



2045 Long Range Transportation Plan

October 2021

Appendix I – Environmental Mitigation Analysis

Appendix I

Environmental Mitigation Analysis

This appendix summarizes the SLATS 2045 LRTP environmental mitigation analysis. The transportation system affects and is affected by the natural environment. As part of the LRTP development process, federal regulations require a discussion of potential mitigation activities and locations that will have the greatest potential to restore and maintain environmental functions affected by fiscally constrained LRTP projects.

The purpose of this effort is to identify possible impacts of proposed “improve and expand projects” on environmentally sensitive resources, list useful guidelines for mitigating these impacts, and share information with implementing agencies.

Finally, this appendix also includes a discussion of security – which is a FAST Act planning requirement. The primary focus of the SLATS 2045 LRTP in terms of security is discusses natural disasters, or hazards.

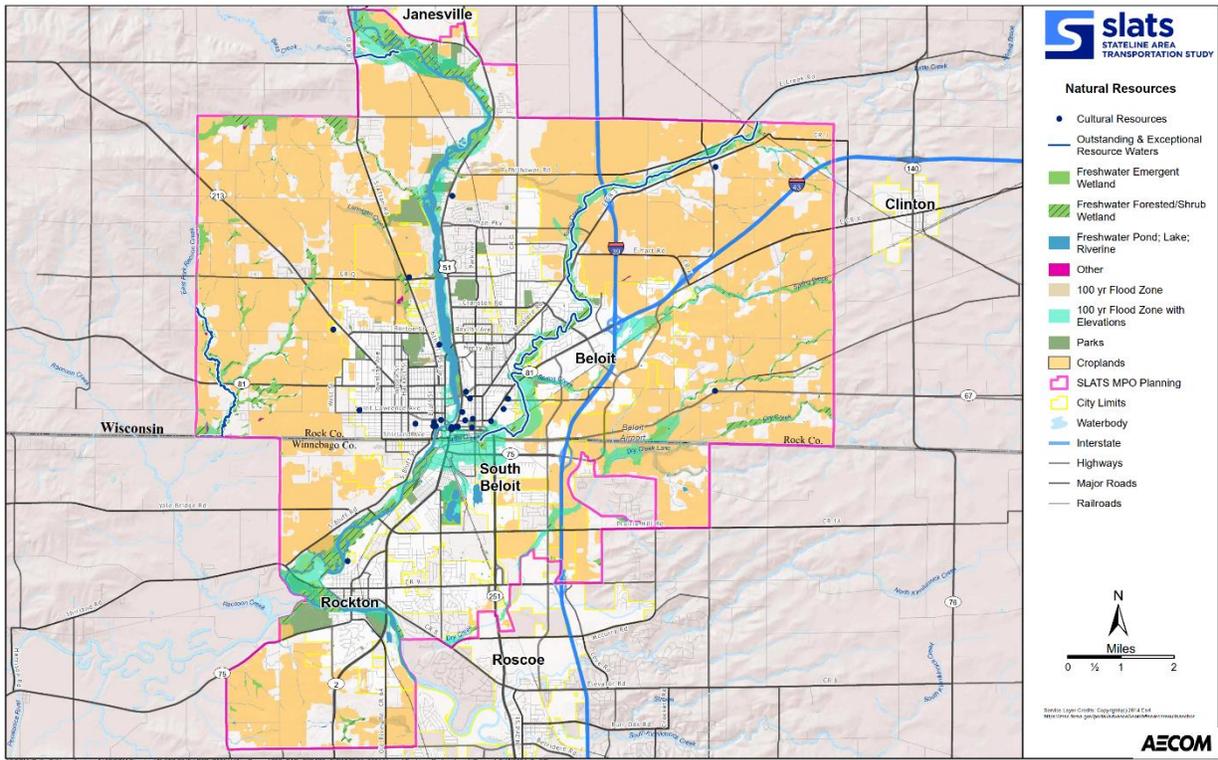
Environmentally Sensitive Areas

Figure 1 displays an overview of the natural resources, and environmentally sensitive areas, within the SLATS MPA. Known superfund sites and cropland/farmland are also identified. The resources identified for the environmental mitigation analysis include the following:



The mapping of this data, in relationship to the LRTP fiscally constrained projects, allows for a high-level review of the projects to identify potential environmental concerns early in the planning process. It is not the intent of the LRTP analysis to solve potential issues, or conflicts, that might be identified. If a potential impact is identified, general guidelines can, and should, be introduced for agency consideration during all phases of project planning, design, construction, and maintenance.

