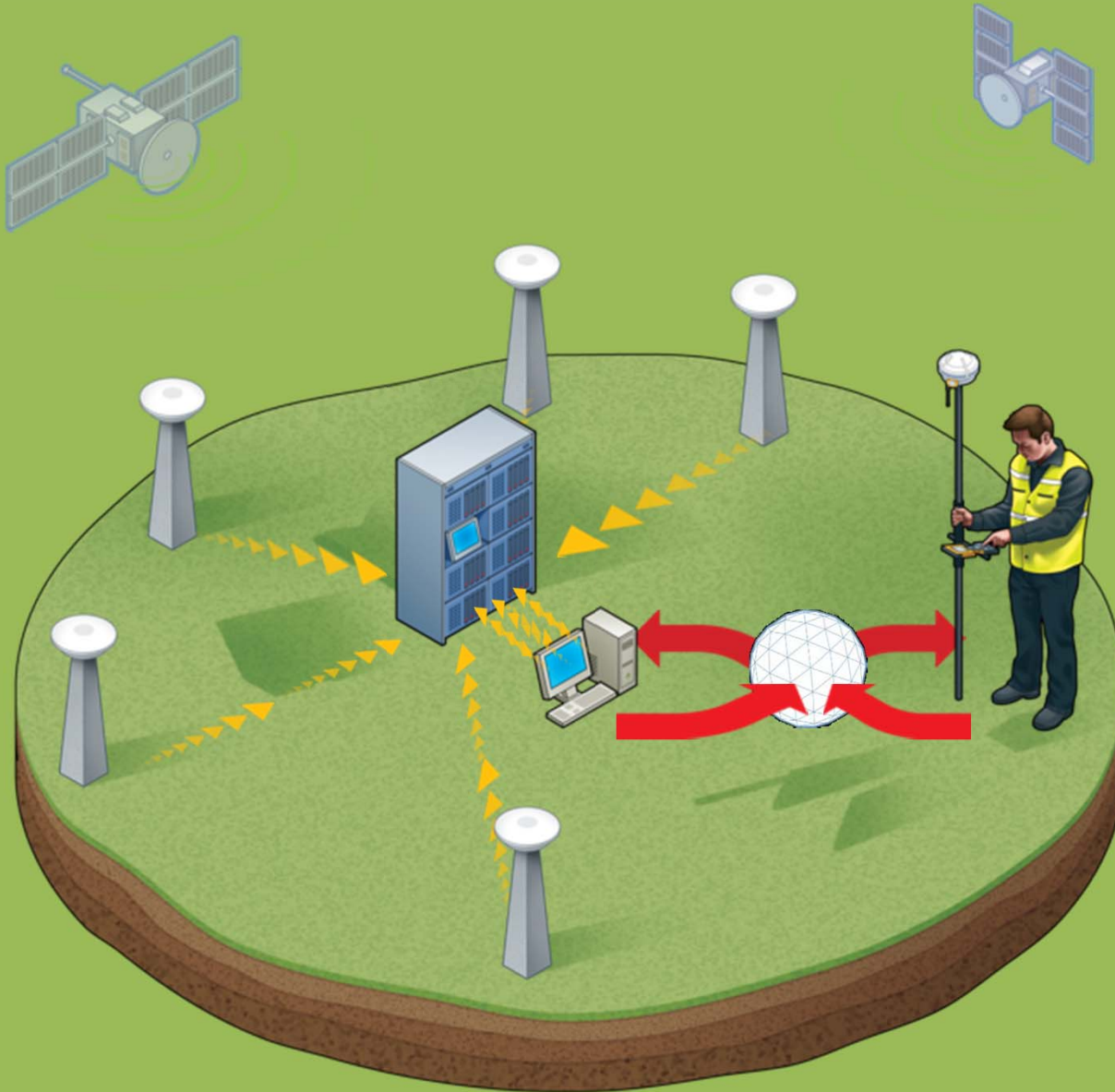
Geopositioning Cooperative (GC) Administration



