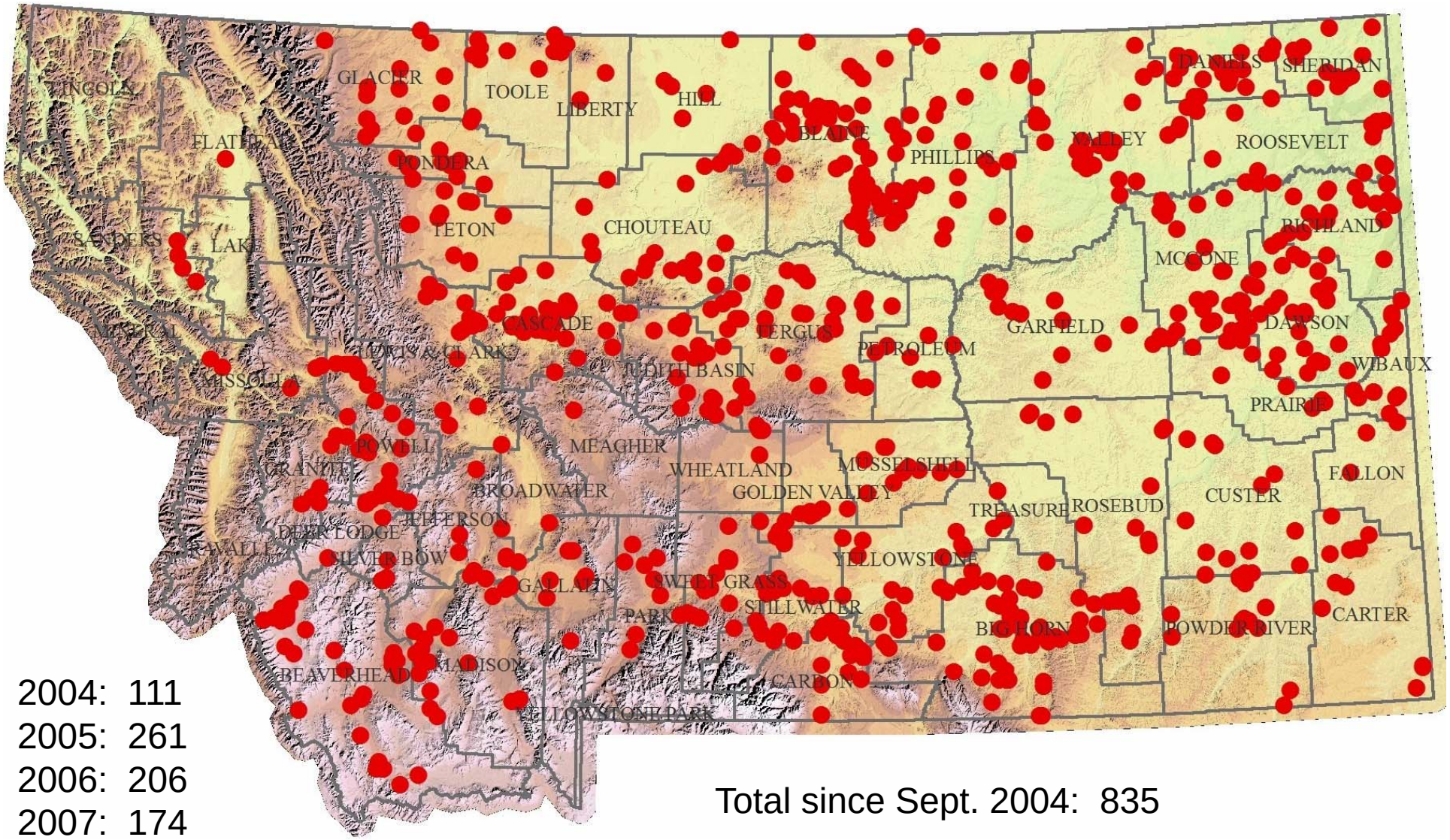
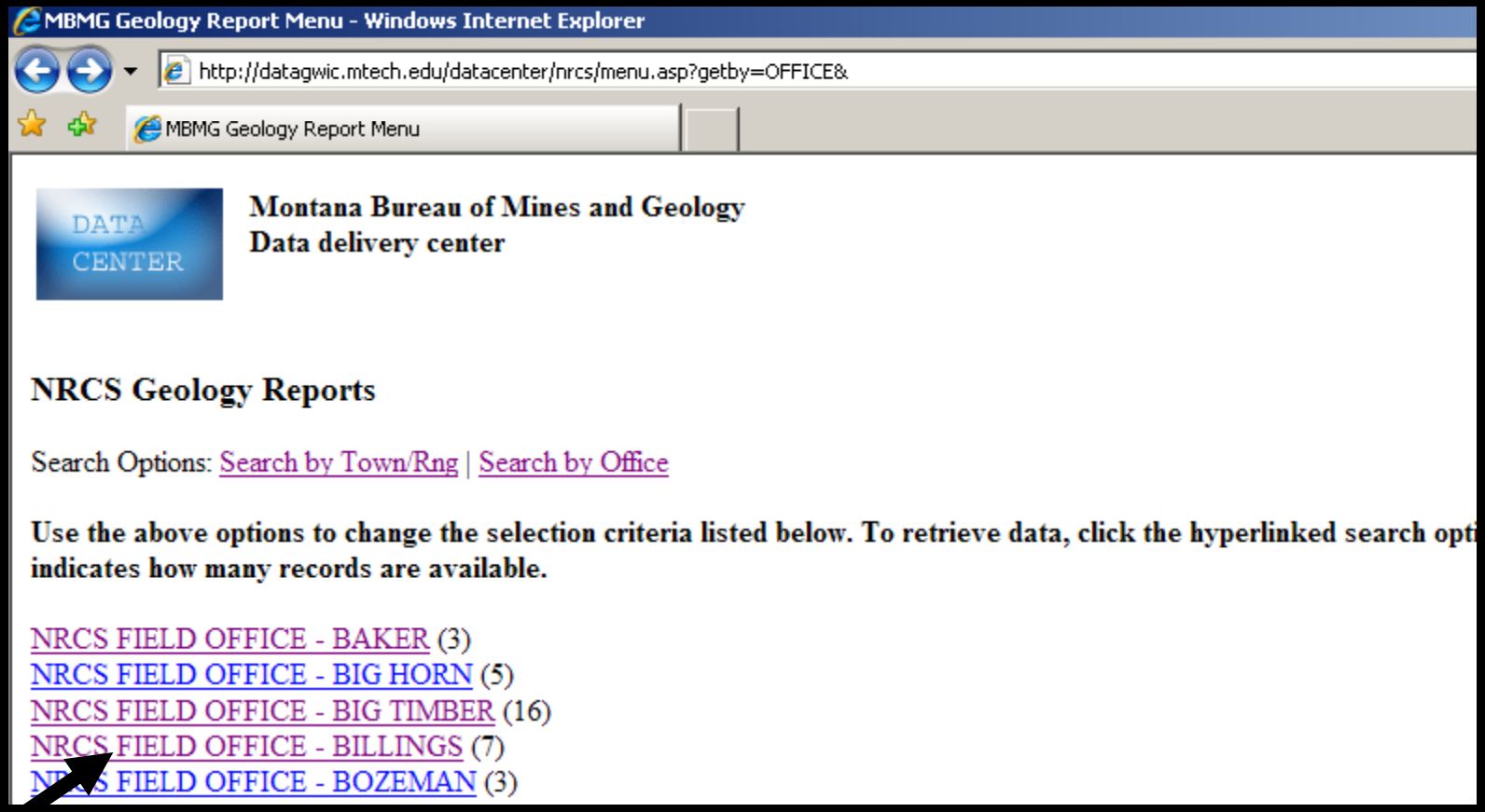
- NRCS Stockwater Well Geology Reports
- USFS Water Resources Guidelines

