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The Mankato/North Mankato Area Planning Organization (MAPO) is charged with overseeing a diverse multimodal transportation system including roadway, bicycle and pedestrian, air, freight, and transit systems. The objective of the range of alternatives analysis is to develop a full menu of multimodal alternatives that address MAPO goals and objectives and identified system deficiencies and needs. However, the range of alternatives analysis was developed with the understanding that MAP-21 guidance dictates system preservation needs must be addressed prior to programming new construction or expansion needs. Therefore, a planning-level analysis of anticipated future system preservation needs was prepared for use in later chapters.

Next, previously identified projects along with new multimodal projects (identified from technical analysis) were compiled to encompass a full range of alternatives. This list of projects is not fiscally constrained because MAPO desired to comprehensively define the metro area’s overall multimodal needs. Fiscal constraint was addressed later in the planning process; however, the multimodal project list was evaluated to determine any fatal flaws from an environmental scan or environmental justice standpoint.

Using this analysis of multimodal projects, scope, and estimated future project costs were prepared. These costs provided the basis for the fiscal constraint analysis and project prioritization process completed later in the Plan. Projects identified and agreed upon by the Technical Advisory Committee (TAC) were categorized into nine groups including corridor, intersection, bicycle and pedestrian, major rehabilitation (rehab)/reconstruction, safety, preservation, air, freight, and transit.

**SYSTEM PRESERVATION OUTLINE**

In accordance with federal and state policies, funding must first be directed toward “state of good repair” activities in order to maintain the existing transportation system; only after system preservation needs are met on the primary system can such funds be used for capital expansion or new construction. Preservation improvements are defined by MAPO as encompassing both 1) operation and maintenance (O&M) activities and 2) major rehabilitation and reconstruction projects (as shown in Figure 7-1).
O&M activities represent regular and routine pavement improvements that keep the transportation system in a safe and effective condition. Major rehabilitation and reconstruction projects are needed in order to extend roadway and bridge functional lifespans.

**Pavement Operation and Maintenance**

Examining the condition of the MAPO’s highway system was a critical element of the entire transportation planning process. The MAPO area’s transportation system was evaluated by jurisdiction in order to determine the baseline inputs of lane miles by jurisdiction and surface types. Then life cycle calculations were used to establish by major jurisdiction the preservation needs over varying timeframes. Importantly, federal, state, MAPO staff, and TAC members were involved in the development of these assumptions, calculations, and outputs.

The number of lane miles was obtained using MAPO’s 2015 roadway centerline file, which contained information on the number of roadway miles by both jurisdiction and functional classification. Roadway surface type data was also obtained using MAPO’s 2015 roadway centerline file. Three main roadway surface types (concrete, asphalt, and gravel) were analyzed by jurisdiction using this data, coupled together with information from MnDOT and local agencies. Table 7-1 shows the number of lane miles by surface type for each agency.
Table 7-1: MAPO Area Lane Mileage by Surface Type

<table>
<thead>
<tr>
<th>LANE MILES</th>
<th>MNDOT</th>
<th>MANKATO</th>
<th>NORTH MANKATO</th>
<th>NICOLLET COUNTY</th>
<th>BLUE EARTH COUNTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete (Collectors or Above)</td>
<td>68</td>
<td>7.46</td>
<td>2.63</td>
<td>1.81</td>
<td>17.24</td>
</tr>
<tr>
<td>Asphalt (Collectors or Above)</td>
<td>136</td>
<td>116.27</td>
<td>32.32</td>
<td>48.44</td>
<td>183.88</td>
</tr>
<tr>
<td>Asphalt (Locals)</td>
<td>0</td>
<td>314.75</td>
<td>114.59</td>
<td>9.99</td>
<td>6.79</td>
</tr>
<tr>
<td>Gravel</td>
<td>0</td>
<td>8.58</td>
<td>0</td>
<td>0</td>
<td>11.01</td>
</tr>
</tbody>
</table>

To establish the needed operation and maintenance costs over the life of the plan, MAPO jurisdictions provided a list of average costs for four surface improvements associated with each type of maintenance strategy. Maintenance practices examined were:

- Concrete Pavement Repair
- Asphalt Overlay
- Chip Seal
- Crack Seal

Table 7-2 shows the approximate improvement cost by maintenance type for each jurisdiction.