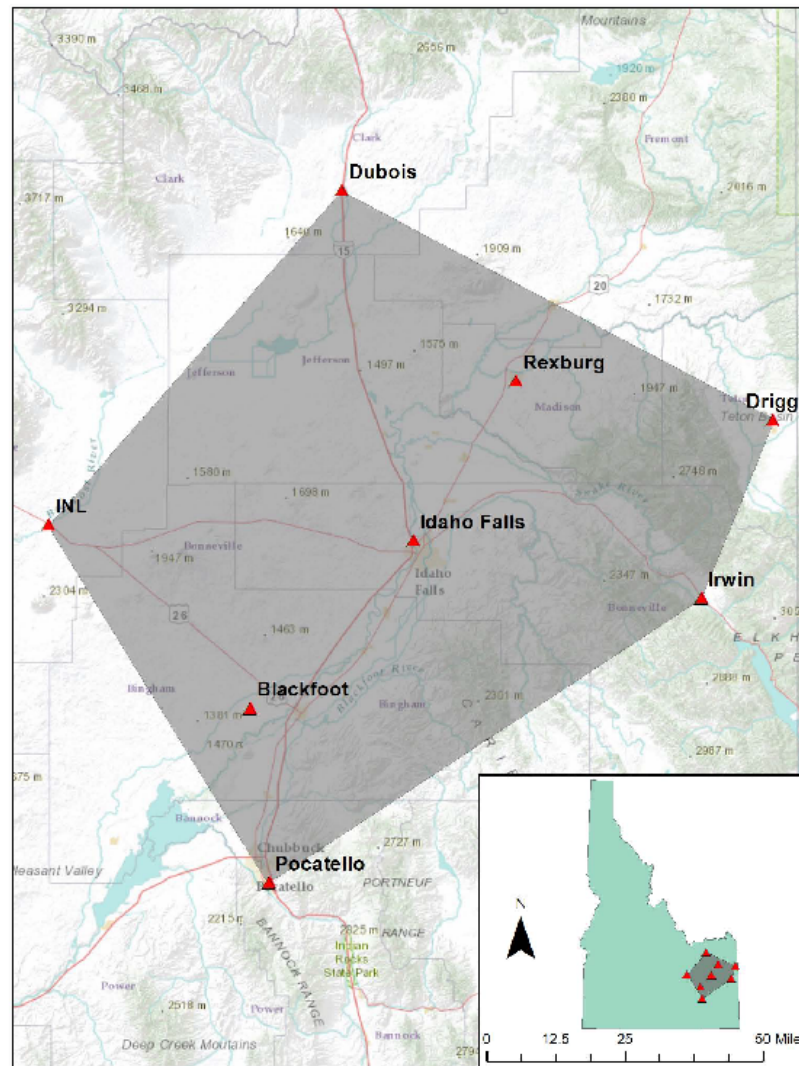
Establish a sustainable geopositioning cooperative that serves the needs of the broad user communities of Idaho and Montana by providing effective access to high-quality geodetic control information, GNSS Infrastructure, and related services.



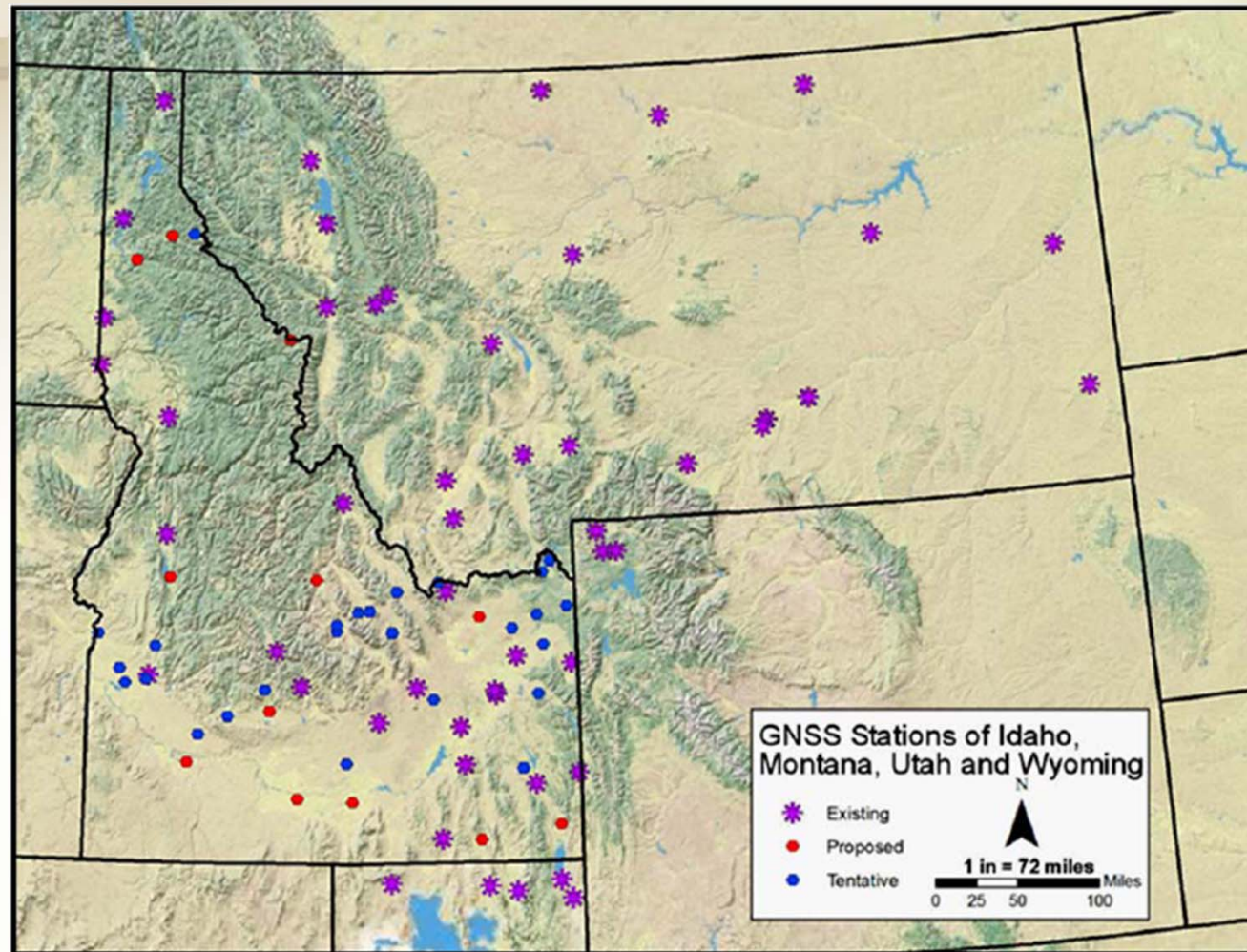
True Network Nuts and Bolts



Current GNSS Service Area



GNSS Real-time network





#gispro

Multi-state Control Point Database MCPD

History of the MCPD

A group of surveyors formed the Montana Geodetic Control Working (MTGCWG) in 2000 in order to develop strategies to facilitate the sharing of control point information for the following reasons:

- Less than 1% of geodetic and mapping control is reported to the National Geodetic Survey (blue-booked).
- Public funds are often used to create surveying or mapping and control that is used for only one project.
- GIS and surveyors can reduce project costs and improve project quality.