Locations of NRCS Stockwater Well Report Requests



2004: 111
2005: 261
2006: 206
2007: 174
2008: 75
2009: 50?

Total since Sept. 2004: 835


MBMG Geology Report Menu - Windows Internet Explorer
http://datagwic.mtech.edu/datacenter/nrcs/menu.asp?getby=OFFICE&
MBMG Geology Report Menu
DATA CENTER
Montana Bureau of Mines and Geology
Data delivery center
NRCS Geology Reports
Search Options: Search by Town/Rng | Search by Office
Use the above options to change the selection criteria listed below. To retrieve data, click the hyperlinked search opti
indicates how many records are available.
NRCS FIELD OFFICE - BAKER (3)
NRCS FIELD OFFICE - BIG HORN (5)
NRCS FIELD OFFICE - BIG TIMBER (16)
NRCS FIELD OFFICE - BILLINGS (7)
NRCS FIELD OFFICE - BOZEMAN (3)

U.S. Forest Service Water Resources Assessment Methodology

- **Develop methods and guidelines for USFS to use to manage water resources.**
- **Focus on identifying areas of ground-water recharge, storage and use.**
- **Develop conceptual model and water budget.**
- **Apply methods to a demonstration area: Bridger Range in Gallatin NF.**

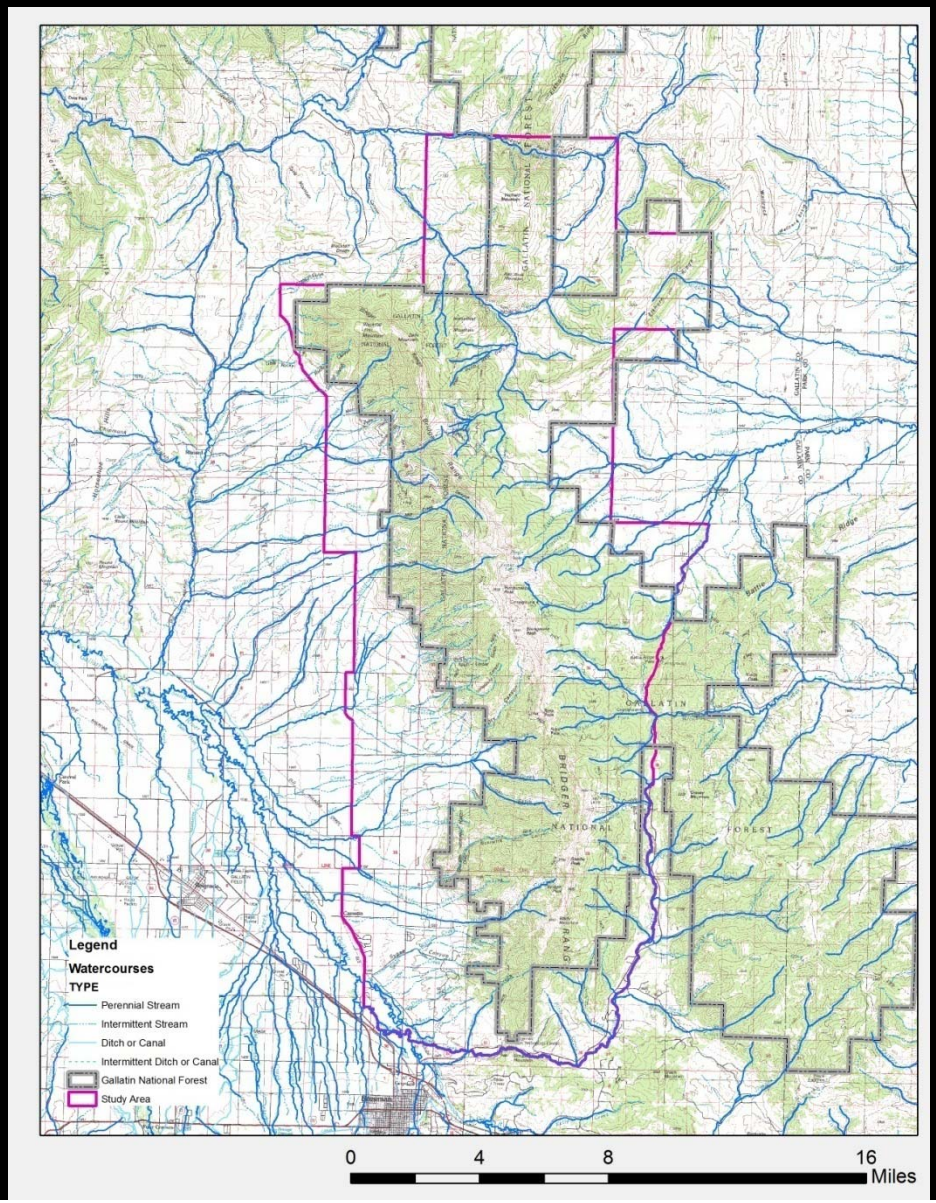
Methodology Outline

- Collect existing information
- Develop conceptual model
  - Boundaries
  - Recharge and discharge areas
  - Drainage boundaries (divides, streams)
  - Areas of concentrated water use or development
- Hydrogeologic setting, hydrostratigraphy (aquifers)
- Surface-water hydrology
- Geology, climate, vegetation, water rights
- Water Budget?