Table 7-2: Approximate Improvement Cost by Maintenance Type

<table>
<thead>
<tr>
<th>MAINTENANCE TYPE</th>
<th>MNDOT/BLUE EARTH COUNTY</th>
<th>MANKATO</th>
<th>NORTH MANKATO</th>
<th>NICOLLET COUNTY</th>
<th>AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Pavement Repair</td>
<td>$90,000</td>
<td>$90,000</td>
<td>$90,000</td>
<td>$90,000</td>
<td>$90,000</td>
</tr>
<tr>
<td>Asphalt Overlay</td>
<td>$150,000</td>
<td>$85,000</td>
<td>$83,000</td>
<td>$60,000</td>
<td>$95,000</td>
</tr>
<tr>
<td>Chip Seal</td>
<td>$13,000</td>
<td>$7,600</td>
<td>$10,500</td>
<td>$12,000</td>
<td>$11,000</td>
</tr>
<tr>
<td>Crack Seal</td>
<td>$2,400</td>
<td>$2,200</td>
<td>$1,000</td>
<td>$5,000</td>
<td>$3,000</td>
</tr>
</tbody>
</table>

Using the costs and lane miles provided by jurisdictions, typical industry maintenance practices were used to determine the operation and maintenance life cycle costs throughout the MAPO planning area over the 30-year Plan horizon. The typical industry maintenance practices used for this analysis are shown in Table 7-3 and Figure 7-2. It was assumed a roadway had a 50-year life cycle, with an overlay every 15 to 20 years, seal coating every seven years, and crack sealing every three years.
Table 7-3: Lifecycle Expectancy for Surface Treatments

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete - State</td>
<td>10</td>
</tr>
<tr>
<td>Concrete - County/City</td>
<td>20</td>
</tr>
<tr>
<td>Asphalt M&amp;O</td>
<td>20</td>
</tr>
<tr>
<td>Asphalt M&amp;O Local</td>
<td>30</td>
</tr>
<tr>
<td>Chip Seal</td>
<td>7</td>
</tr>
<tr>
<td>Crack Seal</td>
<td>3</td>
</tr>
</tbody>
</table>

Figure 7-2: Typical Industry Practice over a 50-Year Maintenance Schedule

Using each of the above inputs, and an annual 4.5 percent inflation factor, the forecasted preservation cost was calculated for each jurisdiction by investment timeframe and is presented in Table 7-4. This table presents the forecast operation and maintenance costs for the short-, mid- and long-term timeframes.
Table 7-4: MAPO Forecasted Preservation Cost by Jurisdiction per Timeframe *

<table>
<thead>
<tr>
<th>JURISDICTION</th>
<th>SHORT-TERM 2016-2020</th>
<th>MID-TERM 1 2021-2025</th>
<th>MID-TERM 2 2026-2030</th>
<th>LONG-TERM 2031-2045</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MnDOT</td>
<td>$11,387,300</td>
<td>$13,890,000</td>
<td>$17,320,000</td>
<td>$86,181,000</td>
<td>$128,778,300</td>
</tr>
<tr>
<td>Mankato</td>
<td>$9,307,000</td>
<td>$12,375,000</td>
<td>$14,140,000</td>
<td>$70,366,000</td>
<td>$106,188,000</td>
</tr>
<tr>
<td>North Mankato</td>
<td>$2,978,000</td>
<td>$3,633,000</td>
<td>$4,526,000</td>
<td>$22,533,000</td>
<td>$33,670,000</td>
</tr>
<tr>
<td>Nicollet County</td>
<td>$1,924,000</td>
<td>$2,350,000</td>
<td>$2,926,000</td>
<td>$14,553,000</td>
<td>$21,753,000</td>
</tr>
<tr>
<td>Blue Earth County</td>
<td>$11,321,000</td>
<td>$13,810,000</td>
<td>$17,225,000</td>
<td>$85,710,000</td>
<td>$128,066,000</td>
</tr>
<tr>
<td>Total</td>
<td>$30,070,000</td>
<td>$36,041,000</td>
<td>$68,617,000</td>
<td>$296,598,000</td>
<td>$431,326,000</td>
</tr>
</tbody>
</table>

*Initial pavement preservation costs by timeframe if maintenance schedules are kept.

