Chapter Five

Transportation Deficiencies, Issues, and Projects

Bay County Road Commission
City of Bay City
City of Essexville
Michigan Department of Transportation
Bay Metro Transit Authority
Transit Project List
Adopted Project List
Environmental Mitigation

Transportation Deficiencies, Issues, and Projects

The center or focus of the Metropolitan Transportation Plan is a list of specific projects, which have been developed by BCATS. Each project must meet an identified transportation need, primarily addressing capacity and maintenance deficiencies and improving safety. Under SAFETEA-LU guidelines, each project must be fundable within anticipated financial resources.

The following is a list of projects that may be programmed into the Transportation Improvement Program (TIP):

A. Identified capacity deficiencies from the 2009 transportation network loaded with 2009 traffic volumes (existing problem areas).

B. Identified capacity deficiencies from the 2040 transportation network loaded with 2040 traffic volumes (expected future problem areas).

C. Maintenance type deficiencies (reconstruction or resurfacing needs) identified from ongoing pavement management practices of the implementing agencies and BCATS.

D. Intersections identified as having existing or potential capacity or safety related issues from review of accident data or lane capacity analysis.

E. Area wide or system wide issues or potential projects needing transportation systems management solutions or further study, which may include transportation enhancement and/or other intermodal solution.

The major priority is roadway repair and preservation. There are approximately 202.4 miles of federal-aid routes within the BCATS urbanized area. About 129.7 miles are under local jurisdiction and about 73.7 miles are under state jurisdiction. BCATS, through funding from the Transportation Asset Management Council (TAMC), has rated the condition of these roadways since 2003. Working closely with the road agencies, pavement management practices are reviewed. As of February 2012, approximate 35% of BCATS federal aid eligible roads are in Good to Excellent condition, 34% in Fair condition and 31% are in Poor condition.

If the goal is to upgrade the pavement condition of these roadways so that 75% are rated good or excellent by 2022, then funding levels for all agencies would need to be at least double what is currently being spent annually on capital improvement to reach that goal.

Deficiency Ratings by Agency in the GLBR Travel Demand Model: 2040

Bay County Road Commission

2009 CAPACITY DEFICIENCIES

- AM Peak deficiency
  1. Mackinaw Rd – US-10 and Tech Dr (V/C: 1.03)
  2. Wilder Rd – State Park Dr to Bay City Mall approaching capacity (V/C: 0.87)

- PM Peak deficiency (none identified)
  1. Mackinaw Rd – US-10 and Tech Dr approaching capacity (V/C: 0.95)
  2. Wilder Rd – State Park Dr to Bay City Mall approaching capacity (V/C: 0.83)

2040 CAPACITY DEFICIENCIES

- AM Peak deficiency
  1. Mackinaw Rd – US-10 and Tech Dr (V/C:1.07); Addition of Center Turn Lane (V/C: 0.99)
  2. Wilder Rd – State Park Dr to Bay City Mall approaching capacity (V/C: 0.87)

- PM Peak deficiency
  1. Mackinaw Rd – US-10 and Tech Dr approaching capacity (V/C: 0.99)
  2. Wilder Rd – State Park Dr to Bay City Mall approaching capacity (V/C: 0.83); Addition of Center Turn Lane on Trumbull St (V/C: 0.87)

Maintenance Deficiencies

Road Segments

Bangor Rd – Wheeler Rd to Donahue Beach Drive
Beaver Rd – Old Beaver Rd to Fraser Rd (I-75)
Chip Rd - Mackinaw Rd to Fraser Street (Kawkawlin)
Erickson Rd – Seven Mile Rd to Eight Mile Rd
Euclid Avenue - M-84 to Hotchkiss Rd
German Rd – M-15 to S. Trumbull Rd
Killarney Beach Rd - North of Euclid Avenue
Linwood Rd – M-13 to Seven Mile Rd
Mackinaw Rd – Prevo Rd to Anderson Rd; Delta Rd to Freeland Rd
Midland Rd - Mackinaw Rd to Three Mile Rd