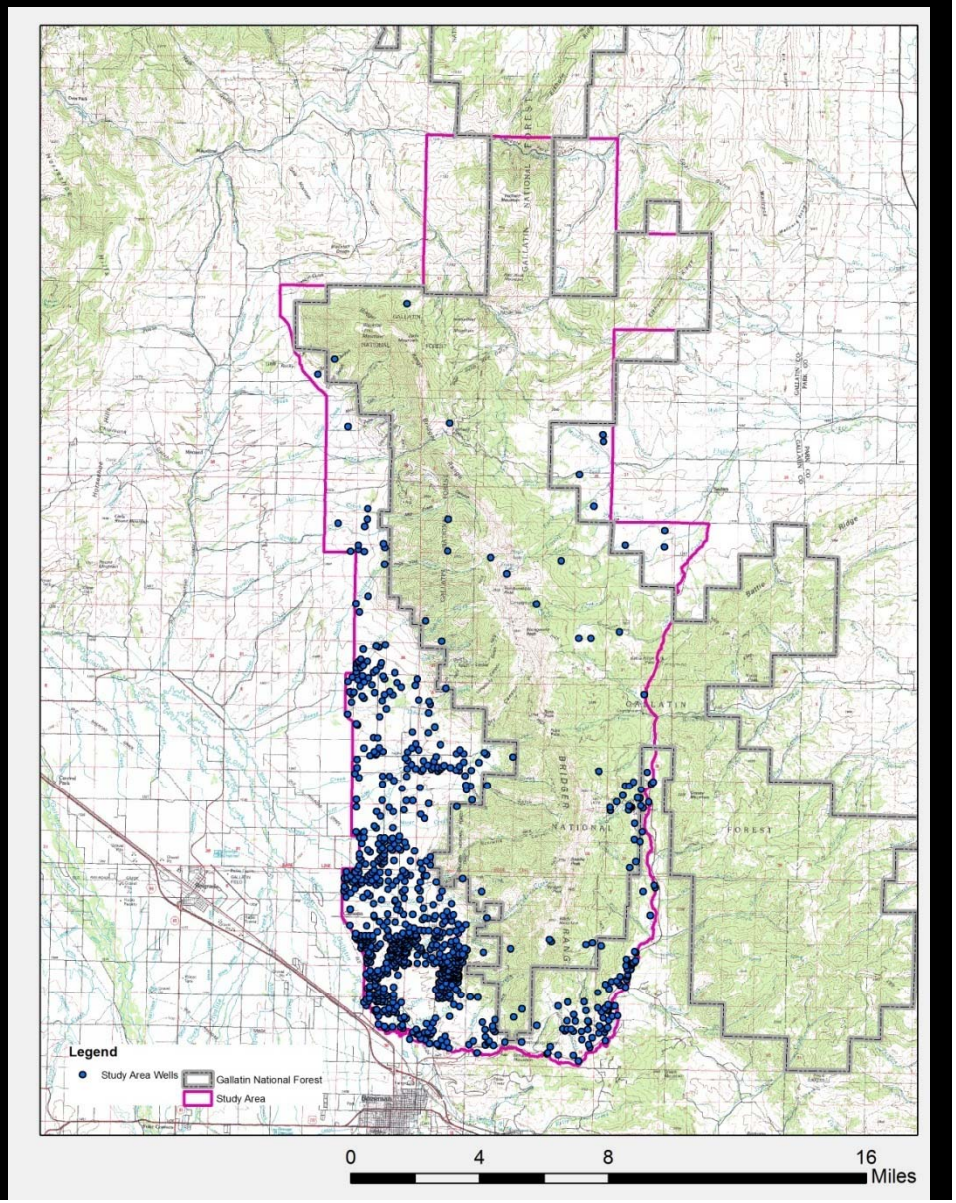

N
90
89
191
Bozeman
Bozeman, MT
Image © 2009 DigitalGlobe
© 2009 Tele Atlas
elev 6357 ft
©2008 Google
45°53'11.51" N 111°01'10.62" W
Eye alt 46.17 mi

