



Location of MLRA 102B in Land Resource Region M.

102B—Till Plains

This area is entirely in South Dakota. It makes up about 2,215 square miles (5,735 square kilometers). The towns of Madison, Canton, and Parker are in this MLRA. Vermillion is on the southern edge of the area, and parts of Sioux Falls are on the eastern edge. Interstate 90 bisects the area from east to west, and Interstate 29 parallels the east edge of the area, crossing it at the north and south ends.

Physiography

This area is in the Western Lake Section of the Central Lowland Province of the Interior Plains. It is characterized by glaciated, nearly level to hilly plains. It has many depressions and ill-defined drainageways. Elevation ranges from 1,140 feet (350 meters) on the edge of the bottom land along the Missouri River in the southern part of the area to 1,880 feet (575 meters) in central Lake County.

The only Hydrologic Unit Area (identified by a four-digit number) that makes up this MLRA is Missouri-Big Sioux (1017). The Vermillion River is just outside the western boundary of the MLRA, and the Big Sioux River is just outside the eastern boundary.

Geology

The major landforms in this MLRA are stagnation moraines, end moraines, glacial outwash terraces, and flood plains. The area is dominated by drift-covered moraines. The stagnation moraines generally are nearly level to gently rolling and have many depressions and ill-defined drainageways. The steeper slopes are on end moraines and on breaks adjacent to some of the larger tributaries. Small outwash areas are adjacent to the minor moraines. The dominant parent materials are silty drift, glacial till, glacial outwash, and alluvium.

Climate

The average annual precipitation in this area is 23 to 26 inches (585 to 660 millimeters). Most of the rainfall occurs as high-intensity, convective thunderstorms during the growing season. Winter precipitation typically occurs as snow. The annual snowfall is 23 to 46 inches (60 to 120 centimeters). The average annual temperature is 43 to 49 degrees F (6 to 9 degrees C). The freeze-free period averages about 165 days and ranges from 155 to 175 days.

Water

Following are the estimated withdrawals of freshwater by use in this MLRA:

- Public supply—surface water, 2.0%; ground water, 19.1%
- Livestock—surface water, 1.6%; ground water, 2.8%
- Irrigation—surface water, 16.3%; ground water, 50.6%
- Other—surface water, 2.1%; ground water, 5.5%

The total withdrawals average 61 million gallons per day (230 million liters per day). About 78 percent is from ground water sources, and 22 percent is from surface water sources. Precipitation is the principal source of moisture for crops. In some years it is inadequate for maximum crop production. Surface water is not plentiful in this area. Rural water systems supply domestic water to an increasing number of farms and communities in the area. The Missouri River, south of this area, has the best quality water in this region, so it is increasingly being used by rural water systems in the area.

A limited supply of ground water is in the glacial drift and alluvial aquifers near the surface in this area. These aquifers consist of unconsolidated sand and gravel. They provide fresh or saline water that is hard and is a calcium-magnesium, bicarbonate, and

sulfate type. The median level of total dissolved solids, 670 parts per million (milligrams per liter), exceeds the national secondary (esthetic) standard for drinking water. The ground water is used primarily for domestic purposes and livestock, but some irrigation development has occurred in areas where the water supply is more abundant. Some public supplies are obtained from the shallow aquifers in the area. Many private wells have high levels of nitrate plus nitrite. Most of this contamination occurs because the wells are located downslope from septic tank absorption fields, feedlots, barnyards, or fertilizer storage areas.

Soils

The dominant soil order in this MLRA is Mollisols. The soils dominantly have a mesic soil temperature regime, an ustic soil moisture regime that borders on udic, and mixed or smectitic mineralogy. They generally are very deep, well drained to poorly drained, and clayey or loamy. Calciustolls (Ethan series) and Calciustepts (Betts series) formed in till on the steeper slopes on moraines. Calciaquolls formed in silty drift (Wakonda series) and glacial till (Davison series) in areas characterized by upward water movement. Haplustolls formed in lacustrine sediments (Huntimer series), silty drift (Wentworth and Trent series), silty drift over glacial till (Egan and Viborg series), or glacial till (Clarno series). They also formed in glaciofluvial deposits on outwash plains (Dempster, Graceville, Delmont, and Enet series). Argiaquolls (Chancellor series) formed in alluvium in wet drainageways. The soils that formed in alluvium in depressions include Argialbolls (Tetonka series), Argiaquolls (Worthing series), and Endoaquolls (Baltic series). Soils that formed in stream alluvium include Haplustolls (Bon, Davis, and Roxbury series), Endoaquolls (Lamo, Clamo, and Salmo series), Calciaquolls (Arlo and Storla series), and Fluvaquents (Chaska series).

Biological Resources

This area is in the western part of the tall grass prairie. Big bluestem, little bluestem, Indiangrass, porcupinegrass, and green needlegrass are the

dominant species in the native plant communities. Needleandthread and prairie dropseed are important species on the steeper soils. Cattails, prairie cordgrass, bulrush, and reed canarygrass commonly grow in wet areas.

Some of the major wildlife species in this area are white-tailed deer, red fox, coyote, white-tailed jackrabbit, pheasant, gray partridge, ducks, and geese. Fishing is common in the pothole lake areas and rivers. The species of fish in the area include walleye pike, smallmouth bass, bluegill, yellow perch, northern pike, carp, channel catfish, and black bullhead.

Land Use

Following are the various kinds of land use in this MLRA:

Cropland—private, 71%

Grassland—private, 16%; Federal, 1%

Forest—private, 1%

Urban development—private, 4%

Water—private, 2%

Other—private, 5%

Most of this area is in farms, and about 70 percent is cropland used for crops grown for sale or for feeding livestock. Corn, soybeans, alfalfa, and oats are the principal crops. Wooded areas generally occur as narrow bands along streams and rivers or as shelterbelts around farmsteads. Irrigation systems are used on droughty soils in areas where water supplies are available. Urban development is expanding around some of the larger towns.

The major soil resource concerns are wind erosion, water erosion, maintenance of the content of organic matter and productivity of the soils, wetness, and management of soil moisture. Conservation practices on cropland generally include systems of crop residue management, especially no-till or conservation tillage systems that conserve moisture and contribute to soil quality. Other practices include terraces, vegetative wind barriers, grassed waterways, and nutrient management.