

LRRB INV 828

Local Road Material Properties and Calibration for MnPAVE

Task 1 Report

Survey of Local Road Officials

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A statewide survey was conducted in 1998 to determine the practice of low volume pavement design and maintenance in Minnesota. The results are summarized in [Minnesota Low Volume Road Design 1998](#) (1). The portions of this survey considered useful in calibrating MnPAVE are those pertaining to pavement performance, such as deflection testing and information about pavement management systems containing pavement condition data. Historical pavement performance data combined with structural and traffic information are essential for calibrating a mechanistic-empirical design procedure.

An analysis was conducted to determine which cities and counties may have useable pavement performance data. Figure 1 shows the cities and counties that were using pavement management systems (PMS) in 1998. Figures 2 through 4 show cities and counties that were collecting ride, condition, and deflection data in 1998. This data was used to target a follow-up survey to determine if data useful for MnPAVE calibration had been collected since 1998.

A follow-up e-mail survey was submitted through the State Aid office to solicit information useful for the calibration of MnPAVE for local roads. Needed information included structural, traffic, and pavement condition data. FWD and GPR testing were offered for pavements that look promising for calibration purposes but have incomplete structural data. While there were several responses from cities and counties with PMS and/or other pavement data, it was either contained in a proprietary database, or was not complete enough to use for calibration.

A pilot project to conduct deflection testing and analysis on Minnesota county state aid highways (CSAH) in 2006 provided sufficient deflection, structural, and traffic data to select segments suitable for calibrating MnPAVE. Pavement management data collected on CSAH routes by Mn/DOT in 2006 provided the necessary condition data. Global information systems (GIS) software was used to locate routes with all of the necessary data for calibration. Figure 5 shows the routes in Wright County with deflection, structural, and traffic data from 2006. Mile markers are included as an aid to locating corresponding pavement management data.