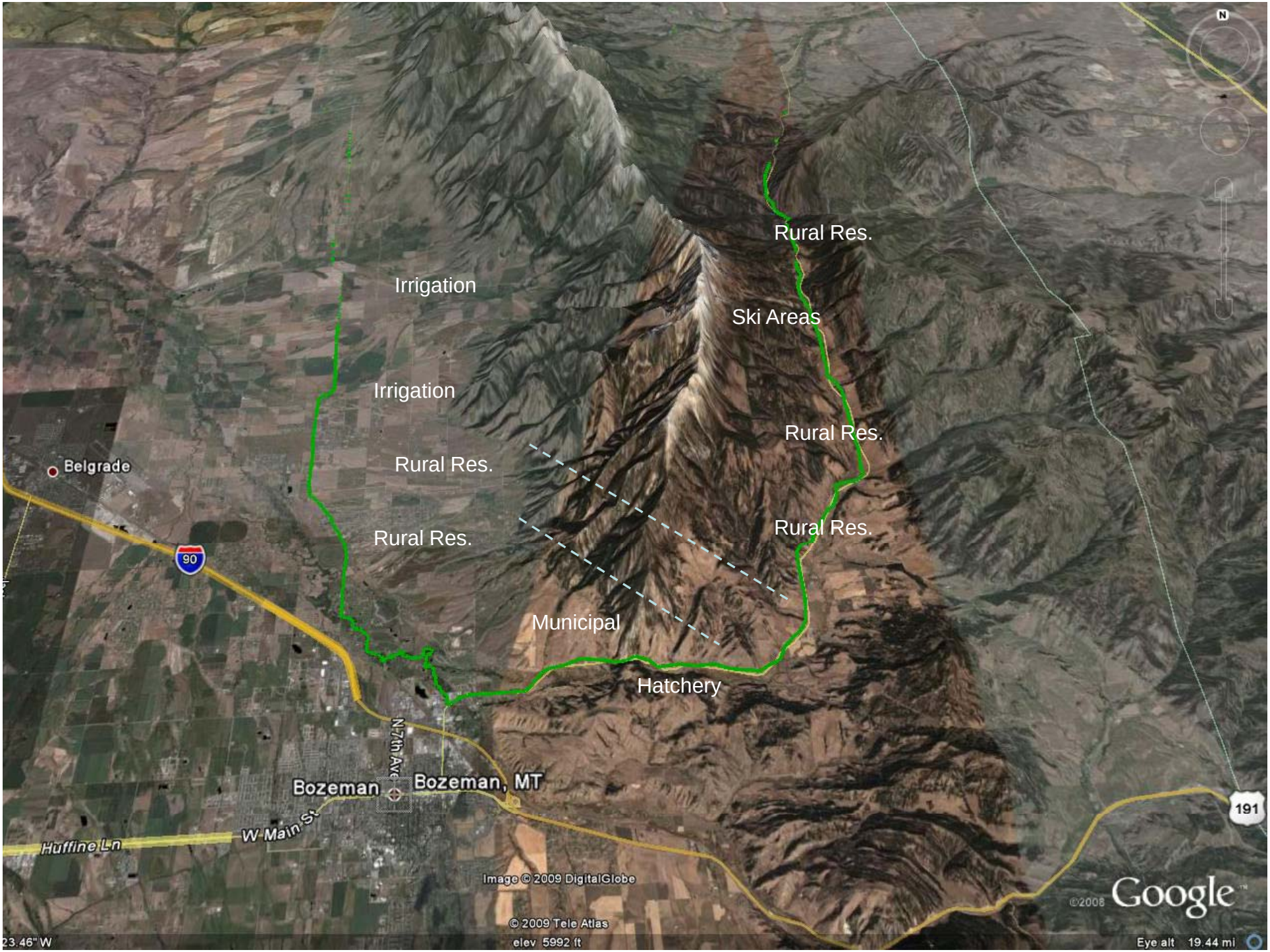
Bridger Range Study Area

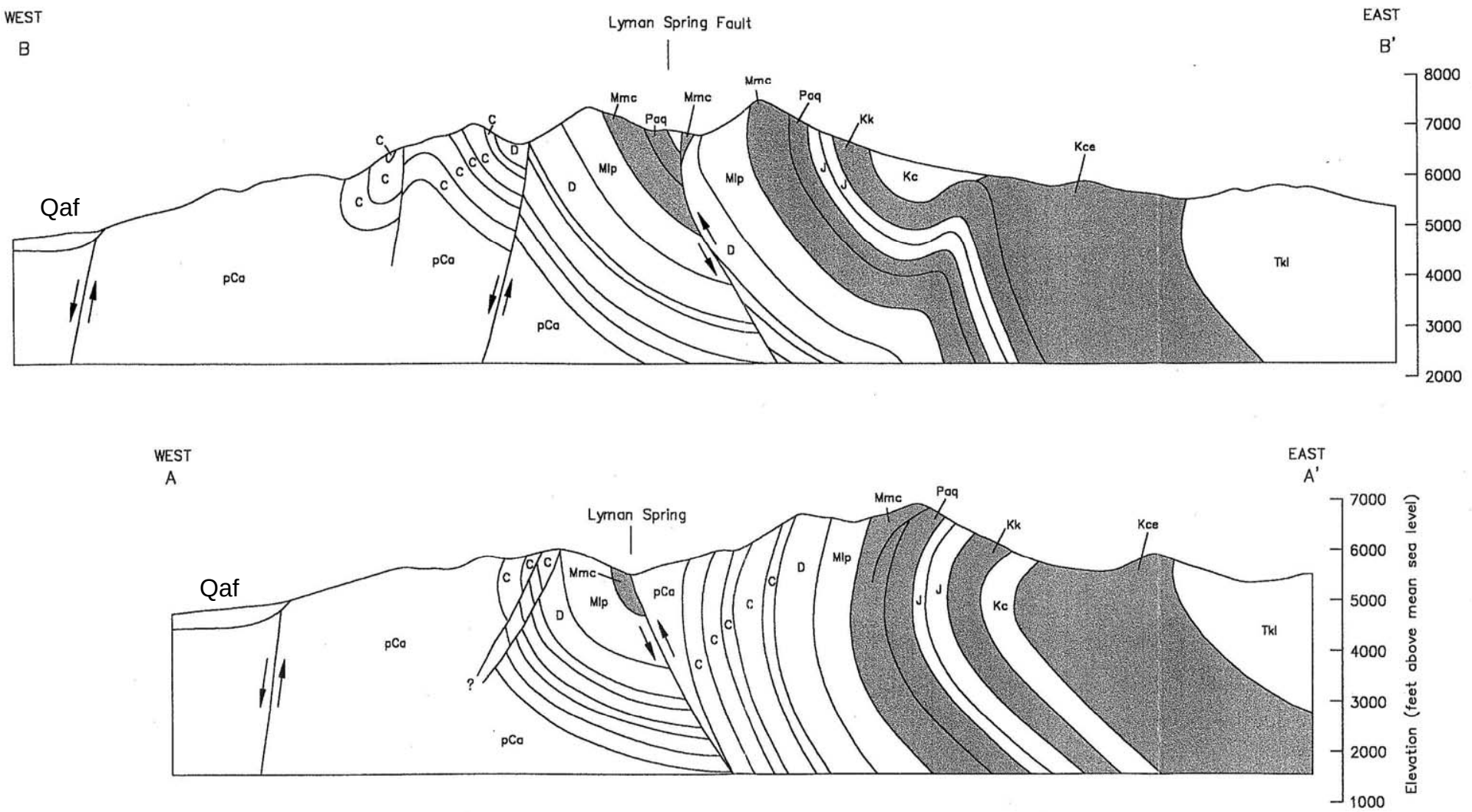
Streams



Wells




Rural Res.
Irrigation
Ski Areas
Irrigation
Rural Res.
Rural Res.
Belgrade