FIGURE 1. NATURAL RESOURCES



Air Quality

The SLATS MPA is located in a non-classified area as defined by the Environmental Protection Agency through the Clean Air Act. This means that the area complies with the National Ambient Air Quality Standards and an air quality analysis is not required as part of the 2045 LRTP update.

Climate Change

Addressing climate change is warranted as part of the LRTP environmental discussion. Generally speaking, the transportation sector is recognized as a major contributor of greenhouse gas (GHG) emissions which directly influences climate change. Carbon dioxide (CO2) and nitrous oxide (NO2) are emissions that are consistent with increased fossil fuel use for generating electricity and transportation. It is generally acknowledged that one of the most effective approaches to reduce CO2 and NO2 emissions is reduce automobile travel, and in particular single occupancy vehicle trips. In order for this to occur, the regional transportation system must have the appropriate infrastructure to support alternative transportation modes – namely public transit service, bicycle facilities, and pedestrian facilities.

The discussion of GHG emissions also crosses over into a health concern as poor air quality can have impacts on the region’s quality of life. According to the United States Environmental Protection Agency, climate change is expected to have negative impacts on human health. The Climate Impacts in the Midwest (<https://climatechange.chicago.gov/climate-impacts/climate-impacts-midwest>) report states:

In the Midwest, climate change is expected to negatively affect human health in a variety of ways and exacerbate existing health challenges. Major heat waves have been occurring more frequently across this region

for many decades, resulting in increased deaths during these extreme events. Heat stress is likely to increase in the future as a result of continued rises in temperatures and humidity in this region, resulting in more heat-related deaths and illnesses. Air quality is already poor in parts of the Midwest and is projected to worsen with rising temperatures. Increased exposure to allergens caused by the lengthening of the pollen season is also expected to negatively impact human health. Warmer temperatures and changes in precipitation could increase the risk of exposure to diseases carried by insects and rodents. Drinking water quality may also decline as a result of heavier rainfall events.

The report continues with a discussion of the impact climate change may have on water resources. The report continues:

Precipitation in the Midwest is expected become more intense, leading to increased flood damage, strained drainage systems, and reduced drinking water availability. Midwestern cities with impervious infrastructure may result in surface runoff entering combined storm and sewage drainage systems. When these systems are overloaded during intense rainstorms, raw sewage overflow can result, impacting clean water availability and human health.

More heavy downpours may increase the likelihood of property damage, travel delays, and disruption in services. Sediment runoff and erosion may clog reservoirs and reduce storage capacity. Local governments may invest in new infrastructure to prevent contamination and protect water resources.

SLATS recognizes that the 2045 LRTP can have a positive impact on reducing GHG emissions within the region. As emphasized in the LRTP guiding principles (see Chapter 6 of the SLATS LRTP), SLATS is committed to investing in alternative transportation modes – including advancing complete streets principles which in some cases may repurpose a portion of the roadway cross section to accommodate bicycle facilities. The SLATS LRTP goals also include an objective to specifically support the reduction of automobile travel in the region. Any action that enhances bicycle connections, and improves safety, potentially encourages the increased use of alternative modes and reduces vehicular travel. While the impact from this type of mode shift may be small, it still has a positive impact on addressing climate change.