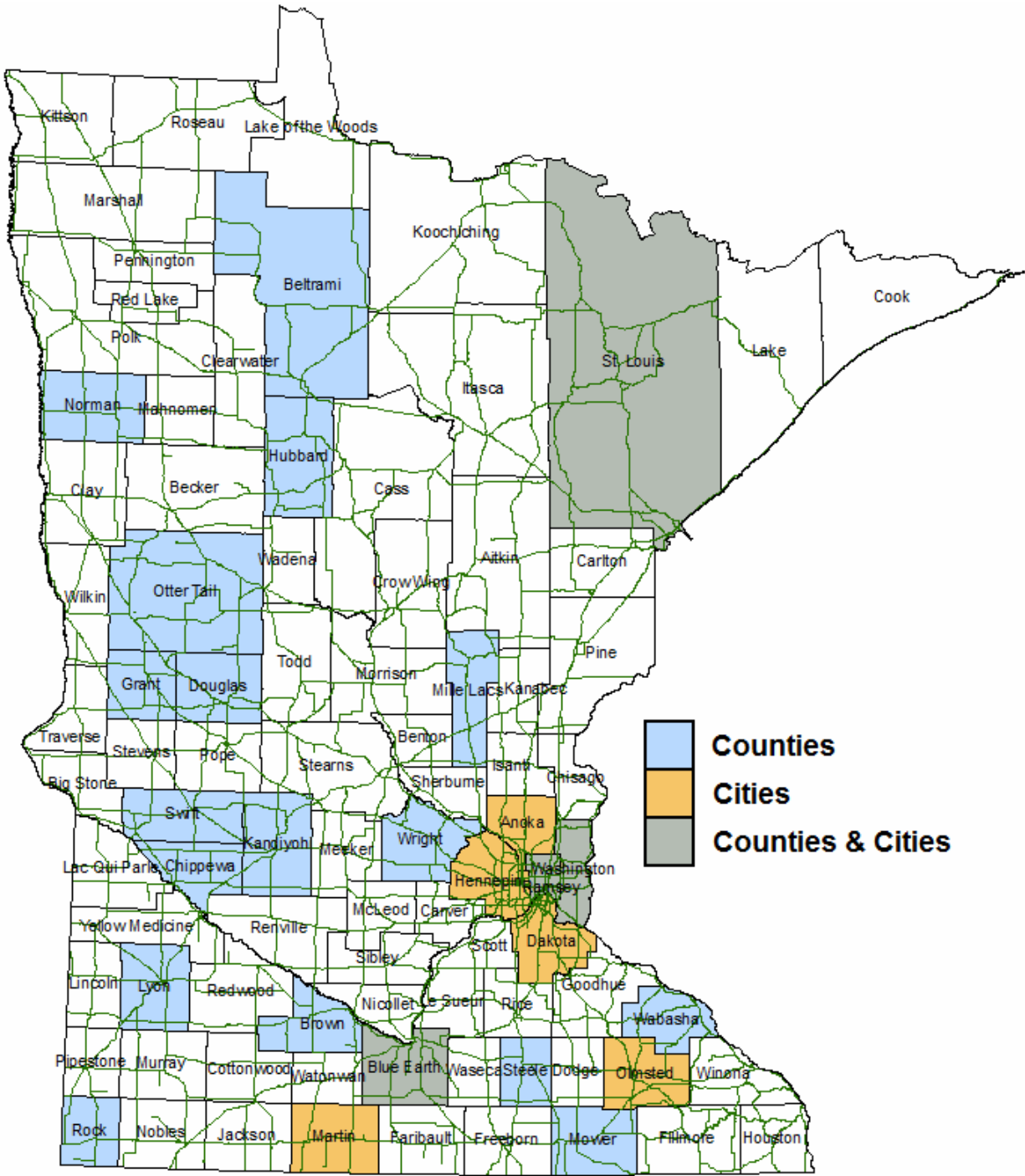


Figure 1: Minnesota Counties and Cities with Pavement Management Systems in 1998

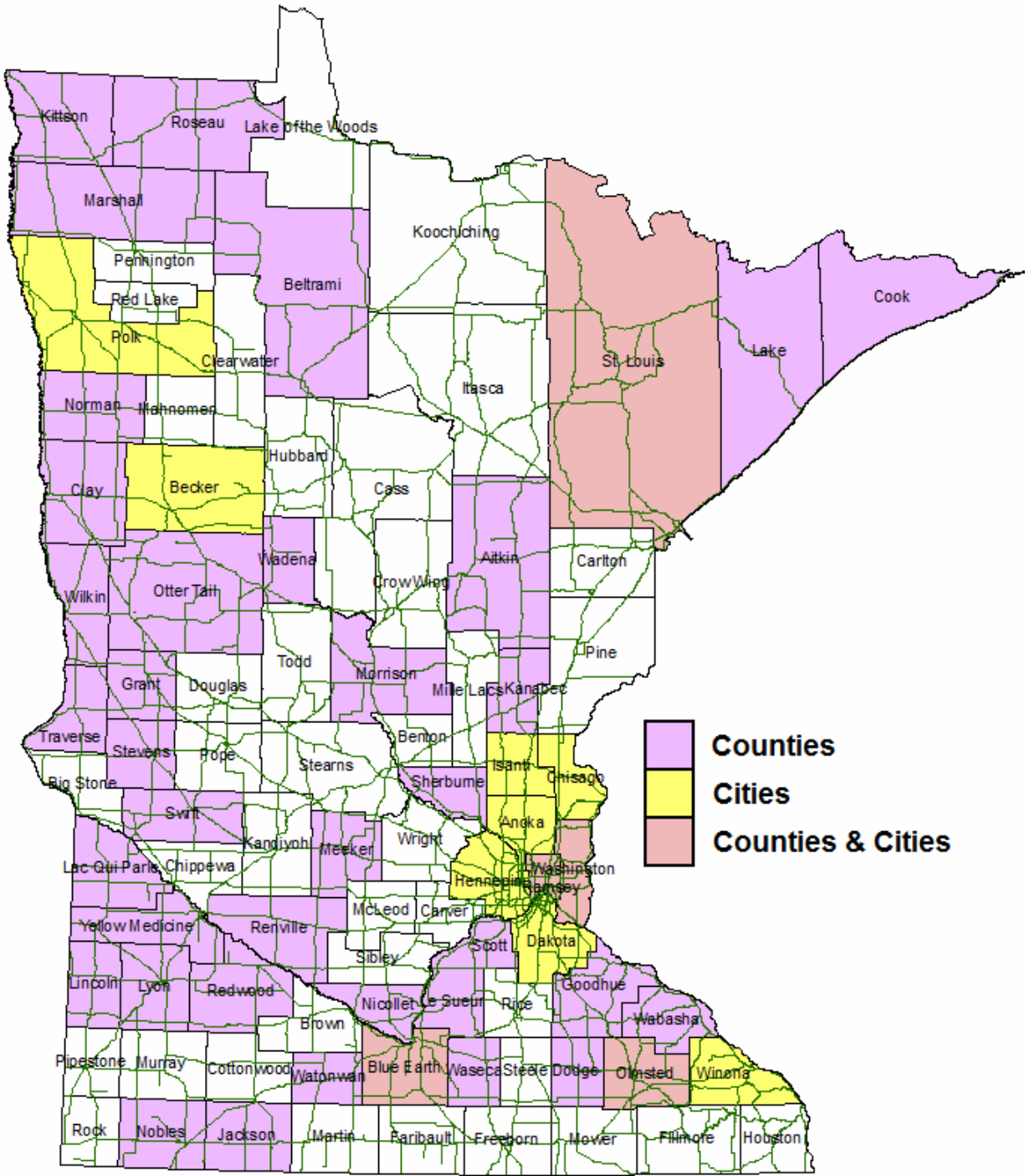


