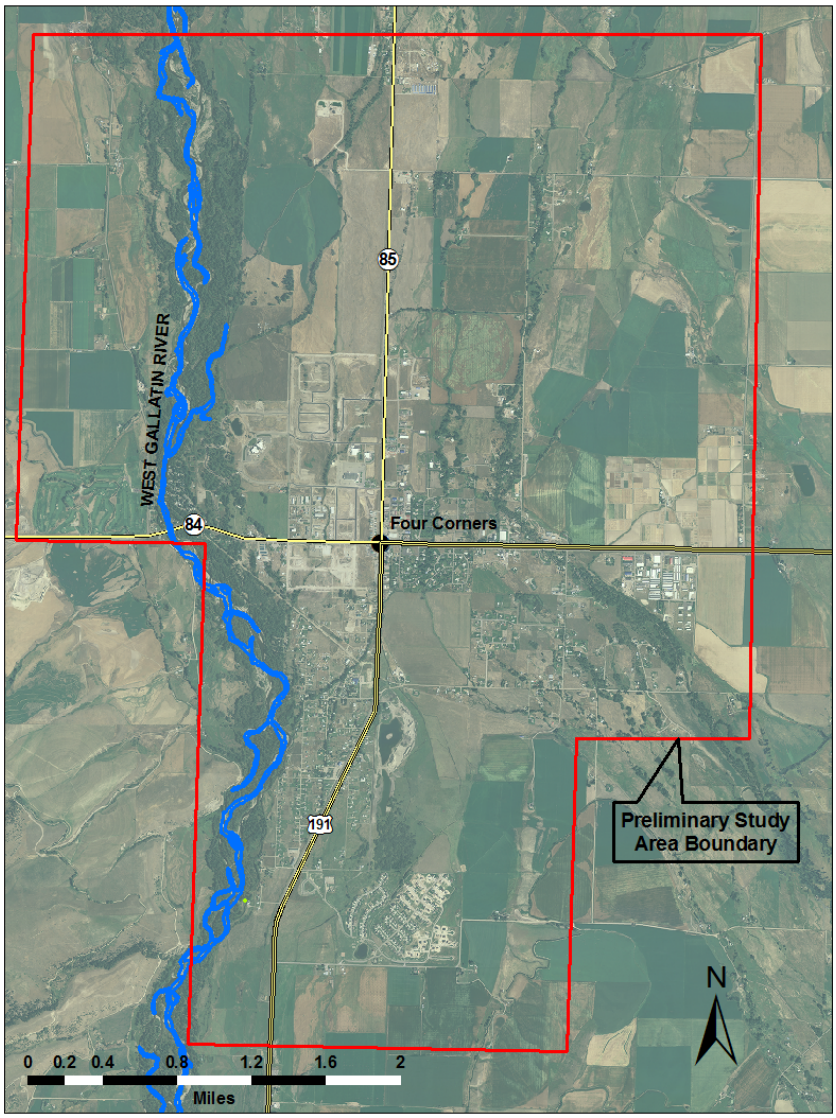
GWIP Project Area: Four Corners, Gallatin County



Subdivisions, rural residential and commercial development are transforming agricultural land in the area of this busy intersection four miles west of Bozeman. Commercial water distribution and wastewater treatment systems are replacing traditional well and septic systems. The possible hydrologic effects of land-use conversion from irrigated agriculture to high-density residential have raised questions concerning both water quality and water availability.

This investigation will provide more accurate descriptions of the geology, hydrologic properties of the aquifers, available water supplies and the effects of stresses on the groundwater and surface water in the Four Corners area. Project goals will be coordinated with local agencies and water users. Work will include assembling existing data and reports, establishing new meteorological and hydrologic monitoring, drilling exploratory and test wells, conducting aquifer tests, water quality sampling and evaluating transpiration consumption by both crops and natural vegetation. A numerical groundwater model will be constructed to simulate the observed hydrogeologic conditions and to evaluate the response of the groundwater system to specific stresses, such as new wells or well fields. The final product will be a publically available interpretive report.

Current Montana Bureau of Mines and Geology personnel assigned to this project include:

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Montana Bureau of Mines and Geology Ground-Water Investigations Program

The 2007/2008 Water Policy Interim Committee (WPIC) recognized that competition for water resources and the lack of detailed information on groundwater/surface-water interaction has challenged water-resource management and development in Montana. The WPIC found that "continued and expanded study of ground-water resources is vital to shaping statewide policy as well as providing the data necessary for local decisions regarding water."

To that end, the **Ground-Water Investigations Program** (GWIP) was established to provide specific scientific information on important water resource issues, including:

- stream depletion from groundwater development by new withdrawals,
- cumulative effects of existing and proposed water development,
- groundwater/surface-water response to changes in irrigation practices,
- implementation of aquifer storage and recovery (ASR) in Montana, and
- evaluating potential mitigation/offset plans in closed basins.

A typical groundwater investigation will involve the compilation of existing data, drilling of test/monitoring wells, aquifer testing, water quality sampling, stream flow analyses, and extensive modeling of groundwater, surface water, and chemistry

Highlights of HB 52 (61st Legislature):

- Directs the Ground-Water Assessment Steering Committee to prioritize sub-basin investigations based on anticipated growth in housing, agriculture, industry, and commercial activities.
- Directs the Montana Bureau of Mines and Geology to conduct 1 to 3-year focused investigations of groundwater and surface water in the prioritized areas.
- Funding for 5 to 7 investigations each biennium starting July 1, 2009. There are currently 37 potential sites identified (see map on reverse side).

Ground-Water Investigation Program Products:

Each sub-basin investigation product will include:

- A detailed report that describes the hydrogeologic system
- Models that simulate hydrogeologic features and processes
- A comprehensive set of hydrogeologic data available online

Each project will be a focused investigation of groundwater and surface water in a sub-basin of sufficient size to construct models and a detailed report of the investigation. The models, reports, and supporting data will be technical in nature and used directly by scientists and engineers representing agencies, senior water-right holders, new applicants, and other stakeholders.

Ground-Water Assessment Steering Committee includes:

Four voting members from:

Department of Agriculture
Department of Natural Resources and Conservation
Department of Environmental Quality
State Library, Natural Resource Information System

Ex-officio members from numerous other interested agencies and interests.

For more information, visit the MBMG website:
http://www.mbmg.mtech.edu/gwip/gwip.asp

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