Along these same lines, investing in emerging technologies, including alternative fuels and electric charging stations, could help the region move the needle in a positive direction. Current estimates suggest there are 280 million cars and trucks on the road in the US today, of which only three percent are electric. However, there are an increasing number of manufactures that are producing electric vehicles and President Biden’s administration has set an ambition goal to cut carbon emissions in half by 2030.

Also, at the time this LRTP was being developed, the US Congress was working on a bipartisan infrastructure deal that would make it easier for Americans to buy and own an electric vehicle. While details could change, the current bill includes \$7.5 billion to build half a million electric vehicle chargers across the country. Expanding the charging stations will create a more dependable charging network which is likely to boost electric vehicle sales in the US over the next decade.

Additional discussion of emerging technology is provided in **Chapter 7** of the SLATS LRTP, as well as in **Appendix E**.

Resiliency

Related to the climate change discussion is the concept of resiliency. FAST Act identifies the need to consider resiliency during the transportation planning process. Specifically, the LRTP should consider potential opportunities to improve the resilience and reliability of the transportation system, especially given the essential link to supporting economic prosperity and quality of life of communities. Generally

defined, resilience is the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.

As part of the SLATS 2045 LRTP update, a new resiliency objective was added to the system preservation goal. The objective supports opportunities to quickly recover after a natural event occurs. For example, as discussed under climate change, rainfall, and rain intensity, have been increasing in the Midwest region. As such, there are some communities in the region that face challenges with stormwater runoff, including some that have issues with portions of roadways washing away. It is important to have alternative travel options available should weather events cause potential roadway closures. This is part of the reasoning behind stressing the importance of enhancing east-west regional connectivity, and the need to monitor regional travel patterns especially given the limited number of Rock River bridge crossings in the region.

Related to this discussion is the need to conserve a sufficient amount of open space in the region. As such, SLATS added an objective that emphasizes preserving open space and natural amenities. In doing so, this can help accommodate stormwater runoff which is an issue that needs be considered under FAST Act. Furthermore, stormwater runoff considerations should be incorporated in more detailed planning, design and engineering activities that take place after the LRTP high-level planning discussion.

Security

According to the U.S. DOT, security is defined as freedom from intentional harm and tampering that affects both motorized and non-motorized travelers and may also include natural disasters. The primary focus of the SLATS 2045 LRTP is related to natural disasters, or hazards. In planning the future SLATS transportation network, it is important to be consistent with the recommendations contained in the Rock County Hazard Mitigation Plan (2017), and the Winnebago County, Illinois Multi-Hazard Mitigation Plan (2019).

The concept of addressing security is also very much related to resiliency, and the ability to quickly recover from natural disasters that could include:

- Overbank flooding
- Local drainage issues
- Tornadoes
- Earthquakes
- Winter storms
- Thunderstorms
- Drought / heat
- Wildfire

While tornadoes are likely to be the most destructive, winter storms are consistently more disruptive on a regular basis and more costly to local governments than the other hazards. Communities within the MPA along the Pecatonica River and Turtle Creek are considered to be most affected by overbank flooding. In Wisconsin, these communities include the City of Beloit, Town of Turtle, and the Town of Beloit. In Illinois, affected areas include the City of South Beloit, Rockton Township, and the Village of Rockton. Repetitive flood losses also occur, but almost exclusively along the Rock River. Given the potential for flooding in these areas, facility improvements such as increasing roadway or trail elevation and designing for appropriate drainage can help reduce the impact of flooding.

As it relates to the SLATS 2045 LRTP fiscally constrained projects, Gardner Street, from Blackhawk Boulevard (IL 2) to IL 251, is located in the 100-year floodplain. Blackhawk Boulevard is also currently being studied by IDOT and the recommended design/improvement should address the bridge over Turtle Creek to alleviate flooding. This bridge has a relatively short span which could in part be contributing to the flooding that occurs in this area. The recommended improvements to Blackhawk Boulevard should incorporate a bridge reconstruction that includes an appropriate (longer) span to accommodate a larger channel for Turtle Creek, potentially reducing the flooding impacts on areas upstream in South Beloit. This bridge improvement could also help minimize potential flooding events that could potentially impact traffic operations along Gardner Street. Ultimately, improving the Blackhawk Boulevard bridge could have significant positive economic benefits for the development / redevelopment in downtown South Beloit.