Monitor Rd – Wheeler Rd to Grove Street (Kawkawlin)
North Union Rd- Monitor Rd to Euclid Avenue
Old Kawkawlin Rd - M-13 to State Park Drive
Patterson Rd – Wilder Rd to Wheeler Rd
Pine Rd – Cass Avenue to Youngs Ditch
Ridge Rd - Bay City Limits to Scheurmann Rd
Salzburg Rd – Three Mile Rd to Mackinaw Rd
Scheurmann Rd - Youngs Ditch Rd to M-25
Seven Mile Rd – Salzburg Rd to Midland Rd; Beaver Rd to River Rd; Prevo Rd to Anderson Rd
Shady Shores Drive - Patterson Rd to Saginaw River
Three Mile Rd - M-84 to Amelith Rd; Wilder Rd to Midland Rd
Trumbull Street - 22nd Street to North of Cass Avenue
Weadock Highway/Pine Rd -Railroad Crossing to Karn-Weadock Power Plant
Wilder Rd - Patterson Rd to Tiernan Rd
Youngs Ditch – Pine Rd to Knight Rd
Zimmer Rd – Bangor Rd to Patterson Rd

Intersections
Pine Road / Youngs Ditch (safety, capacity)
Ridge Road / Scheurmann Road (realignment)
Truman Parkway / Wilder Road (safety*, channelization)
Two Mile Road / Wilder Road (safety*)

*Safety issues were determined by crash history, alignment, local knowledge and/or design deficiencies.

Bridges
Chip Road over the Kawkawlin River
Mackinaw Road over the Kawkawlin River
Midland Road over the Culver Creek
Wheeler Road over the Kawkawlin River

Issues
Access Management
All-season roadway network (truck related)
Changing land-use impacts on transportation facilities
Closing of Monitor Road south of Wilder Rd and diverting traffic to Bay-Arenac Dr
Interconnection of traffic signals along all corridors
Railroad crossings (at grade)
Providing Paved Shoulder
County Drains adjacent to County Roads

City of Bay City

2009 CAPACITY DEFICIENCIES

- AM Peak
  1. N. Water –Woodside to Essexville city limits (V/C: 1.18)
  2. Trumbull St – Woodside Ave to M-25 (V/C: 1.15)
  3. Kosciuszko St – Michigan Ave to Lincoln St (V/C: 1.05)
  4. Midland St – Euclid to Wenona, approaching capacity (V/C: 0.98)
- PM Peak
  1. Trumbull St – Woodside Ave to M-25 (V/C: 1.09)
  2. N. Water – Woodside to Essexville city limits (V/C: 1.08)
  3. Midland St – Euclid to Wenona, approaching capacity (V/C: 0.94)
  4. Kosciuszko St – Michigan Ave to Lincoln St approaching capacity (V/C: 0.83)

2040 CAPACITY DEFICIENCIES

- AM Peak
  1. N. Water –Woodside to Essexville city limits (V/C: 1.21)
  2. Trumbull St – Woodside Ave to M-25 (V/C: 1.16); with center turn lane (V/C < 0.8)
  3. Kosciuszko St – Michigan Ave to Lincoln St (V/C: 1.1)
  4. Midland St – Euclid to Wenona, approaching capacity (V/C: 0.97)
- PM Peak
  5. N. Water – Woodside to Essexville city limits (V/C: 1.07)
  6. Trumbull St – Woodside Ave to M-25 (V/C: 1.04); with center turn lane (V/C < 0.8)
  7. Midland St – Euclid to Wenona, approaching capacity (V/C: 0.92)
  8. Kosciuszko St – Michigan Ave to Lincoln St approaching capacity (V/C: 0.87)

Maintenance Deficiencies

Segments

- Smith St: State St to Patterson St
- Bangor St: Wilder Rd to Marquette Ave
- State St: Wilder Rd to Elm St
- Marquette Ave: Hart St to Transit St
- Patterson St: Smith St to Marquette Ave
- E North Union St: Henry St to State St
- Wenona Ave: Ionia Ave to North Union St
- Midland St: Euclid Ave to Wenona Ave (Resurfacing); Henry St to Litchfield Ramp
- Midland And Vermont St: Wenona St to Walnut St (Resurfacing)
- Marquette Ramp: Liberty Bridge to Marquette Ave (Joint Repairs)
- Henry St: Vermont St to Thomas St (M-25 EB)
- Walnut St: north of Veteran Bridge to Fisher St
- Fisher St: Euclid Ave to Walnut St