Rural Res.
Municipal
Hatchery
90
N 7th Ave
Bozeman
Bozeman, MT
W Main St
Huffine Ln
191
Image © 2009 DigitalGlobe
© 2009 Tele Atlas
elev 5992 ft
©2008 Google
Eye alt 19.44 mi



Aquifer formations indicated by shading.
(unshaded areas considered to be aquitards)

Refer to text for explanations of formation symbols.

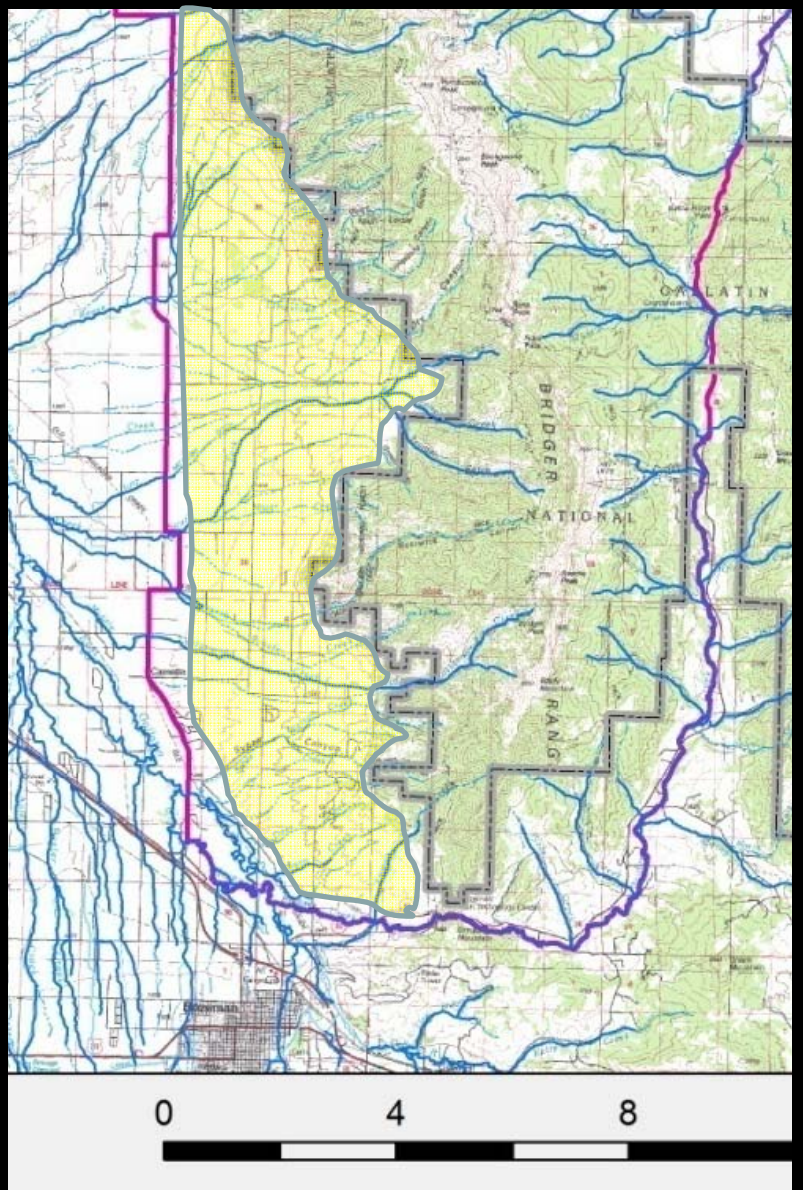
Geological cross sections by McMannis (1952).