The totals take into account the estimated cost of roadway improvements for each surface type based on standard surface life cycles and assumes that pavement preservation occurs in the timeframes assigned given the maintenance schedule. If pavement preservation is deferred at all, the costs will shift due to additional inflation and maintenance activities.

**Transit Operation and Maintenance**

Using inflation factors provided by Greater Mankato Transit and MnDOT Office of Transit, future operating expenses were calculated for each time frame. It is understood that Greater Mankato Transit will continue to maintain or expand its operations based on available funding. Therefore, this exercise determined the amount of operating expenses and expenditures over the life of the plan (see Table 7-5). Operating expenses include maintaining and keeping pace with expanded service to accommodate growing population; fleet capital expenses accounts for expenditures for bus fleet replacement; facility capital expenses account for maintenance facility expansion/construction.

Table 7-5: MAPO Transit Preservation

<table>
<thead>
<tr>
<th>EXPENSES</th>
<th>SHORT-TERM 2016-2020</th>
<th>MID-TERM 2021-2030</th>
<th>LONG-TERM 2031-2045</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating</td>
<td>$12,458,000</td>
<td>$13,687,000</td>
<td>$15,038,000</td>
<td>$54,618,000</td>
</tr>
<tr>
<td>Fleet Capital</td>
<td>$1,220,000</td>
<td>$3,611,000</td>
<td>$4,648,000</td>
<td>$14,860,000</td>
</tr>
<tr>
<td>Facility Capital</td>
<td>$8,000,000</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>
**Trail Operation and Maintenance**

Another aspect of the MAPO area’s transportation network is maintenance of its trail system. Similar to roadways, trails deteriorate as they age but with planned maintenance strategies, the life expectancy of these trails can be extended. Communities and agencies are building more paved, multi-use trails to meet public demand for safe, off-road places to recreate and commute. Trail users, however, have a heightened awareness of the surface condition of trails. Bicyclists and in-line skaters, for example, are very sensitive to even the smallest cracks, and wheel chair users or those pushing strollers notice crumbling or pitted surfaces because uneven surfaces are harder to navigate. Trail maintenance and preservation is an important component of long-term infrastructure planning.

Agreements are often made between governing agencies such that one agency constructs a trail but the other agency will maintain it. Similar situations have occurred within the MAPO planning area. Figure 7-4 shows the agency responsible for maintaining the trails.

Maintaining trails on a regular basis is vital to increasing their longevity. Maintenance schedules will vary for each trail because surface conditions, environmental conditions, and use will be different. It is possible that maintenance needs may vary on the same trail given differing environmental conditions. Figure 7-4 illustrates a “typical” maintenance schedule that utilizes crack sealing, fog sealing, and chip sealing applied according to a pre-determined timeline. Because ultraviolet light begins breaking down a trail’s surface immediately after construction, the timeline in Figure 7-3 includes a fog seal completed within one year of the original paving. This protects the asphalt from impacts from ultraviolet rays. Approximately every two years cracks are filled, and fog seal is applied at four years. This is followed by a chip seal at eight years. Subsequent two- and four-year maintenance practices follow the schedule of sealing cracks and applying fog seal or chip seal until the trail surface it twenty years of age. At that time, it may be necessary to overlay the trail with a 1.5-inch layer of new asphalt. Depending on local conditions, it may be possible to push the full reconstruction to 30 years.

**Figure 7-3: Trail Primary Asphalt Treatment Example: Fog Seal and Sealcoat (Chip Seal)**
Figure 7-4: Paved Trail Maintenance

- Blue Earth County
- Eagle Lake
- Eagle Lake Maintained Owned by Other
- MNDOT
- Mankato
- Mankato Maintained Owned by Other
- Nicollet County
- North Mankato
- State Trail
- PWI (Basin)
- PWI (Watercourse)
- MAPO Planning Area

Source: Blue Earth County, Nicollet County, MnDOT, North Mankato, Mankato, MnDNR, Esri Imagery

Map Document: J:\Maps\8573\mxd\Trails\MAPO_Trails_Maintenance_150929.mxd Date Saved: 9/30/2015 10:54:38 AM
While no trail operation and maintenance cost estimates were developed for this Plan, the above information should help advance preservation activities among MAPO partners. In future Plan updates, as more trail condition data is assembled in a usable, consistent format by local jurisdictions, the operation and maintenance costs can be calculated.