- Ionia Ave: Euclid Ave to Henry St
- Wenona Ave: Salzburg Ave to Ivy St (reconstruction planned for 2013 as part of M-13/M-84 project)
- Backus St: Euclid Ave to Morton St
- Morton St: Salzburg Ave (M-13/M-84) to Backus St
- N Water St: Woodside Ave to Atlantic St
- Woodside Ave: McEwen to Truman Parkway (Joint Repairs)
- Trumbull St: Woodside to M-25; 10th St to South City Limits
- Johnson St: North of Woodside; 3rd St to Center; Center to Columbus; 15th St to 22nd St
- 3rd St; Water St to Saginaw St; Washington Ave to Adams St; Madison Ave to Grant St
- 5th St: Water St to Madison Ave
- Center Ave: Water St to Madison Ave
- 6th St: Water St to Washington Ave
- Washington Ave: Woodside Ave to 7th St (Resurfacing, streetscape)
- Saginaw St: 3rd St to 10th St
- Water St: 3rd St to Center Ave
- Lincoln St: Woodside Ave to 1st St; 18th St to Cass Ave
- Madison Ave: Woodside Ave to Center Ave (Resurfacing); McKinley St to Columbus Ave
- Lafayette Ave: Garfield Ave to Michigan Ave (Resurfacing)
- Fremont Ave: Water St to Lincoln St
- Cass Ave: Water St to Michigan Ave
- McGraw St: Water St to Michigan Ave

Intersections

- Vermont / Walnut (capacity)
- Henry / Vermont (capacity and timing)
- State / Wilder (capacity)
- Woodside/Trumbull (safety)

Issues

- Railtrail crossings
- Operation and maintenance of moveable bridges
- Mast-arm signal replacements
- Interconnection of traffic signals along various corridors
- All season roadway network (truck related)
- Access Management
- Land-use impacts on transportation facilities
- Traffic signal removal at unwarranted locations
- Center Avenue Historic Heritage Route
- Trumbull St/M-15/Wilder Rd Corridor Study
- Establishment of Bicycle Routes on the existing roads

City of Essexville

2009 CAPACITY DEFICIENCIES

- AM Peak
    1. Borton Ave –East of Woodside to N Water St approaching capacity (V/C: 0.81)

- PM Peak
    1. Borton Ave –East of Woodside to N Water St approaching capacity (V/C: 0.85)

2040 CAPACITY DEFICIENCIES WITH LISTED PROJECTS

- AM Peak
    1. Borton Ave –East of Woodside to N Water St approaching capacity (V/C: 0.87)

- PM Peak
    1. Borton Ave –East of Woodside to N Water St approaching capacity (V/C: 0.84)

Maintenance Deficiencies

Segments

- Woodside Avenue - Scheurmann St to Pine St

Intersections

- Woodside Ave & Scheurmann St
- Woodside Ave & Main St

Issues

- Streetscaping along all federal-aid routes
- Intermodal connection to port facilities
- Access Management
- Transportation facilities needed as a result of changing land-uses
- Transportation Enhancement and local Safety projects
- All-season roadway network (truck related)
- Railroad crossing at Woodside and ‘Y’ junction
- Establishment of Bicycle Routes on the existing roads

Michigan Department of Transportation

2009 CAPACITY DEFICIENCIES

- AM Peak
  1. M-13/M-84 Salzburg Ave and Lafayette Bridge – Euclid to Water St(V/C: 1.39)
  2. M-13/M-84 Lafayette Street – Water to Garfield Ave (V/C: 1.19)
  3. M-25 (Veterans Memorial Bridge), approaching capacity (V/C: 0.86)

- PM Peak
  1. M-13/M-84 Salzburg Ave and Lafayette Bridge – Euclid to Water (V/C: 1.37)
  2. M-13/M-84 Lafayette Street – Water to Garfield Ave (V/C: 1.11)

2040 CAPACITY DEFICIENCIES WITH LISTED PROJECTS

- AM Peak
  1. M-13/M-84 Salzburg Ave – Euclid Ave to Wenona Ave (V/C: 1.4); with addition of Center Turn Lane (V/C: < 0.8)
  2. M-13/M-84 Lafayette Bridge – Wenona to Water St (V/C: 1.39)
  3. M-13/M-84 Lafayette Street – Water to Garfield Ave (V/C: 1.19)
  4. M-25 (Veterans Memorial Bridge), approaching capacity (V/C: 0.95)

- PM Peak
  1. M-13/M-84 Salzburg Ave – Euclid Ave to Wenona Ave (V/C: 1.24); with addition of Center Turn Lane (V/C: < 0.8)
  2. M-13/M-84 Lafayette Bridge – Wenona Ave to Water St (V/C: 1.33)
  3. M-13/M-84 Lafayette Street – Water to Garfield Ave (V/C: 1.11)

Maintenance Deficiencies

Segments

- M-13/M-84 (Salzburg Ave): (Reconstruction planned for 2013)
- M-84: M-25 to 15th St (Concrete Road)
- M-84: 15th St to Lafayette Ave (Asphalt Road)
- M-84: Delta Rd to Euclid Ave
- US-10: I-75 to Midland