The primary strategy was to develop an online control point database application named the Montana Control Point Database (MCPD) which premiered in 2010.

In 2011 the Idaho Geodetic Control and the Cadastral Reference Working Group joined with the MTGCWG on a Federal Geographic Data Committee grant. Revised application went on-line in July 2012.

MCPD is currently housed at the Montana State Library, but an ArcGIS 10.1 application is being developed at ISU.

Purpose of the MCPD

Find and publish survey and mapping control contributed by Montana and Idaho's professional land surveyors.

For Surveyors, the MCPD provides:

- a standardized, consistent format for data collection and storage.
- an opportunity for off-site data back up.
- one stop access to control point data thus reducing or eliminating research costs.

For GIS mappers, the MCPD provides:

- access to high quality control point information for improving geospatial data.



#gispro

MCPD Viewer Overview

Multi-state Control Point Database

Welcome | Disclaimer | Credits

Welcome to the Montana and Idaho Multi-state Control Point Database!

Here you will find survey and mapping control contributed by Montana and Idaho's professional land surveyors who are committed to improving the positional accuracy of geospatial information.

The public may use this site to search for and download survey and mapping control points that are unique to the Montana and Idaho data set. For your convenience we also provide links to the National Geodetic Survey (NGS) control point data sheets and corner coordinates of the Geographic Coordinate Database (GCDB) of the US Bureau of Land Management. The GCDB information provided here is for reference information only and is not regularly updated. For the most current GCDB information, go to www.geocommunicator.gov.

Professional Land Surveyors who are licensed to practice in the States of Idaho and Montana may use this site to contribute control point records to make them available to the public.