Environmental Mitigation Analysis

The approximate limits of the fiscally constrained 2045 LRTP projects were overlaid on top of the natural resources to identify potential environmental impacts. As stated previously, this is conducted at a high-level and is not intended to provide a solution if a potential impact is identified. The primary focus of this high-level analysis is to identify any potential fatal flaws, as well as identifying potential concerns early in the planning process so issues can be studied in greater detail as projects advance through the programming, design, and construction phases. **Figure 2** displays the fiscally constrained LRTP projects in proximity to the natural resources. **Table 1** summarizes the potential, or notable, environmental concerns as they relate to the fiscally constrained projects.

FIGURE 2. ENVIRONMENTAL MITIGATION ANALYSIS (NATURAL RESOURCES) – FISCALLY CONSTRAINED PROJECTS

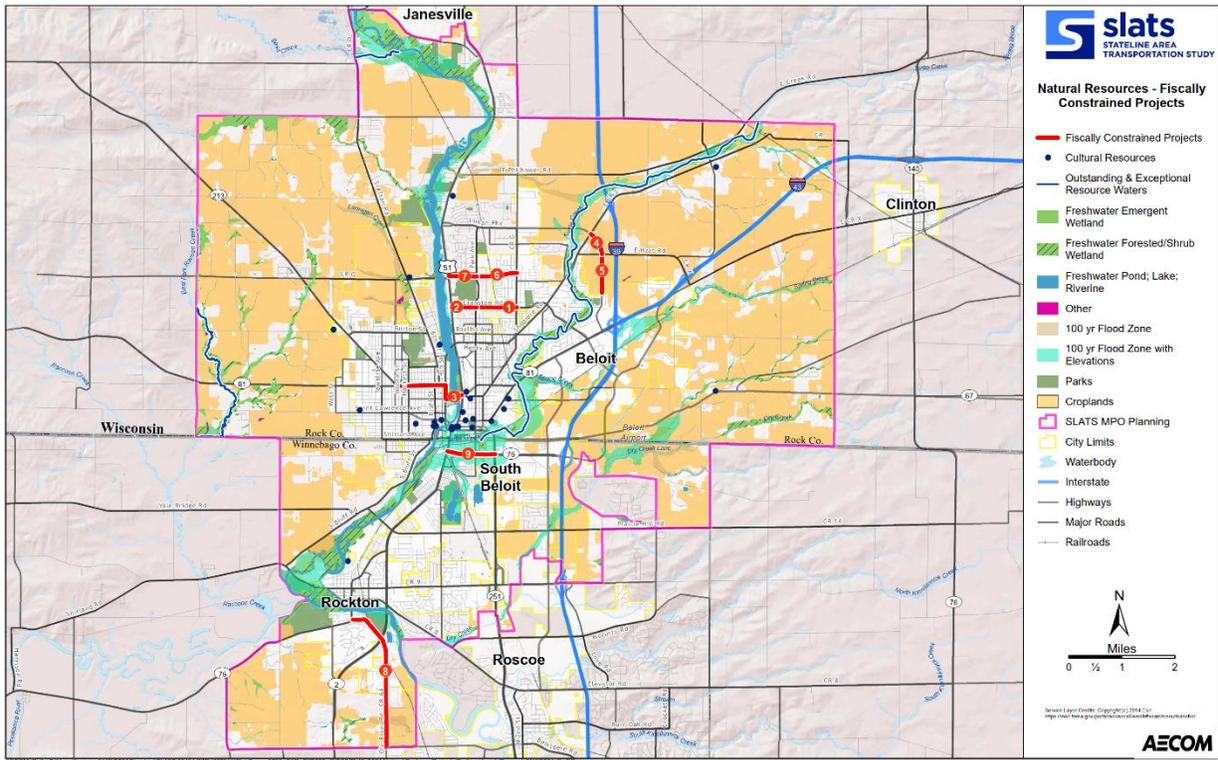


TABLE 1. ENVIRONMENTAL MITIGATION ANALYSIS SUMMARY

Fiscally Constrained Roadway/Freight Project	Potential / Notable Environmental Concerns
1 Cranston Road – Phase 1 (Park Avenue to Prairie Avenue) – FY 2025	No adverse impacts identified. The project supports the use of alternative transportation as it includes repurposing a portion of the roadway cross section to accommodate bicycles.
2 Cranston Road – Phase 2 (Riverside Drive to Park Avenue) – FY 2027 / 2029	No adverse impacts identified. The project supports the use of alternative transportation as it includes repurposing a portion of the roadway cross section to accommodate bicycles.
3 Liberty Avenue / 4th Street / Portland Avenue – FY 2027	No adverse impacts identified. The study could include potential enhancements near, or crossing, the Rock River but the anticipated improvements are not expected to impact the natural resources/environment.
4 BT Extension – Phase 1 (S to approx. 200 feet south of Hart) – FY 2029	The extension will be constructed in an area that is currently cropland/farmland; however, this is an area this is experiencing growth and is part of the regions overall growth plan. Appropriate actions should be considered with additional studies to avoid or mitigate any potential environmental impacts.
5 BT Extension – Phase 2 (200 feet south of Hart to Winchester) – FY 2031	The extension will be constructed in an area that is currently cropland/farmland; however, this is an area this is experiencing growth and is part of the regions overall growth plan. Appropriate actions should be considered with additional studies to avoid or mitigate any potential environmental impacts.
6 Elmwood Avenue – Phase 1 (Riverside Drive to Park) – FY 2033	No adverse impacts identified. The project does involve a potential intersection realignment near Riverside Drive which could include right-of-way acquisition but no environmental issues are currently identified.