Intersections

- US-10 and Mackinaw Rd Interchange
- M-84 and Lafayette / Garfield
- M-13/M-84 and Lafayette / Broadway
- M-13 (Euclid Ave) / M-84 Salzburg (safety, capacity)

- M-13/I-75 Connector at Wilder Rd and Monitor Rd (capacity, safety)
- Signal progression at intersections along M-25 and M-13 corridors

Issues

- US-10 & Mackinaw Rd road interchange (operational/capacity)
- US-10 & Garfield Rd road interchange (relocation of Fisher Rd and safety-line of sight)
  - Outside of the BCATS area but has significant impact to the transportation network as the route to the regional Airport
- See State Long Range Transportation Plan Strategies, Appendix A. regarding highway, bridge, truck, carpool, access management, ridesharing, non-motorized, public transportation, regional rail, intercity bus, air, marine and intercity rail issues.

Bay Metro Transit Authority Projects

Vehicle Replacement

Bay Metro currently operates 47 buses and 18 vans. The estimated useful life for the smaller buses is seven years, for the medium buses is 10 years, and for the larger buses is 12 years. Useful life for vans is four years or 100,000 miles. Due to the significant effort placed on maintaining the fleet, the useful lives of BMTA vehicles are typically extended as follows:

Small buses: seven years extended to 15-18 years
Medium buses: 10 years extended to 18-20 years
Large buses: 12 years extended to 18-20 years
Vans: four years extended to 5-6 years

Based on these estimates, all 47 buses should be eligible to be replaced twice from fiscal year 2013 until the end date of the current Metropolitan Transportation Plan. Twelve of 18 BMTA vans will need to be replaced six times and six vans five times in this time frame, (see the Transit Projects table on the following page for more details).

Facilities

Our current facility which houses maintenance, operations and administrative functions of the transit system is 56,000 square feet and was completed in 1981 at a cost of $3.5 million. The building is presently 32 years old but is in very good condition and should continue to be functional for many more years. However, it will be reasonable to consider either a major renovation or building replacement during the term of the Metropolitan Transportation Plan terminating in the year 2040. The facility will reach 40 years of age in the year 2021 and planning for its replacement/ upgrade should have begun by that time. Assuming a building of similar size and function the cost estimate (for a new building) would be about $15,000,000 in 2021.

The intermodal central bus station, located in downtown Bay City, serves both the local transit system and intercity carriers. It was completed in 1991. Constant bus traffic, especially by the much heavier intercity coaches, takes a significant toll on the pavement. Concrete drives on the site have already been replaced one time at a cost of about $250,000. It is expected that replacement will need to be done about every 15 years with the next replacement occurring about 2015 at an estimated cost of $300,000. The next concrete replacement would occur in 2030 in conjunction with the replacement of the terminal itself. The terminal is relatively small, about 2,500 square feet, most of which is a glass enclosed lobby. A renovation has occurred in 2012; however, another major renovation will likely be necessary during the term of the Metropolitan Transportation Plan. The initial cost of construction (for the building alone) was about $500,000. A major renovation, tentative scheduled for 2030, should only cost in the neighborhood of $250,000, since smaller facility maintenance projects will take place along the way. For instance, a new roof was installed six years ago and a new heating/cooling system was installed about seven years ago.

Transit Projects

Year	Vehicle to be Replaced	Number of Vehicles	Cost Per Vehicle (5% increase/yr)	Total
2013-2018	Lift Vans	18	$57,000	$1,026,000
2013	1994 Orion II2013	4	$330,000	$1,320,000
2014	1996 Orion II2014	6	$347,000	$2,082,000
2015	1998 Orion II2015	9	$365,000	$3,285,000
2015	Central Bus Station Concrete Drive Replacement	1	$300,000	$300,000
2016	1999 Orion II2016	4	$384,000	$1,536,000
2017	2000 Orion II2017	3	$404,000	$1,212,000
2019-2024	Lift Vans	18	$60,000	$1,080,000
2019	2002 Gillig2019 (40ft.)	3	$500,000	$1,500,000
2019	2002 Gillig2019 (30 ft.)	7	$425,000	$2,975,000
2020	2007 Thomas2020	3	$447,000	$1,341,000
2020-2025	Lift Vans	18	$70,000	$1,260,000
2021	2008 Thomas2021	4	$470,000	$1,880,000
2021	Maintenance & Administration Building Replacement	1	$15,000,000	$15,000,000
2026	2011 Gillig2026 (30 ft.)	4	$494,000	$1,976,000
2026-2031	Lift Vans	18	$63,000	$1,134,000
2027	2013 Replacement	4	$519,000	$2,076,000
2028	2014 Replacement	6	$545,000	$3,270,000
2029	2015 Replacement	9	$573,000	$5,157,000
2030	2016 Replacement	4	$607,000	$2,428,000
2030	Central Bus Station Renovation	1	$250,000	$250,000
2031	2017 Replacement	3	$638,000	$1,914,000
2032-2037	Lift Vans	18	$67,000	$1,206,000
2036	2019 Replacement (40 ft.)	3	$710,000	$2,130,000
2036	2019 Replacement (30 ft.)	7	$670,000	$4,690,000
2037	2020 Replacement (30 ft.)	3	$704,000	$2,112,000
2038	2021 Replacement	4	$740,000	$2,960,000
2038-2040	Lift Vans	12 out of 18	$71,000	$852,000
	Replacement Totals	**195**		**$67,952,000**