Enter

Terrain | Satellite | Hybrid | Road

MCPD

Database Search

Map Search

Measure Tool

Clear Map

Print Map

Street View

Show Tooltips

Control Points

MCPD

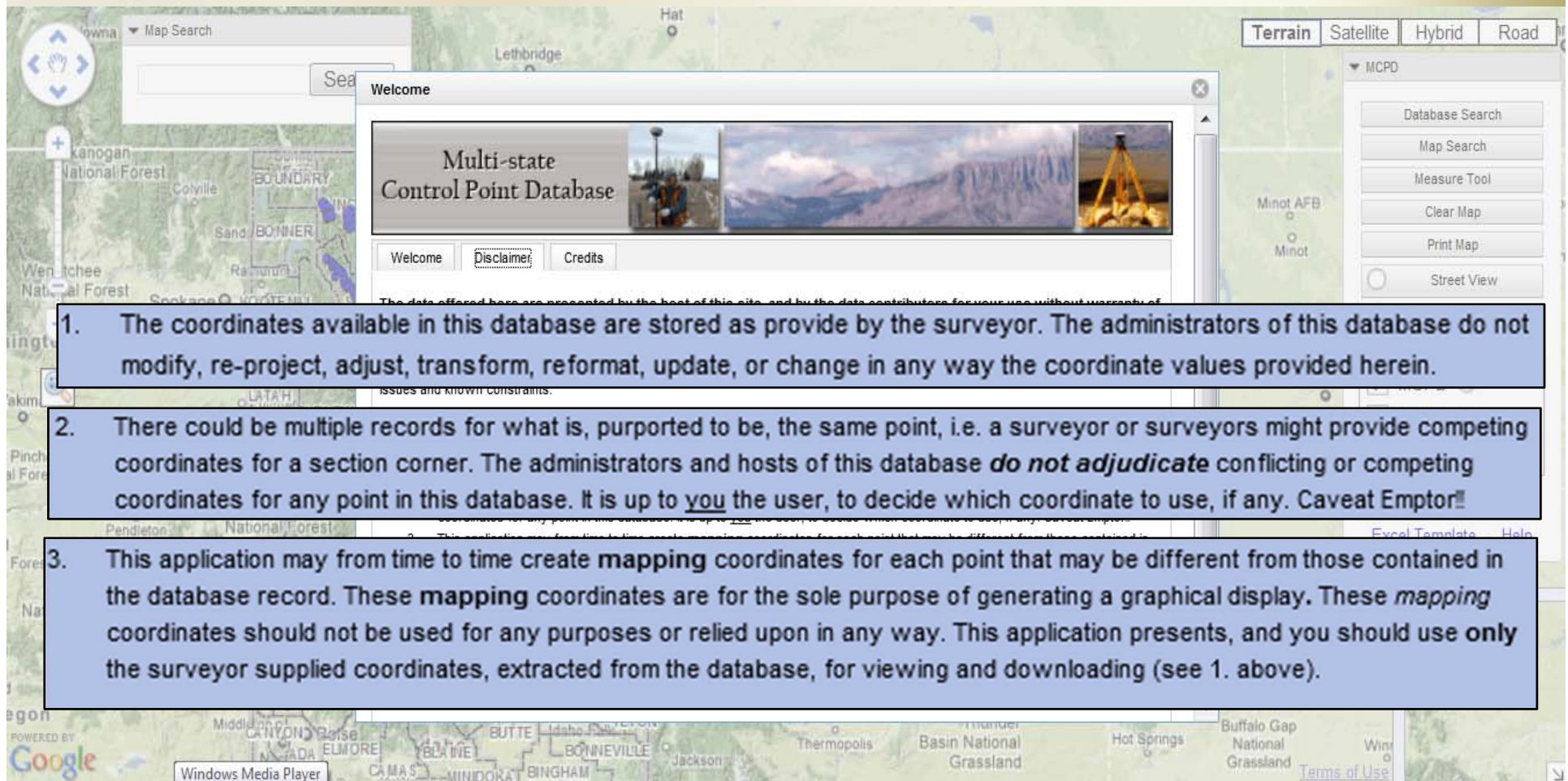
GCDB

NGS

Surveyor Login

Excel Template - Help

MCPD Viewer Overview



The data offered here are presented by the best of this site, and by the data contributors for your use without warranty of accuracy or completeness. There are many known issues and known constraints.

1. The coordinates available in this database are stored as provide by the surveyor. The administrators of this database do not modify, re-project, adjust, transform, reformat, update, or change in any way the coordinate values provided herein.
2. There could be multiple records for what is, purported to be, the same point, i.e. a surveyor or surveyors might provide competing coordinates for a section corner. The administrators and hosts of this database **do not adjudicate** conflicting or competing coordinates for any point in this database. It is up to you the user, to decide which coordinate to use, if any. Caveat Emptor!!!
3. This application may from time to time create **mapping** coordinates for each point that may be different from those contained in the database record. These **mapping** coordinates are for the sole purpose of generating a graphical display. These *mapping* coordinates should not be used for any purposes or relied upon in any way. This application presents, and you should use **only** the surveyor supplied coordinates, extracted from the database, for viewing and downloading (see 1. above).

MCPD Viewer Overview

Pan & Zoom Controls

Map Search

Map Window

Background Map Control

Tools

Control Point Visibility (on/off)

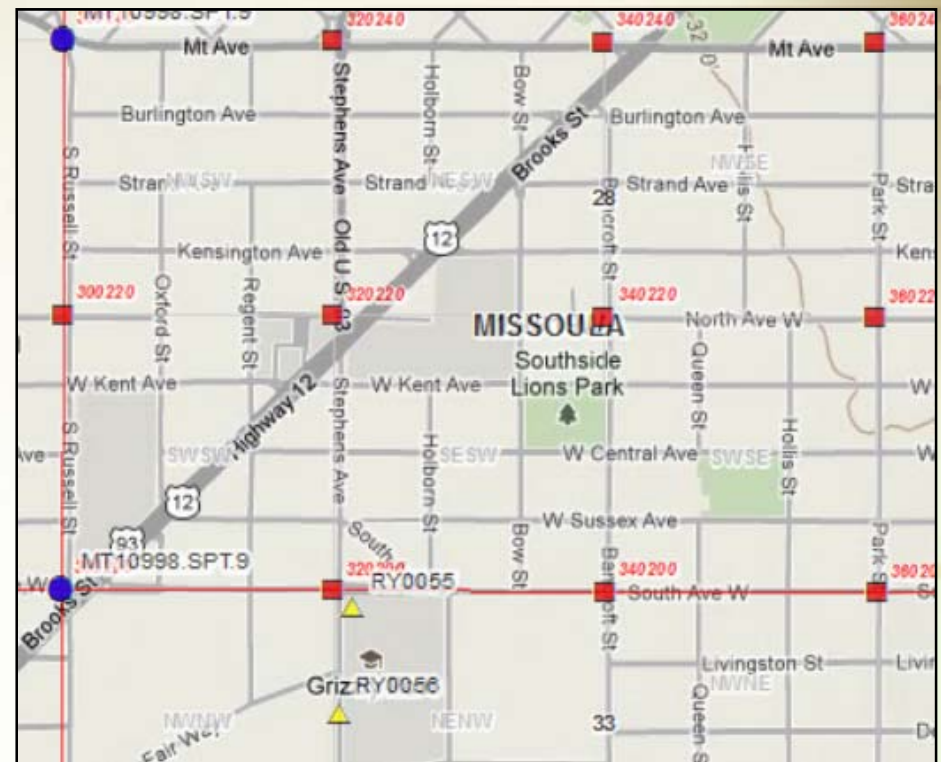
Data Submission

The screenshot displays the MCPD Viewer interface. On the left, there are pan and zoom controls. A search bar is located at the top left. The main map area shows a topographic view of the Pacific Northwest, with a grid of blue control points overlaid on the terrain. On the right side, there are several toolbars. The top toolbar includes 'Terrain', 'Satellite', 'Hybrid', and 'Road' options. Below this is a 'Tools' panel with buttons for 'Database Search', 'Map Search', 'Measure Tool', 'Clear Map', 'Print Map', and 'Street View'. A 'Control Points' panel is also visible, with checkboxes for 'MCPD', 'GCDB', and 'NGS'. At the bottom right, there is a 'Data Submission' button. The interface is powered by Google Maps.