7 Elmwood Avenue – Phase 2 (Park to Prairie) – 2035	No adverse impacts identified. This project may have some limited right-of-way impacts and appropriate stormwater drainage should be incorporated into the project design and engineering.
8 Old River Road – (IL-75 to Roscoe Road) – FY 2024	The northern portion of this project runs near a park and floodplain. Appropriate design considerations should be considered to avoid or minimize potential flooding of the roadway, and bicycle facility.
9 Gardner Street – Phase 1 (FY 2028) and Phase 2 (FY 2032); the limits of phase 1 and phase 2 to be determined.	This project is located within the 100-year floodplain and this should be taken into account as during planning, design, and engineering. Mitigation measures should be put in place to eliminate or minimize the potential impacts on the roadway network.

Source: AECOM (2021)

Environmental Mitigation Planning Guidance

The identification of a potential impact does not mean that the project cannot advance for further study, or eventually be implemented. Having identified potential impacts, planning guidelines can be introduced for agency consideration during all phases of project planning, design, construction, and maintenance.

From a high-level perspective, the 2045 LRTP projects should be analyzed more closely as they move further into the stages of project development to determine whether negative environmental impacts will be realized by the surrounding area. SLATS will use the environmental mitigation analysis information as a guide to consult with the appropriate local, state, and federal agencies to minimize the impact the transportation projects may have on the environment.

The guidelines for evaluating potential impacts to sensitive resources establish a three-step approach, commonly called sequencing. The first step is to avoid the resource whenever or wherever possible. If a sensitive resource cannot be avoided, then the second step is to minimize the impact to the greatest extent possible. The third step is to consider compensatory mitigation to offset harm to the resource from those impacts that remain after steps one and two.

Regardless of the type of project or the resource that may be impacted, the guidelines deserve consideration during the planning, design, construction, and maintenance of the recommended projects. Finally, it is important to note that SLATS can only recommend these guidelines be followed by the implementing agencies during the project planning and development process. These “best practice” guidelines are provided for reference and will help ensure good planning practices that will assist in the overall quality of the area’s environment.