Figure 2: Minnesota Cities and Counties Collecting Pavement Ride Data in 1998

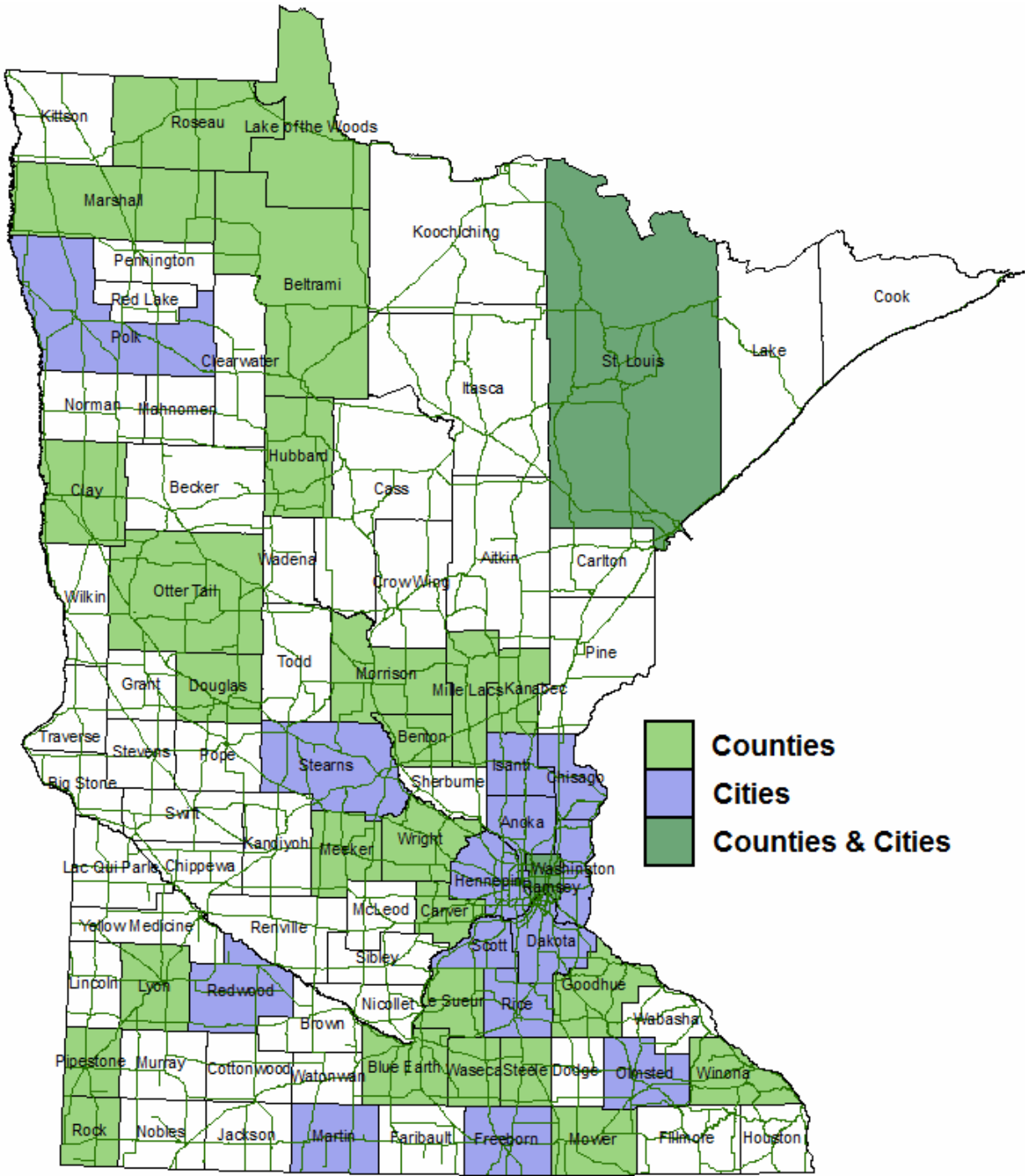


Figure 3: Minnesota Cities and Counties Collecting Pavement Condition Data in 1998