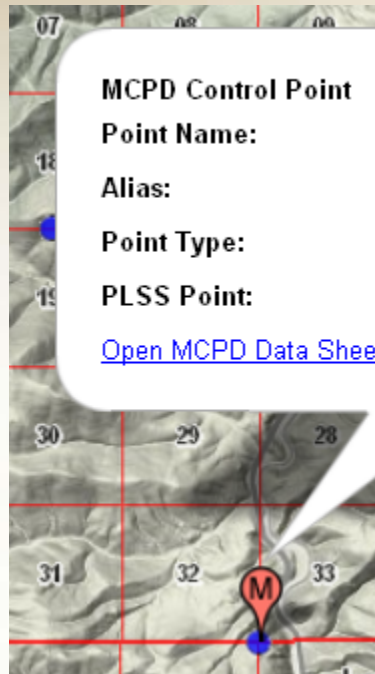
Control Point Dataset Visibility

The MCPD application serves 3 different control point datasets:

- Idaho and Montana Control Points (MCPD)
- BLM's Geographic Coordinate Database (GCDB)
- A link to the National Geodetic Survey's control points (NGS).



Map click info



MCPD Control Point
Point Name:
Alias:
Point Type:
PLSS Point:
[Open MCPD Data Sheet](#)

CONTROL POINT DATASHEET

Multi-state Control Point Database - Date extracted on: 3/27/2012

CONTROL POINT INFORMATION

Point Name:	6460	General Location	
Point Alias:	NA	Meridian:	NA
Is this a PLSS Corner:	NA	Township:	NA
GCDB Point ID:	MT20T0240n0040W400700	Range:	NA
Monument Type:	NA	Section:	NA
Monument Description:			

HORIZONTAL COORDINATE INFORMATION

Northing:	405427.297 m	Easting:	404657.577 m
Horizontal Accuracy:	0.03 m	Horizontal Method:	Geodetic GPS
Horizontal Coordinate System:	Montana State Plane Meters	Horizontal Datum:	NAD83 (CORS96)

VERTICAL COORDINATE INFORMATION

Elevation:	1160.33 m	Vertical Accuracy:	0.1 m
Vertical Datum:	NAVD88	Vertical Method:	
Vertical Method:	GPS and Geoid Model		

PROJECT INFORMATION

Project Name:	GCDB Enhancement -Highline		
Project ID	DJA-5247	Project Date:	3/16/2007
Comments:			

