

**Figure 20: Sand and Gravel Resources: Example of Montana Bureau of Mines and Geology Maps**

Gravel pits permitted by the state of Montana are shown in the map inset. Gravel pits adjacent to residential areas was identified as an issue for the county. The location of the sand and gravel resource is similar to the location of residential development in the county—along rivers (which also align generally with roads and highways).

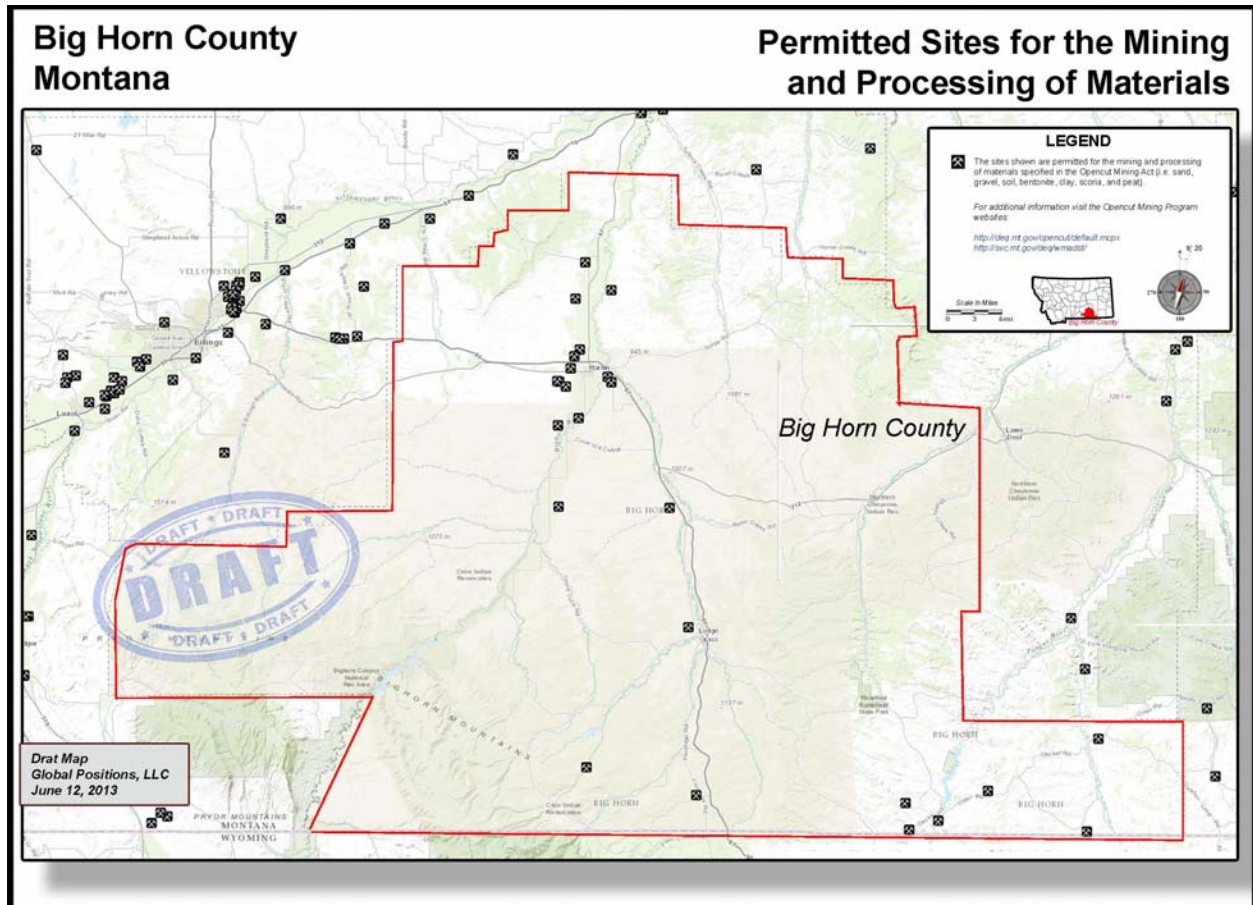


Figure 21: Permitted Sand and Gravel Operations in Big Horn County

### Soil Resource

Big Horn County contains gently sloping to very steep, shallow to very deep, well drained, sandy, loamy, and clayey textured soils. The soils were formed primarily into sedimentary beds, plains, mountains, and valleys. Soil data is available directly from the NRCS web page, “Web Soils.” Data from this source can identify soil properties for specific uses.

**Table 21: Big Horn County Soil Characteristics**

<b>Soils</b>	<b>Characteristics</b>	<b>Primary Uses</b>
Stream terraces and alluvial fans	deep, well-drained soils on floodplains, terraces, fans	irrigated crops, dryland crops, pasture
High gravel terraces, fans and benches	shallow to deep, nearly level to very steep, undulating, well-drained soils on fans, terraces and benches	small grains, rangeland
Sandstone hills	moderately deep and deep, gently sloping to strongly sloping and undulating hills, well-drained soils on footslopes, fans, valley bottoms and sedimentary uplands	range, dryfarmed small grain and hay
Dissected shale hills	shallow to deep, nearly level to very steep, gently undulating to hilly soils on fans, footslopes, terraces and sedimentary uplands	range, dryfarmed crops, some coal
Intermixed sandstone hills and dissected shale hills	shallow and moderately deep, gently undulating and gently sloping to very steep, well-drained	range, dryfarmed small grains
Mountain soils	shallow to moderately deep, undulating to strongly sloping, well-drained soils on sedimentary highlands	range

Source: Soil Survey of Big Horn County Area, Montana (USDA and USDI in Cooperation with the Montana Agricultural Experiment Station, 1977)

## Water Resource

The water resources in Big Horn County are economically valuable, valuable as habitat, and scenic. These water resources form the basis for sustaining human life, agriculture, wildlife, recreation, and the fishery.