Planning & Design Guidelines

- Utilize Context Sensitive Solutions (CSS) throughout the planning and project development process. CSS identifies the physical, visual, and social context in which a project is situated while involving all stakeholders in a collaborative process in developing transportation projects.
- Identify the area of potential impact as it relates to each transportation project, including the immediate project area as well as related project development areas.
- Continue to update the environmental sensitive inventory to determine if any of the identified resources may be impacted by proposed projects.
- Coordinate with the Rock County and Winnebago Hazard Mitigation Plans as appropriate.
- Coordinate the transportation projects with local comprehensive and master plans, watershed management plans, recreation and non-motorized plans, etc.
- Prior to project construction, collaborate with local community officials, contractors, and other relevant stakeholders to review and discuss environmental issues and goals.
- If it all possible, avoid impacts to environmental resources through project design and/or through the implementation of all possible mitigation measures.
- Incorporate stormwater and erosion control management into the project design. The emphasis on better stormwater management is also a new focus area of FAST Act.
- Upgrade to current Americans with Disabilities Act of 1990 (ADA) standards for any sidewalks that are within right of way and the project construction limits.
- The FAST Act now requires agencies to take resiliency into consideration during transportation planning processes. As a result, SLATS should consider ways to protect, preserve, and improve their assets in the face of increasing climate change and extreme weather events. As an example, agencies may want to approach development within floodplains from a different perspective to address more frequent flooding events. Additional guidance can be found at <https://www.fhwa.dot.gov/environment/sustainability/resilience/>

Construction & Maintenance Guidelines

- Include all special requirements that address environmentally sensitive resources into plans and estimates used by contractors and subcontractors. Specifically identify/highlight the types of activities that are not appropriate in environmentally sensitive areas.
- Minimize the size of the construction and staging area with clearly marked boundaries using fencing or flagging around sensitive areas as necessary to prevent intrusions.
- Use the least intrusive construction materials and techniques.
- Avoid disturbing the construction site as much as possible by:
 - Protecting established vegetation and natural habitat. If disruption is unavoidable, replace with native species as soon as possible.
 - Implementing sediment and soil erosion control measures as required.
 - Not stockpiling materials in sensitive areas.
 - Protecting water quality by controlling direct runoff, sweeping streets to reduce sediment, implement salt management techniques, and control storm water drains from construction debris.
 - Protecting cultural and historic resources.
 - Minimizing noise and vibration.
 - Providing for solid waste disposal.
 - Conducting on-site monitoring during and after construction to ensure protection of environmental resources as planned.
 - Maintaining equipment in good working condition and avoid fueling or maintenance near environmentally sensitive areas.
 - Reducing land disturbances through the efficient organization of construction activities.

Environmental Mitigation Conclusion

Following a review of the 2045 LRTP fiscally constrained roadway/freight projects, SLATS believes there are no significant environmental concerns associated with the recommended improvements. As previously discussed, the BT Extension will be constructed in area designated as cropland/farmland; however, this project is consistent with future growth plans and no environmental concerns are currently identified. Elmwood Avenue is likely to have some right-of-way impacts that will need to be studied in more detail with preliminary design and engineering; however, at this time there are no significant environmental impacts that have been identified.

It is also worth noting that the majority of the recommended fiscally constrained projects occur within the existing roadway right-of-way and do not include capacity improvements (i.e., such as widening an existing roadway). As such, these projects are less likely to negatively impact the surrounding area and the environment. Furthermore, it is SLATS policy to ensure that all projects incorporate complete streets principles, and most will include bicycle and pedestrian accommodations (the BT Extension, as a new roadway construction, will be evaluated to identify appropriate non-motorized accommodations). SLATS on-going support to incorporate non-motorized accommodations into roadway projects, as well as continued support to implement the regional Pedestrian and Bicycle Plan, are actions that have a positive impact on the environment, promote healthy lifestyles, and improve overall quality of life for area residents.