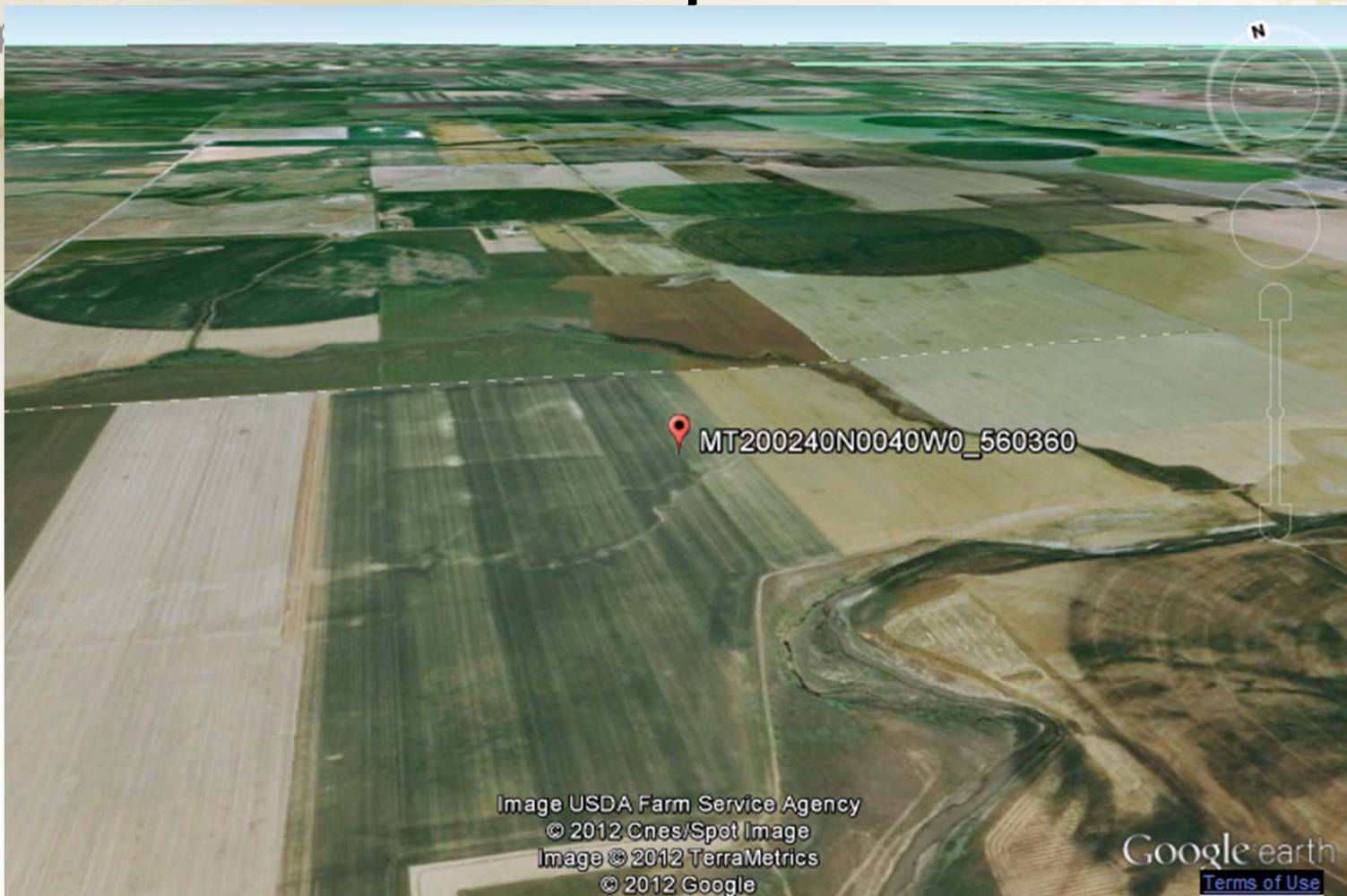
SURVEYOR CONTACT INFORMATION

Surveyor:	Kurt A. Luebke	License:	MT13237
Phone:	406-721-4320	Business:	DJ&A, P.C.
Business Address:	3203 Russell St.	Address 2:	NA
City:	Missoula	State:	MT
Zip Code:	59801	Email:	kurtl@djanda.com

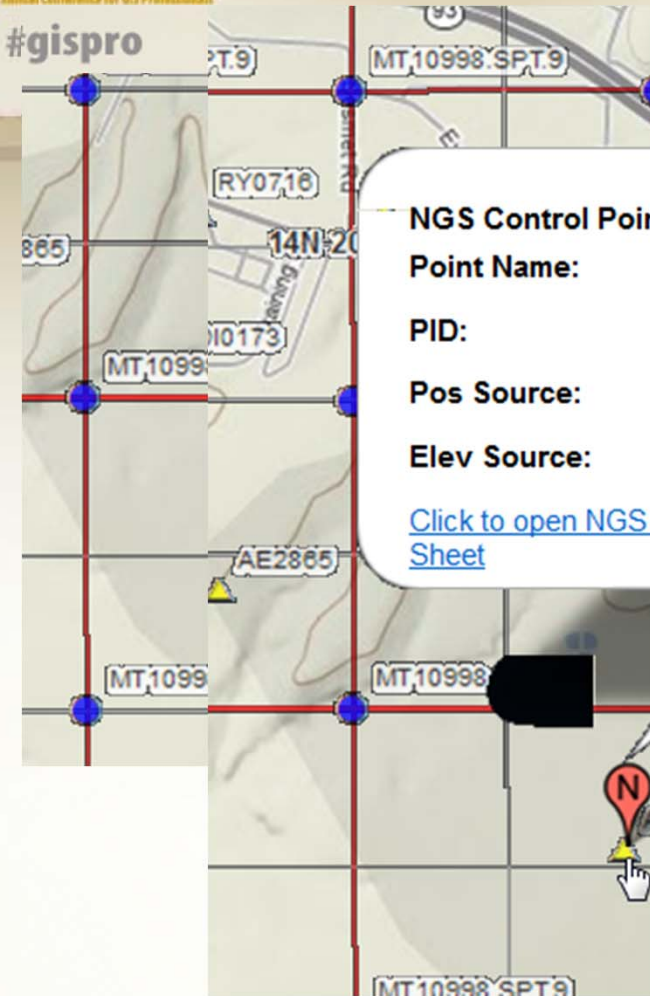


MCPD ID: MT13237.CPT.2112

Map click info



Map Click Info



The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

```

DATABASE = NGSIDS , PROGRAM = datasheet95, VERSION = 7.87.6
1 National Geodetic Survey, Retrieval Date = MARCH 27, 2012
NU0071 *****
NU0071 DESIGNATION - C 164
NU0071 FID - NU0071
NU0071 STATE/COUNTY- ID/BANNOCK
NU0071 USGS QUAD - POCATELLO NORTH (1971)
NU0071
NU0071 *CURRENT SURVEY CONTROL
NU0071
NU0071* NAD 83(1986)- 42 55 14. (N) 112 27 35. (W) SCALED
NU0071* NAVD 88 - 1363.141 (meters) 4472.24 (feet) ADJUSTED
NU0071
NU0071 GEOID HEIGHT- -12.74 (meters) GEOID09
NU0071 DYNAMIC HT - 1362.363 (meters) 4469.69 (feet) COMP
NU0071 MODELED GRAV- 980,002.3 (mgal) NAVD 88
NU0071
NU0071 VERT ORDER - FIRST CLASS I
NU0071
NU0071.The horizontal coordinates were scaled from a topographic map and have
NU0071.an estimated accuracy of +/- 6 seconds.
NU0071.
NU0071.The orthometric height was determined by differential leveling and
NU0071.adjusted in June 1991.
NU0071
NU0071.WARNING-Repeat measurements at this control monument indicate possible
NU0071.vertical movement.
NU0071
NU0071.The geoid height was determined by GEOID09.
NU0071
NU0071.The dynamic height is computed by dividing the NAVD 88
NU0071.geopotential number by the normal gravity value computed on the
NU0071.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
NU0071.degrees latitude (g = 980.6199 gals.).
NU0071
NU0071.The modeled gravity was interpolated from observed gravity values.
NU0071
NU0071:
NU0071: North East Units Estimated Accuracy
NU0071:SPC ID E - 139,320. 176,070. MT (+/- 180 meters Scaled)
NU0071
NU0071 SUPERSEDED SURVEY CONTROL
NU0071
NU0071 NGVD 29 (08/20/92) 1362.087 (m) 4468.78 (f) ADJUSTED 1 1
NU0071
NU0071.Superseded values are not recommended for survey control.
NU0071.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
NU0071. See file dsdata.txt to determine how the superseded data were derived.
NU0071
NU0071 U.S. NATIONAL GRID SPATIAL ADDRESS: 12TUN808530 (NAD 83)
NU0071
NU0071_MARKER: DB = BENCH MARK DISK
NU0071_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
    
```