The high elevations in the southern and western portions of the county serve as the headwaters for many of the creeks and rivers which drain generally to the north and east dropping in elevation towards the Yellowstone River Valley. Three major rivers fed by numerous tributaries flow through the county, the Big Horn, the Little Bighorn, and the Tongue. The Big Horn and Little Bighorn have their headwaters in the Big Horn and Pryor Mountains. These two rivers meet near Hardin flowing north and east eventually draining into the Yellowstone River. The Tongue River enters Big Horn County from the south, fills the reservoir, and exits the county flowing north to where it too, joins the Yellowstone. Pryor, Lodge Grass, Soap, and Rosebud are the major Creeks in the county. The Crow Irrigation project controls Willow Creek Dam which creates a sizeable impoundment and is used for irrigation and recreation. The county contains over 1,000 miles of perennial streams.

There were approximately 3500 wells in Big Horn County in April 2013. Approximately 720 new wells were drilled between 2000 and 2013.

**Table 22: Water Well Information – Big Horn County:**

Number of wells in County	3302
Deepest well on record (feet)	2650
Shallowest well on record (feet)	1
Most recent well on record	4/25/2013
Oldest well on record	1/1/1897

**Water Well by Type of Use:**

UNKNOWN	205
RECREATION	1
INDUSTRIAL	27
OTHER	54
PUBLIC WATER SUPPLY	48
TEST WELL	41
UNUSED	110
MONITORING	574
COMMERCIAL	9
IRRIGATION	130
RESEARCH	202
GEOHERMAL-EXTRACTION	1
COAL BED METHANE	65
GEOTECH	20
STOCKWATER	1136
DOMESTIC	941
* Total	3564

Source: Montana Groundwater Information Website:

<http://mbmgwic.mtech.edu/sqlserver/v11/reports/CountyStatistics.asp?MTCOUNTY=BIG+HORN>

The Montana Department of Natural Resources and Conservation (DNRC) maintains a listing of all dams in the county with a capacity of 50 or more acre feet of water. There are four major holding dams in Big Horn County: Yellowtail on the Big Horn (two dams) in extreme canyon lands, Tongue River in rough hills, and Willow Creek. These major dams were constructed for irrigation water storage and recreation. (Big Horn County PDM Plan)

In 1981, the Federal Emergency Management Agency (FEMA) completed mapping of the 100-year floodplain within the Town of Lodge Grass and for Big Horn County areas outside of the Crow and Northern Cheyenne Indian Reservations. Mapping of the Little Big Horn and Big Horn Rivers has been completed, but have not yet been accepted by FEMA. (Big Horn County PDM Plan)

The Crow Tribe Water Rights Settlement and Compact was signed into law by President Obama in 2010 and ratified by the Crow Tribe in 2011. Together, the Settlement Act and the Compact quantify the Tribe’s water rights and authorize funding of \$131.8 million for the rehabilitation and improvement of the Crow Irrigation Project and \$246.4 million for the design and construction of a water system to serve numerous reservation communities, as well as funding totaling more than \$81 million for tribal water administration and for a portion of costs for the irrigation and municipal water systems. The Settlement also provides funding to boost energy development projects such as hydropower generation at Yellowtail Afterbay Dam, clean coal conversion, and other renewable energy projects. ([U.S. Department of Interior, April 27, 2012 news release](#))





Photo: Montana Department of Commerce

## Fish and Wildlife Resources

Big Horn County provides habitat for a wide range of fish and wildlife species. The fish and wildlife species serve as a source of food, serve as important amenities for residents, serve traditional cultural purposes, and as an attraction for sportsmen from outside the county.

Important habitats in the county include river or riparian habitats, valley bottoms, uplands, and mountainous areas. Native rangelands provide the best wildlife habitats, dry cropland the worst. With the exception of migratory birds, grazing management practices limit the quantity and quality of forage available for wildlife.

The Big Horn River boasts a brown and rainbow trout fishery that is world-renowned and attracts a large number of nonresident fly fishermen. The River and associated wetlands provide important bald eagle wintering habitat, and the corridor also provides cover and forage for migratory birds and waterfowl such as ducks and geese, osprey, and neo-tropical songbirds. Geese have begun to stay year-round as the river has not frozen over as in years past (Slattery). The major wetland areas are located along the Big Horn and Little Big Horn Rivers. Activities proposed in wetland areas may require permits from the U.S. Army Corps of Engineers, the Tribe, Montana Department of Natural Resources and Conservation, and Montana Department of Environmental Quality.

The uplands of the Big Horn River are intensively farmed and irrigated. These uplands are home to white-tailed deer, antelope, turkey and game birds. The Pine Ridge area north and west of Hardin and the River boast an elk herd with several hundred head, a large variety of hawks, and several prairie dog towns.