**Major Rehabilitation and Reconstruction**

The MAPO partners have agreed that there will be a point during the 30-year planning horizon when portions of the transportation system will need more than what maintenance activities can provide. Portions of the roadway and bridge system will need major rehabilitation and reconstruction. American Association of State Highway and Transportation Officials (AASHTO) defines major rehabilitation as “…structural enhancements that both extend the service life of an existing pavement and/or improve its load-carrying capability.” Whereas, pavement reconstruction is the replacement of the entire existing pavement structure by the placement of the equivalent or increased pavement structure. Reconstruction usually requires the complete removal and replacement of the existing pavement structure. Reconstruction is required when a pavement has either failed or has become functionally obsolete.

Bridges were considered in this category as well. Based on discussion with the MAPO project partners, and reference of the MnDOT Structure Inventory Report, bridges were identified for potential major rehabilitation or reconstruction within the planning horizon. MnDOT also referenced their most recent 10-year Capital Highway Investment Proposal (CHIP) for District 7 when stating bridge needs during the Plan’s 30-year timeframe.

Review of this information with the project partners led to the Major Rehabilitation and Reconstruction project list, which like pavement operation and maintenance, should be addressed before new construction or expansion projects. Roadway projects were identified, resulting in 35 span bridges and 12 major culverts under MnDOT jurisdiction within the MAPO planning area. MnDOT bridge planning indicates that preserving these existing structures with fixes that may include painting, overlays, redecking, rehabilitating and/or replacing will be significant. Blue Earth County was the only other jurisdiction to have a structure need within the planning horizon and the MAPO planning area.

**PROJECT INVENTORY AND SCOPE**

**Existing Project Inventory**

The range of alternatives analysis started with compiling an inventory of programmed, planned, and proposed projects. Projects were identified from various sources including Transportation Improvement Programs (TIPs)/State TIPs (STIPs), transit plans, previous Mankato Area Transportation Area and Planning Study (MATAPS), City and County Capital Improvement Programs (CIPs), other recent planning activities and recommendations from comprehensive, airport,
recreation, safety, campus, downtown plans, Alternative Urban Areawide Reports (AUARs), and other studies. Many of these sources and studies have been previously discussed within the System Forecasts, Operational Needs, and Modal Opportunities chapter of the Plan. This comprehensive inventory of projects within the MAPO planning area provided the foundation for each of the eight identified categories.

**New Multimodal Projects**

New multimodal projects, not identified by previous plans/studies, were generated from the previous chapters’ technical analysis or were recommended by various agencies to improve the transportation system capacity. This analysis of multimodal projects was developed in order to scope and eventually prioritize projects.

Public participation and agency coordination was also an important element in identifying issues and needs. A number of public engagement tools were incorporated to engage key groups in the planning process. These included a series of stakeholder one-on-one meetings and public open houses. The open houses featured collaborative activities such as an interactive preference and online survey to engage the public. From this input additional projects were identified and evaluated prior to adding them to the universe of future multimodal projects.

**Cost Estimates**

With a comprehensive project list, MAPO staff and partnering agencies developed planning-level cost estimates for each project. Project costs from past studies were updated and current costs were developed by the partnering agencies for major rehabilitation and reconstruction project, and new projects. These construction costs were developed based on type of improvement, length, unit cost, and facility type. Table 7-6 shows a sampling of the planning-level cost assumptions used to calculate some of the project costs. Bridge costs were provided by the governing agency for each.
Table 7-6: MAPO Planning-Level Cost Estimate Assumptions