MULTIPLE POINT DATABASE SEARCH

MCPD Viewer Overview

The screenshot displays the MCPD Viewer application interface. The main map area shows a geographical view of the Pacific Northwest, including parts of Washington, Oregon, and Idaho. County boundaries are clearly delineated, and numerous blue data points are scattered across the map, primarily concentrated in the central and eastern regions. The interface includes a search bar at the top left with a "Search" button. On the right side, there is a "Tools" menu and a control panel. The control panel features several buttons: "Database Search", "Map Search", "Measure Tool", "Clear Map", "Print Map", and "Street View". Below these buttons, there is a "Show Tooltips" checkbox which is checked. Under "Control Points", there are three checkboxes: "MCPD" (checked), "GCDB", and "NGS". At the bottom of the control panel, there is a "Surveyor Login" dropdown menu and a link for "Excel Template - Help". The map navigation tools on the left include a compass, a hand icon for panning, and a vertical zoom slider. The top right corner of the map area has tabs for "Terrain", "Satellite", "Hybrid", and "Road".

MCpD Point selection Criteria

Control dataset to query

Location Query

Who and when criteria

Accuracy criteria

Point Type

Export file format

Perform the Query

Database Search

Select control point data
 MCPD GCDB

Select state
 Montana Idaho

Select spatial criteria - Buffer: [] [] [v]

County: [] [v]
 City: [] [v]
 Township: [] [v] [] [v] Range: [] [v] [] [v]

Select attribute criteria
Surveyor: [] [v]
Agency/Firm: [] [v]
Survey Date: From: [] [v] To: [] [v]
Horiz. Accuracy: = [] [v] []
Horiz. Method: [] [v]
Vert. Accuracy: = [] [v] []
Vert. Method: [] [v]
Point type: [] [v]

Select download file type
 KML ASCII Calculate & include lat/long coordinates using:
 Decimal Degrees Degrees Minutes Seconds

[Search] [Clear Form] [Close]

State to query

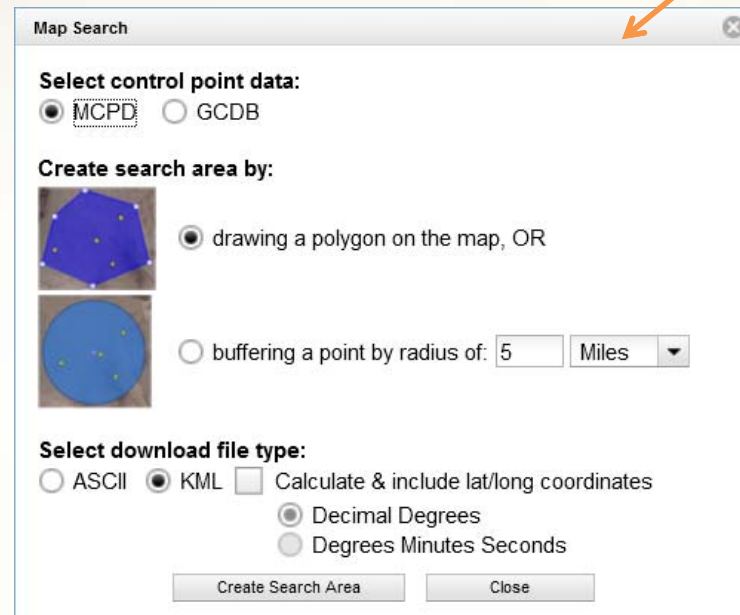
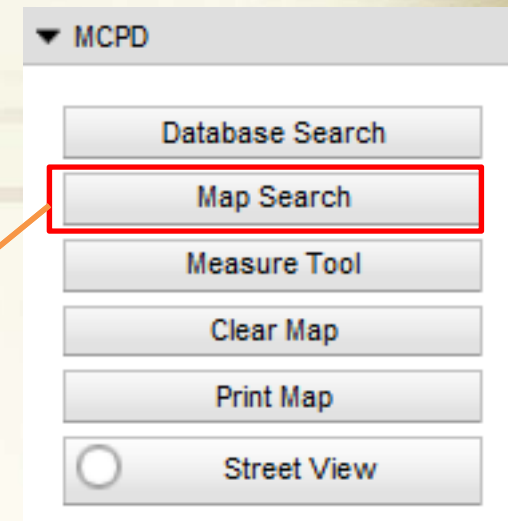
All options that you select on this form operate as AND queries to the database.