Transportation Projects

The following transportation projects are specifically identified as part of this BCATS 2040 Plan. These projects have an identified source of funding, thus ensuring a financially constrained plan. Additional funding that is available after these projects are constructed is currently appropriated for operations and maintenance of the transportation network.

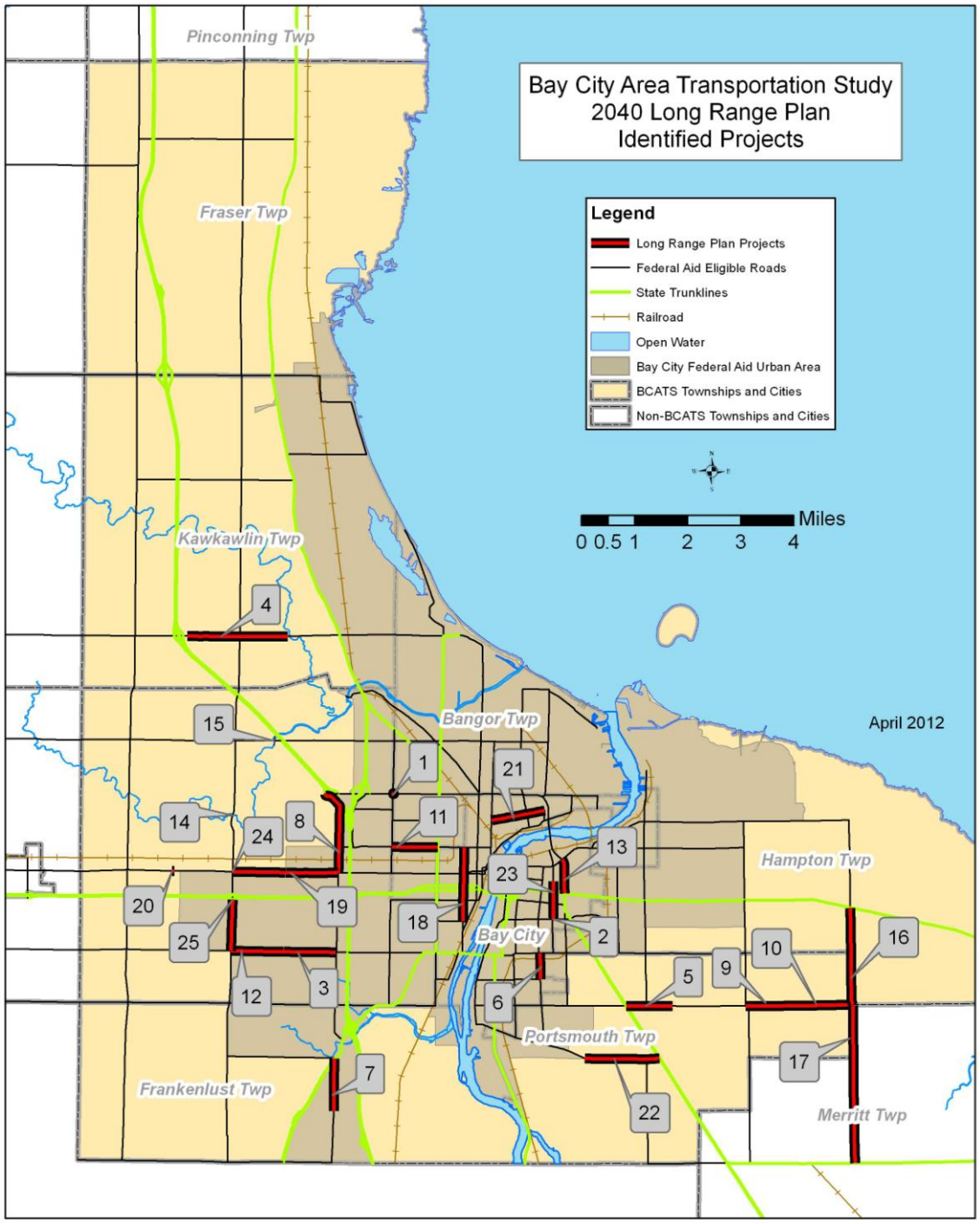
Project Number	Project	Location	Project Type	Length (mi.)	Year	Cost (x1000)
1	2 Mile Rd & Wilder Rd	Intersection Improvements	Left Turn Phase	0	2012	$100
2	Johnson St	Center Ave to Columbus Ave	Reconstruction	0.51	2012	$1,498
3	Salzburg Rd	3 Mile Rd to 4 Mile Rd	Crush & Shape	1	2012	$650
4	Beaver Rd*	Old Beaver Rd to Fraser Rd	Crush & Shape	2	2013	$710
5	Cass Ave*	M-15 to Southeast Boutell Rd	Crush & Shape	0.89	2013	$340
6	Lincoln St	22nd St to Fremont St	Reconstruction	0.49	2013	$1,471
7	3 Mile Rd	Amelith to M-84	Crush & Shape	0.99	2014	$550
8	3 Mile Rd	Wilder Rd to Midland Rd	Crush & Shape	1.64	2014	*$550*
9	Cass Ave*	Knight Rd to Finn Rd	Crush & Shape	1	2014	$410
10	Cass Ave*	Finn Rd to Farley Rd	Crush & Shape	1.03	2014	$410
11	North Union	2 Mile Rd to Euclid Ave	Crush & Shape	0.88	2014	$700
12	Salzburg Rd	4 Mile Rd to Mackinaw Rd	Crush & Shape	1	2014	$700
13	Trumbull St	Woodside Ave to M-25 (Center Ave)	Reconstruct and add center turn lane	0.53	2014	$2,000
14	Mackinaw Rd	Over Kawkawlin River	Bridge Rehabilitation	0	2015	$140
15	Wheeler Rd	Over Kawkawlin River	Bridge Rehabilitation	0	2015	$160
16	Farley Rd*	Cass to M-25	Resurface	1.95	2016	$350
17	Farley Rd*	Cass to M-138	Resurface	3	2016	$500
	2012-2016 Urban Project Totals					**$8,514**
	2012-2016 Totals					**$11,814**
	**Road segment is within BCATS, but outside the urbanized area.*					