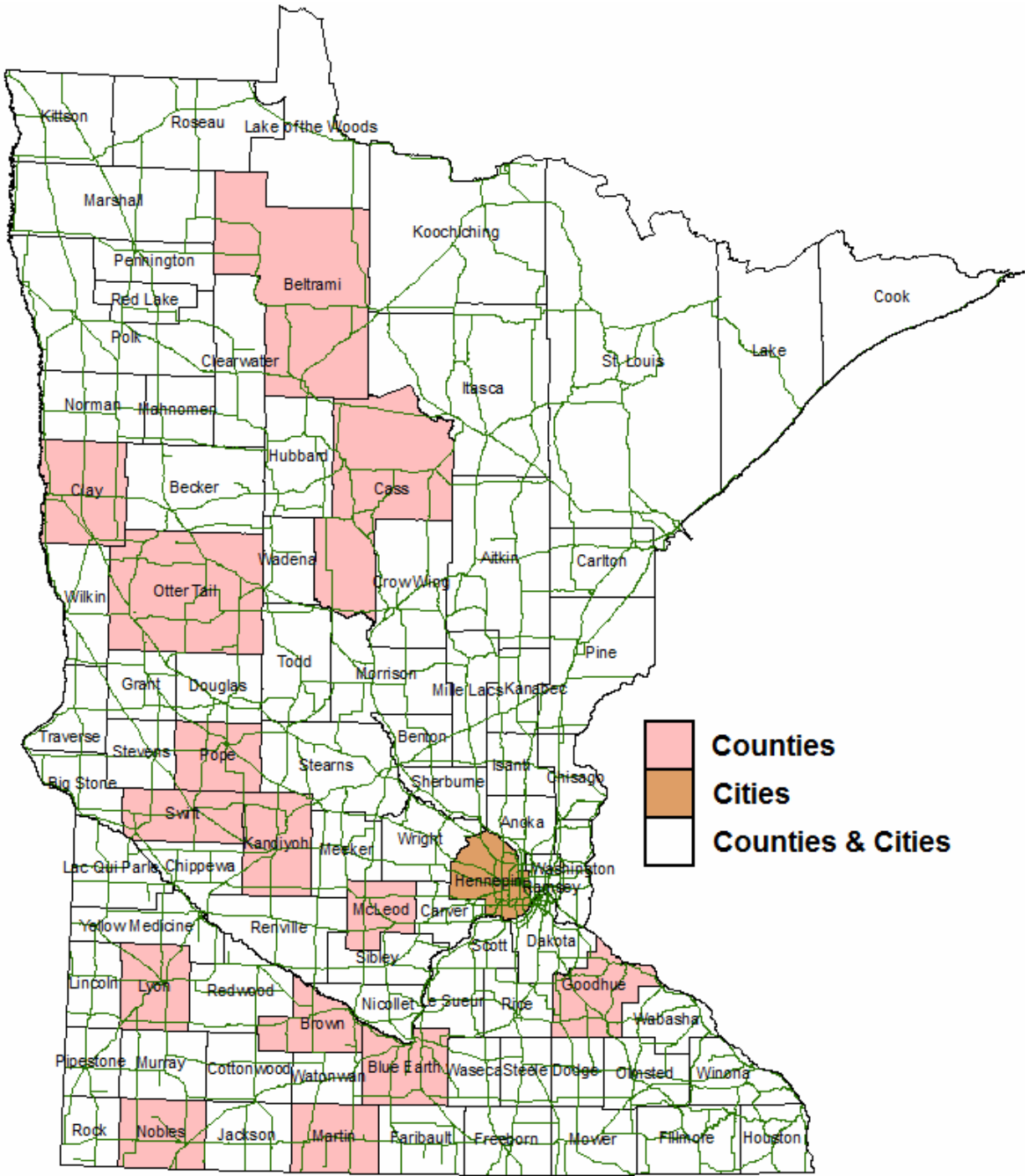


Figure 4: Minnesota Cities and Counties Collecting Deflection Data in 1998

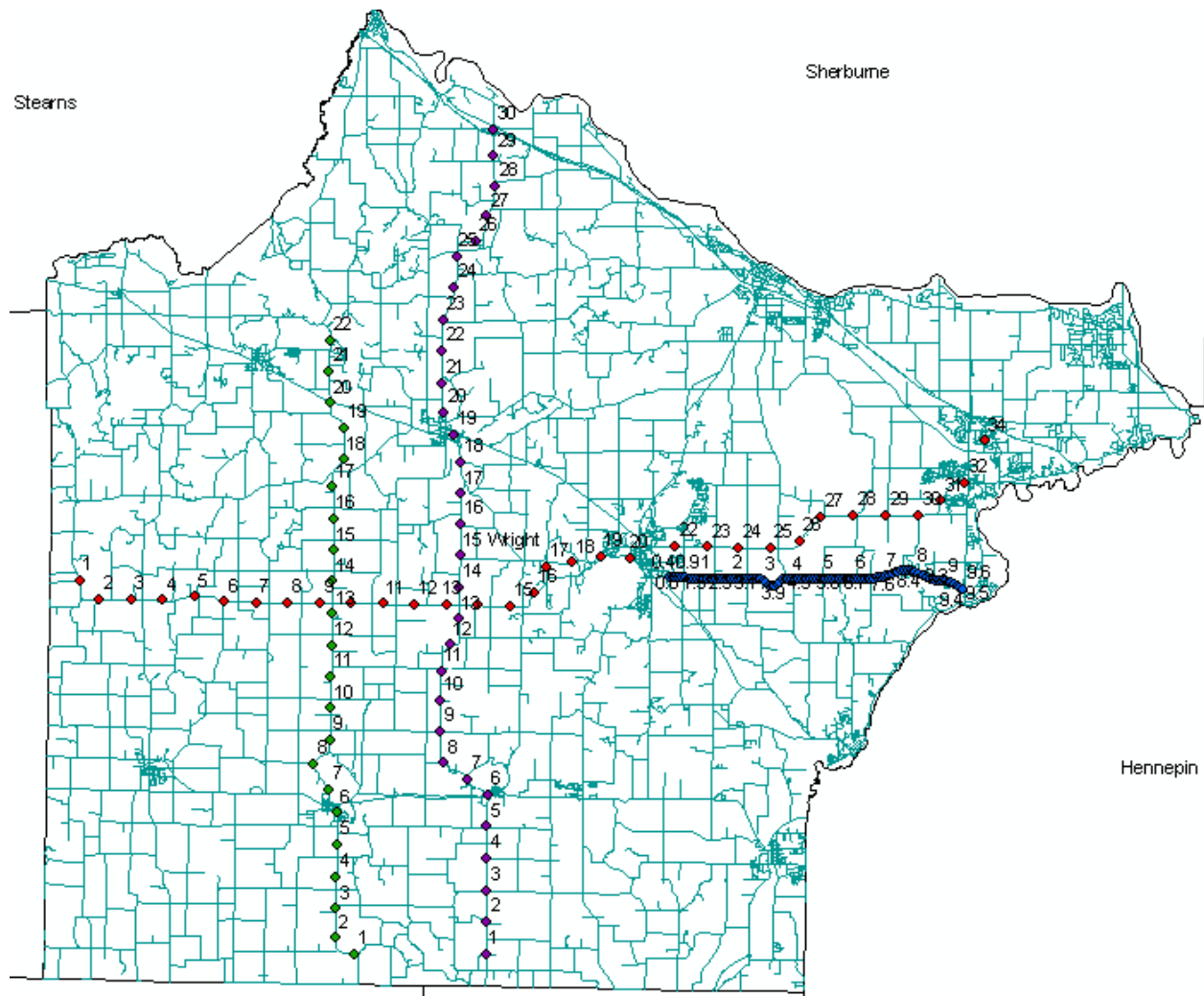


Figure 5: Wright County Routes with Deflection, Structural, and Traffic Data

References

1. Skok, E.L., Newcomb, D.E., and Timm, D.H., "Minnesota Low Volume Road Design 1998," Final Report MN/RC 1999-34, Minnesota Department of Transportation, September 1999.