<table>
<thead>
<tr>
<th>PROJECT TASK</th>
<th>COST</th>
<th>UNIT</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>New or Reconstruction</td>
<td>$10.00</td>
<td>Square Feet</td>
<td>Based on previous planning level estimates for bituminous pavement. Curb and drainage costs added separately.</td>
</tr>
<tr>
<td>Scab Extra Width</td>
<td>$12.50</td>
<td>Square Feet</td>
<td>Based on inflated reconstruction cost for bituminous pavement. Curb and drainage costs added separately.</td>
</tr>
<tr>
<td>Striping</td>
<td>$2,000.00</td>
<td>Intersection</td>
<td>Assumes epoxy striping 300’ left and right turn lanes and pavement marking removal on all approaches.</td>
</tr>
<tr>
<td>Drainage</td>
<td>$95.50</td>
<td>Linear Feet</td>
<td>Extra cost for drainage (50% of bid price). Assumes $2,500 per structure, 40’ roadway width, 2 structures every 100’, 24” pipe at $32.50/LF.</td>
</tr>
<tr>
<td>Mill and Overlay</td>
<td>$110,000.00</td>
<td>Lane Mile</td>
<td>Based on MnDOT Pavement Design Manual. Assumes 12’ lanes width, 2” mill, and 3.5” overlay.</td>
</tr>
<tr>
<td>Roundabout</td>
<td>$1,500,000</td>
<td>Single-lane Roundabout</td>
<td>Multi-lane roundabouts assumed to increase cost by $500,000</td>
</tr>
</tbody>
</table>

Additional factors were also considered that have the potential to increase planning-level costs beyond typical assumptions. These factors included the need for retaining walls or substantial drainage improvements. To avoid redundancy, the proposed comprehensive multimodal future project list is presented in Chapter 9 – Implementation Plan as part of the fiscal constraint analysis.

ENVIRONMENTAL CONSTRAINTS AND CULTURAL RESOURCES

Federal and state policies require governmental agencies to examine the environmental impacts of projects they propose. Projects funded with federal dollars are required to comply with the requirements of the National Environmental Policy Act (NEPA). NEPA requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

Incorporating NEPA into the Planning Process

The MAPO 2045 LRTP transportation planning effort expressly considered the early NEPA process so as to recognize corridor and intersection projects that may impact the environment or cultural resources. In such cases, even at this early transportation planning stage, MAPO sought to:

- Avoid the impact altogether
- Minimize impacts by limiting the degree or magnitude of the action and its implementation
- Rectify the impact by considering repair, rehabilitation, or restoration of the affected environment
- Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action, or:
- Compensate for the impact by replacing or providing substitute resources or environments.

Therefore, each corridor and intersection project identified in the MAPO 2045 LRTP underwent a planning-level assessment to determine the potential for negative impacts on social, economic, and environmental resources. The planning-level assessment included review of GIS datasets, aerial photography, and previous plans and studies. The results of the planning-level assessment were then displayed in a table (see Appendix 7-A) to depict the likelihood of impact to key environmental features, ranging from no impact to high likelihood of impact for both corridor and intersection projects identified in the MAPO 2045 LRTP.

The preliminary planning-level assessment was shared with local, regional, state, and federal agencies to gather feedback on the proposed improvements, timeframes, and additional improvements that may be needed and the assessment of potential environment impacts. The following agencies were contacted to gather feedback:

- Minnesota Pollution Control Agency (MPCA)
- Minnesota Department of Natural Resources (DNR)
- Water Management Organizations (WMO)
- State Historic Preservation Office (SHPO)
- Blue Earth County Historical Society
- Nicollet County Historical Society
- Natural Resources Conservation Services (NRCS)
- Blue Earth County Soil and Water Conservation District (SWCD)
- Nicollet County SWCD
- U.S. Army Corps of Engineers (USACE)
- City of Mankato Heritage Preservation Commission
- FHWA Minnesota Division

Listening sessions were also held as another opportunity for agencies to participate and provide feedback on the planning-level assessment and project list. No comments or concerns were expressed by agencies in writing or in person through participation at listening sessions.
Each of the environmental categories evaluated by the MAPO planning-level assessment are presented on the following pages.

**Wildlife and Vegetation**

The U.S. Fish and Wildlife (USFWS) identifies three categories of species at risk. Endangered species are those at the brink of extinction now. Threatened species are those that are likely to become an endangered species in the near future. The Candidate category is for species the USFWS has proposed for threatened and endangered status. Both Blue Earth and Nicollet counties contain one threatened species, the Northern long-eared bat.