The following transportation projects are specifically identified as part of this BCATS 2040 Plan. However, these projects have yet to have a specific funding source identified or year of construction.. Revenue estimates for this Plan indicates funding for these would be available in future years. Any additional funding that is available after these projects are constructed would be appropriated for operations and maintenance of the transportation network.

Project Number	Project	Location	Project Type	Length (mi.)	Year of Cost Estimate	Cost (x1000)
18	Wenona Ave	North Union St to Ionia	Reconstruction	1.397	2015	$4,240
19	Midland Rd	3 Mile Rd to 4 Mile Rd	Widen to 3 lanes	1	2016	$2,000
20	Midland Rd*	Over Culver Creek	Bridge Rehabilitation	0	2016	$500
21	Smith St	State St to Patterson St	Reconstruction	1.022	2016	$3,200
22	German Rd	M-15 to Bullock Rd	Crush & Shape	1.41	2017	$600
23	Johnson St	Center Ave to 3rd St	Reconstruction	0.21	2017	680
24	Midland Rd	4 Mile Rd to Mackinaw Rd	Widen to 3 lanes	1	2019	$2,300
25	Mackinaw Rd	US-10 to Delta	Widen to 3 Lanes	3.02	2020	$9,000
	2015-2020 Planned Urban Project Funding Source not specifically Identified					**$22,020**
	2015-2020 Totals					**$22,520**
	**Road segment is within BCATS, but outside the urbanized area.*					

In summary, more than $30.5 million ($8.5 million and $22 million from project tables above) are planned to be spent on urban road projects from 2012 to 2020. When compared to table 2, *Comparison of Estimated Revenue and Expenditure*, located in Chapter 7, it indicates that $51.6 million would be available for unassigned preservation and maintenance projects. This unallocated estimated revenue will go towards general rehabilitation/resurface projects not yet identified at this time to assist in the maintenance, preservation and efficiency of the existing BCATS transportation system.

The implementing agencies used an inflation factor of 3.3% per year in determining future cost projections.