Add geographic coordinates

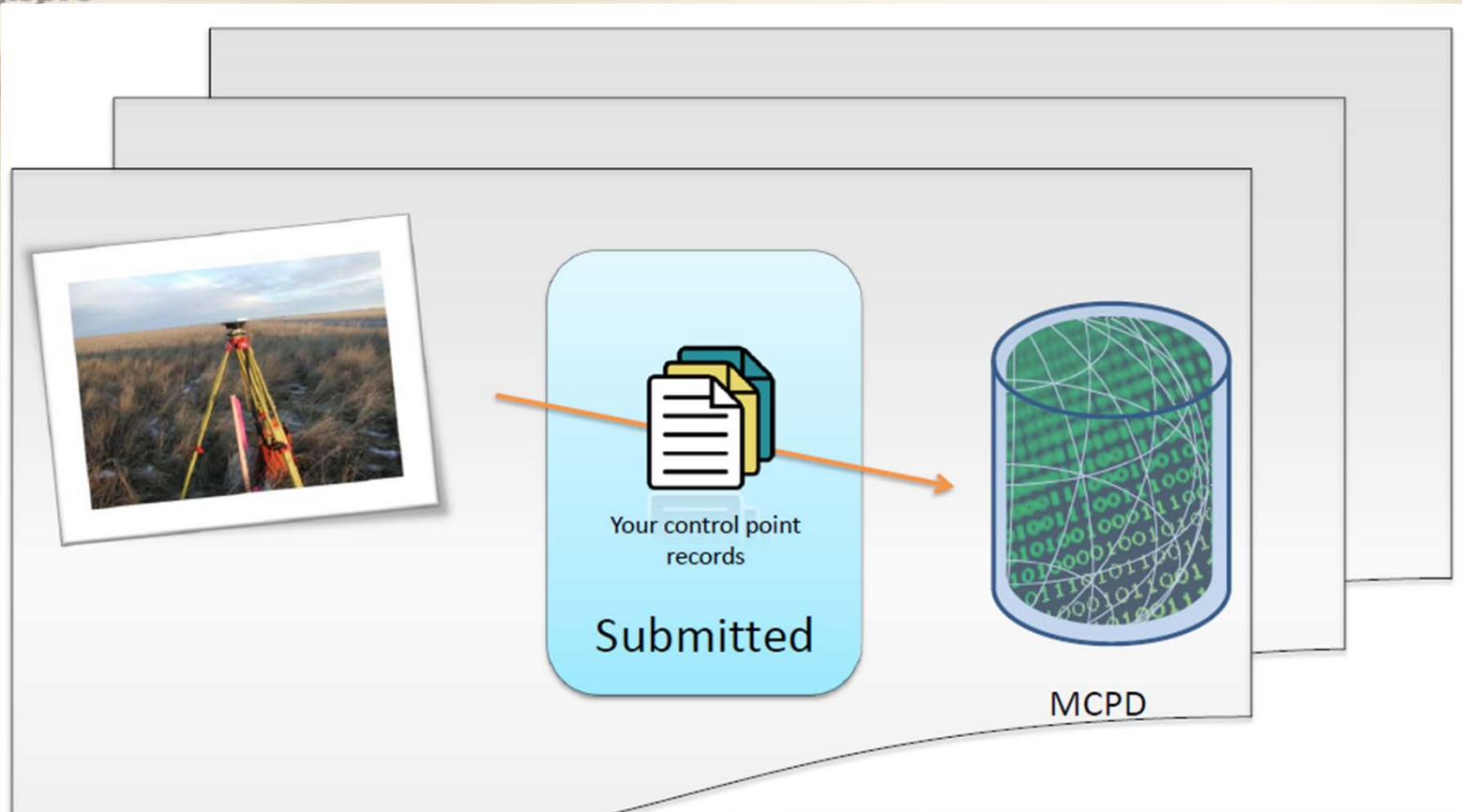
MCPD Select Tool

The Map Search tool interactively selects points on the MCPD map by

- drawing a polygon around your area of interest
- buffering around a point you select.



How to submit data



How to Submit Data

	A	B	C	H
1	Point Name	Point	Case	Horizontal Unit
2	Sample Point	All	Type	Meters
3		as		US Survey Feet
4				US Survey Feet
5				US Survey Feet
6				US Survey Feet
7				US Survey Feet
8				US Survey Feet
9				US Survey Feet
10				US Survey Feet

Submit

Reviewed

Published





Participating organizations

- *Professional land surveyors of Montana*
- *The Montana Association of Registered Land Surveyors*
- *Montana Department of Transportation*
- *Montana Department of Administration – Base Map Service Center*
- *National Geodetic Survey*
- *United States Forest Service*
- *United States Bureau of Land Management*
- *Missoula County, Montana*
- *Lewis & Clark County, Montana*
- *Professional land surveyors of Idaho*
- *Idaho Society of Professional Land Surveyors*
- *The Idaho Map – TIM*
- *Information Technology Resource Management Council of Idaho*
- *Idaho Department of Transportation*
- *Federal Geographic Data Committee*
- *United States Geological Survey*



References and Contacts

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dpitzer@usbr.gov

The business plan

<http://giscenter.isu.edu/research/Techpg/capGC/index.htm>

Montana site

ISU site

Questions?