States may also establish endangered and threatened species lists that are at risk of extinction for the state, even though they may not be on the national endangered or threatened list. The Minnesota Department of Natural Resources maintains an extensive database of rare plants, animals, native plant communities, and other rare features. This database should be consulted by MAPO partners as planned projects move forward into project development in order to assess risk along with potential avoidance, minimization and mitigation measures.

**Wetlands**

Federal and state laws protect aquatic resources, including wetlands, swamps, marshes, bogs, and similar areas. Any wetland that is proposed to be impacted by a project is required to undergo a wetland impact sequencing discussion by addressing three aspects: avoidance, minimization, and replacement of unavoidable impacts.

A preliminary screening using aerial photography was completed to identify potential wetland resources in relation to the MAPO 2045 LRTP project corridors and intersections. Given the proposed project locations, predominantly in urbanized areas, many of the projects are anticipated to have a low to no potential for wetland impacts.

**Floodplains**

If the project crosses or lies adjacent to any floodplain area an impact may exist. Floodplain maps available through Federal Emergency Management Agency (FEMA) were reviewed to determine if any MAPO 2045 LRTP project corridors or intersections were within a floodplain. Four of the proposed projects are located within the 100-year or 500-year floodplain.

**Water Resources**

In addition to wetlands protected by federal and state laws, as mentioned above, water resources are also protected in regard to water quality. Water quality issues need to be addressed whenever a project will add additional impervious surfaces, which may funnel additional water to water resources, such as water runoff.

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1 Minnesota Department of Transportation HPDP Scoping Guidance: Floodplains [http://dotapp7.dot.state.mn.us/edms/download?docId=608948](http://dotapp7.dot.state.mn.us/edms/download?docId=608948)
The MAPO 2045 LRTP project parameters were assessed in regard to the amount of increase in impervious surfaces. Projects that entail new construction result in the greatest increases in impervious surfaces, and therefore greatest impacts to water resources, while project reconstructions generally have less impact to water resources.

**Farmland and Soils**
Federal laws require projects to take into account any impacts to agricultural land to ensure they are minimized to the extent reasonable. Agricultural land includes prime farmland, unique farmland, and any farmland that is of statewide or local importance. State laws apply for acquisition of more than 10 acres of agricultural land although the definition of agricultural land is much broader and can be considered any land outside city limits.

Aerial photography and GIS datasets were reviewed to determine the potential for impacts to farmable soils within the project corridors and intersections. Projects that are new construction in more rural areas have greater potential for impacting farmland.

**Potentially Contaminated Properties**
Early identification of contaminated properties in and adjacent to proposed project limits can aid in avoiding, or minimizing impacts for contaminated property cleanups. If contaminated properties are unavoidable, early identification can allow time to determine the extent or magnitude of contaminants that may require any special provisions. Early identification can also prevent any possible construction delays or increased costs that may arise from inadvertent discoveries.

Potential for impacts from contaminated properties was reviewed using the Minnesota Pollution Control Agency’s “What’s in My Neighborhood” mapping tool. Quantifications were made on the number of potentially contaminated sites on, or adjacent to, a project corridor or intersection.

**Parks and Trails**
Federal and state laws are intended to prevent conversion of certain park, wildlife and waterfowl refuges, recreation areas or historic properties to transportation use.

Project assessments were first done by mapping existing parks, pedestrian and bicycle facilities in the MAPO planning area. This was done by incorporating park and trail GIS datasets. The MAPO 2045 LRTP project corridors and intersections were then compared to park and trail locations, with an assessment for potential project impacts, including the permanency of the impacts.

**Environmental Justice**
Environmental justice is a public policy goal ensuring that low-income or minority populations do not bear disproportionately high or negative impacts as a result of the policies, programs, and activities of federal agencies. It originates from
Executive Order 12898 signed by President Clinton in 1994.

Project assessments were done by first mapping areas with high concentrations of minorities or low-income populations in the MAPO planning area. This was done by determining census tracts within the MAPO planning area with concentrations of minorities greater than the county averages, and which census tracts have household incomes at or below the poverty level for Nicollet and Blue Earth Counties.

Geographic information system (GIS) software was then used to overlay the future transportation projects on top of this information, and special attention was given to those projects that involve expansion or significant alteration of the existing transportation system.

Refer to Appendix 7-A for a full analysis of the proposed corridor and intersection improvements reviewed and an assessment of their potential impacts.