Bay City Area Transportation Study
2040 Long Range Plan
Identified Projects
Legend
Long Range Plan Projects
Federal Aid Eligible Roads
State Trunklines
Railroad
Open Water
Bay City Federal Aid Urban Area
BCATS Townships and Cities
Non-BCATS Townships and Cities
Miles
0 0.5 1 2 3 4
April 2012
Pinconning Twp
Fraser Twp
Kawkawlin Twp
Bangor Twp
Hampton Twp
Bay City
Portsmouth Twp
Frankenlust Twp
Merritt Twp
1
2
3
4
5
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Environmental Mitigation

BCATS has inventoried the following Environmental Sensitive Resources in the BCATS area using Geographic Information System (GIS) technology along with local knowledge. Maps of these resources and the related Metropolitan Transportation Plan Projects can be seen on pages 49 & 50.

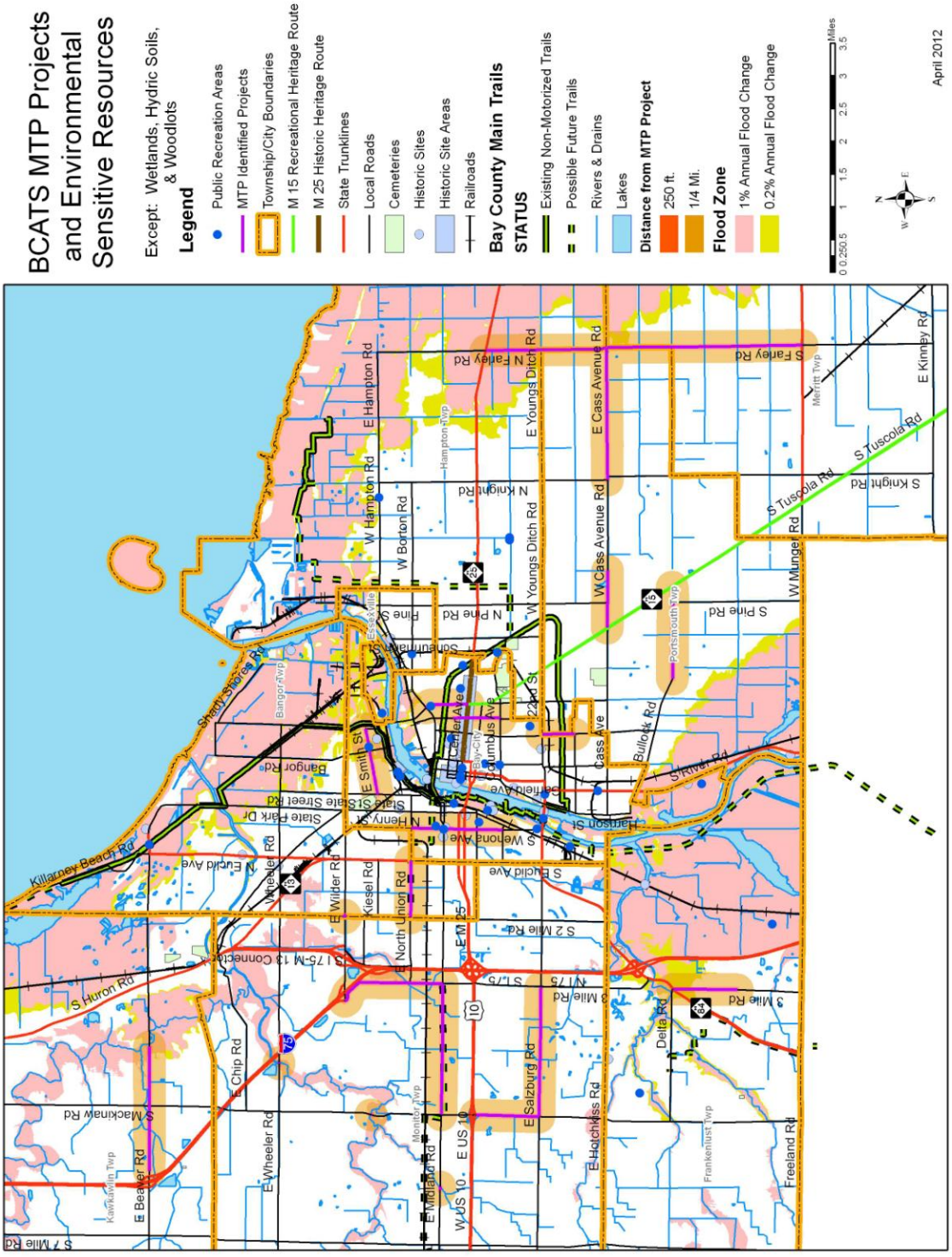
GIS Data Layers	Source
Flood prone areas	FEMA
Historic Sites	Bay County GIS, Nat. Register of Historic Places & Michigan Department of History, Arts and Libraries
Heritage routes	Bay County GIS & MDOT
Wetlands	Michigan Center for Shared Solutions
Cemeteries	Bay County GIS
Parks and Recreation Areas	Bay County GIS & Recreation Dept.
Lakes and Streams	Michigan Center for Shared Solutions
Woodland	Michigan Center for Shared Solutions - IFMAP/GAP
Non-motorized Trails	Bay County GIS & Saginaw Bay Greenways
Hydric Soils	Michigan Center for Shared Solutions & Bay County Soil Survey Manual

