



Bioregional Assessment

The Visioning Program encourages the use of sustainable design, a philosophy that human development is integrated with the natural world and should exemplify the principles of conservation. Preservation of the natural world is critical to ensuring the sustainability of the human community.

An important component of sustainable design is bioregional assessment. In order for a design to be sustainable, it must function within the existing natural environment without producing a negative impact. The design team has conducted an inventory of its natural resources, including both biological and physical characteristics, such as geology, vegetation, climate, soils, land use, wildlife, and hydrology. This information is mapped here.

Soils

Soils are formed by the weathering of bedrock over thousands of years. Wind, waterborne sediments, and vegetation also factor into formation of soils. According to the 1975 Soil Survey of Linn County, IA by the United States Department of Agriculture, the Mount Vernon soils are composed of alluvium, loess, glacial till and parent plant material. The principal soils include Seaton loess soils running from the northwest to the southeast: well-drained Tama soils in the southwest and northeast portions of the city; Dickinson soils in the center of Mount Vernon; alluvial Colo soils found in the southwest and the east around streams; and Downs and Atterberry found in the eastern part of the city. Colo soils are poorly drained, nearly flat and found in flood plains and upland drainage ways. The Dickinson-Downs-Seaton soils are well-drained, loess soils found on gentle to strongly sloping uplands and ridges. Tama soil is well-drained nearly flat to moderately sloping in upland areas. Atterberry soil is poorly drained, nearly flat and found at the head of drainage ways, the base of slopes, and near major streams.

Vegetation

The native vegetation for Linn County was tallgrass prairie, and woodland forest along waterways. This flora supported the fauna of the historical Midwest grassland which included deer, bison, elk, wolves, and a variety of birds. Since the settlement of Iowa in the 1840's, nearly all the tallgrass prairie has been tilled under and converted to agricultural use. Mount Vernon is no exception to this conversion process, much of the surrounding area is dedicated to growing corn and soybeans.

Climate

The Climate of Mount Vernon is characterized by regular annual weather cycles that are typically continental. Weather patterns frequently change with warm summers and cold winters. The average temperature varies from 20°F in January to 75°F in July, though much cooler and warmer temperatures occur annually. According to the United States Department of Agriculture the warmest month is usually July with a record temperature of 110°F in 1911. The lowest record temperature of -36°F occurred in January 1883. Average annual precipitation for Linn County is 33.4 inches, with May and June being the wettest months and July and August being drier. The average snowfall is 30 inches, with snowfall of one inch or more persisting through November and as late as April. Storm systems typically travel from the west across Mount Vernon.

Topography and Drainage Patterns

Much of downtown Mount Vernon resides on a Paha formation of loess soils. The topography of Mount Vernon is gently to strongly sloping with a high elevation just over 930 feet above sea level at Cornell College. Major elevation changes occur on the slopes of the Paha. Tributaries of the Cedar River reach just into the city limits in the south. Flooding is not a major problem in Mount Vernon with only a small 100-year flood plain located in the southeast corner of the city.

Geology

Mount Vernon is located on fractured carbonate bedrock created during the Silurian period between 443.7-416 million years ago. Beginning 750,000 years ago the Nebraskan glacier was the first to deposit glacial drift in Linn County. Later during the Wisconsin age, glacial till was covered by windblown loess. Also during the Late Wisconsin age, alluvium was deposited in flood plains and terraces of water courses. The windblown loess created a Paha geological feature, or elongated ridge oriented northwesterly to southeasterly, that Mount Vernon rests upon today. The makeup of the bedrock and soils in the area contribute to the overall fertility of the soil, how water infiltrates into the soil and which areas have the appropriate bearing capacities for buildings.



Agricultural fields along W Mount Vernon Road.
Source: Nicholas Gulick



Nearby Cedar River. Source: Nicholas Gulick



Gently rolling hills west of Mount Vernon.
Source: Nicholas Gulick

Mount Vernon

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Landscape Architect: Loren Hoffman, ASLA, Hall and Hall Engineers, Inc.

LA Intern: Nicholas Gulick and Robin Hamadani, ISU Landscape Architecture Extension

Iowa Department of Transportation Trees Forever ISU Landscape Architecture Extension ISU Extension Community and Economic Development

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