0 2000 4000
Horizontal Scale in Feet
Vertical Exaggeration: 1X

Figure 2
Lyman Spring Geological Cross Secti

Upper Sypes Canyon

Alluvial Fan Deposits



DNRC/DEQ Form 633 Revised 05/2007

AQUIFER TEST DATA

Shaded Cells Require User Input

Project or Person:	Town of Columbus, Heritage Park Well							
Address:	PO Box 549, Columbus, MT 59019				County:	Stillwater		
Test Site Location:	SE 1/4	SE 1/4	Section:	21	Twnshp (N/S):	2S	Range (E/W):	20E
Date Test Conducted:	11/13/2007	Person/Company Conducting Test:			M. Cunnane/Western Groundwater Services, LLC			
Type of Test:	Constant Rate (required reductions in flow during test)							
Pumping Well ID:	Heritage Park East			Pumping Rates (gpm):	600, 500, 480			
Pumping Well GWIC ID #:	NA	Depth (feet):	63	Diameter (inches):	16	Perf. Zone(s):	42.5	53
Pumping Well GPS Coordinates:	Select Datum of NAD 27 or 83:		NAD83 MTSP	Latitude:	618,860 m	Longitude:	154,748 m	

NA = NOT AVAILABLE

NAD83 Montana State Plane - Meters

Observation Well ID(s)	GWIC ID#	GPS Coordinates* Latitude	GPS Coordinates* Longitude	Depth (feet)	Diameter (inches)	Perforated Zone(s) (feet)	Distance from Test Well (feet)	Bearing from Test Well (degrees)
1) Heritage Park West	NA	618,853 m	154,748 m	64	16	40 - 54	24	~285
2) Heritage Park Irrigation Well	174103	618,876 m	154,749 m	53	6	40 - 53	57	~085
3) Henry Irrigation Well	NA	618,782 m	154,725 m	50 (est.)	6	28 - 50 est.	263	~250
4) High School Irrigation Well	161028	618,815 m	154,858 m	64	6	50 - 55	390	~345
5) Hermes Irrigation Well	150221	618,986 m	154,594 m	40	6	39 - 39	654	~135
6)								

NA = NOT AVAILABLE

Specify Water-Level Monitoring Equipment: Pressure transducers: Instrumentation Northwest PS9000, PS9001; In-Situ Level Troll 700, Baro Troll

*Coordinates obtained by locating wells onto air-photo and identifying point locations in Arc GIS.

Production Well Water-Level Data

Static Water Level (swl) to 0.01 ft:	28.28 ft bgs 11/11/2007
Measuring Point ID:	GL
Measuring Point Elevation (feet):	3616 ft GL
How Measured:	Probe

Time Data

Pump On:	Date	11/13/2007
	Time	1430 hrs
Pump Off:	Date	11/16/2077
	Time	1431 hrs
Recovery End:	Date	11/19/2007
	Time	1430 hrs

Aquifer-Test Duration:

Pumping (hrs):	72
Recovery (hrs):	72

Discharge Data

Discharge to be measured several times per hour during the first 3 hours of pumping and thereafter several times per hour if discharge fluctuates and requires frequent adjustment; otherwise, hourly measurements if discharge remains constant and requires little or no adjustment.
Discharge must be reported in gallons per minute (gpm) if using flow meter; in cumulative gallons if using totalizing meter; or 0.01 foot if using flume/weir.

Specify Discharge Measurement Equipment:

Controlotron 1010WP Ultrasonic Meter, C3 Transducers
Instantaneous and totalizing

2009 Work

All that and more!