GIS ANALYSIS OVERVIEW:
A regional resource analysis was made of a study area ten miles on each side of the Minnesota River from Montevideo to New Ulm by the Regional Design Graduate Studio, Department of Landscape Architecture, University of Minnesota, led by Professor David Pitt, the analysis included data layers of:

- Bedrock Geology
- Surficial Geology
- Elevation
- Hydrology
- Original Vegetation
- National Wetlands Inventory
- Native Plant Communities
- Biodiversity Sites
- Land Use
- Population Change from 1990 - 2000
- Gap Land Ownership
- Hydric & Highly Erodable Soils
- Infrastructure

These layers were used as the basis from which the initial planning process was begun. The resource maps and a brief description are found in the index pages 74-85. Additional resources considered in the trail alignment and trailhead selection were:

- DNR Heritage Database mapping of rare and endangered species
- DNR Prairie Bank potential sites
- DNR mapping of rare and protected habitats
- Historic Structures
- Recreation Sites
- Utilities
- County Well Index (CWI)
LAND TRANSFORMATION MODELING:
The research team considered the implications of future growth patterns on the character of the area in the context of the opportunities and challenges that the area’s many amenities provide for its future. Emphasis will be on the area’s physical form.

To determine how much non-urban land within and around the Minnesota River Trail will transition to urban land in the future, specifically by years 2020 and 2050, analysts from the College of Natural Resources used a digital modeling tool called the Land Transformation Model (LTM). Developed by Michigan State University, this tool uses land use and land use change data from the past to predict how land use will change in the future. The model makes its predictions by considering factors that drive change, like distance to lakes, distance to interstates, and elevation. Details of this model and its application in this study are provided in the appendix pages 86-89.

PURPOSE OF THE REPORT:
The research team will analyze the area’s natural systems, existing natural and cultural amenities, development patterns, and land uses. The purpose of this report is twofold: First, to describe the application of the Land Transformation Model (LTM) to an analysis and projection of land use for the Minnesota River study area in Southern Minnesota shown on page 15. Second, to show how the LTM results can be applied to guide specific community planning and design.

STUDY AREA:
The study area traverses the length of the Minnesota River in Minnesota. This is an area long known for its fishing, golfing, biking, and birding opportunities. Additionally, the area is an important part of the southern Minnesota ecosystem that provides high quality aesthetic features, and habitat for a wide range of game and non-game wildlife species. Our study focuses on the Minnesota River Valley and its surrounding area.

URBAN TRANSFORMATION PROJECTION:
Using the same method to project the 1991-2000 urban transformation, analysts projected urban transformation for years 2020 and 2050. Here’s what they found:

The LTM projected a 56 percent increase in the area classified as urban land between 2000 and 2020. The increase projected for 2000 to 2050 was 140 percent. Among the 10-predictor variables, the four most significant variables for predicting land-use change for 1991-2000 were, in decreasing order of importance: distance to urban; distance to highways and county roads; population density, and; distance to water. Based on these variables, the LTM indicates that over the 9-year study period, non-urban to urban land change is concentrated around areas of existing population and development.

The Minnesota River Trail may also be analyzed further by subregion based on differences in landscape character or selected communities.

In using these projections, caution is urged to avoid over-interpretation. These projections assume rates of change observed from 1991-2000 will continue. That further implies continuation of the driving forces and constraints behind change. Yet we know there is change in these forces and constraints over time. Thus the projections should be viewed as suggestive of change and where it will likely occur, but not as a precise forecast. Additionally, the 2050 projection should be viewed as much more speculative than the projection to 2020.
LANDSCAPE SUITABILITY COMPOSITE:
Map themes were set up and overlaid to analyze physical suitability of the landscape for trail construction. This focused look at the landscape between Granite Falls and Skalbakken County Park identified areas of opportunity and constraint for trail routing shown on the map layout on the facing page. The data layers used to create this composite included:

Data Layers used to create this composite:
- 100 year Floodplain from the Federal Emergency Management Agency (FEMA)
- National Wetlands Inventory (NWI)
- Slopes in excess of 15% from USGS Minnesota Digital Elevation Model (DEM)
- Scientific & Natural Area (S.N.A)
- Conservation Easement Lands (C.R.E.P & R.I.M.)
- State Land
- Federal Land