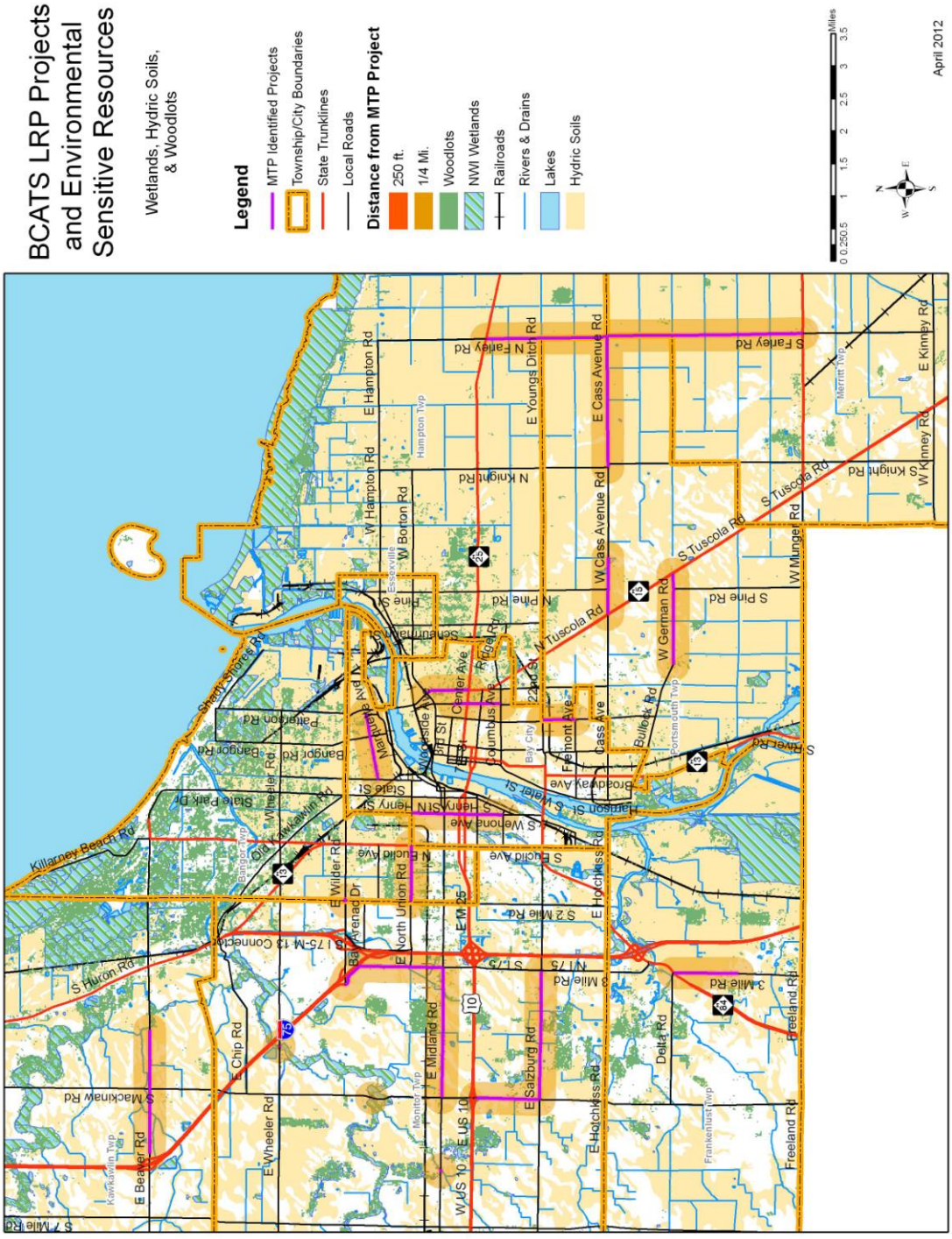
Of the 25 transportation improvement projects, only four projects will have expansion outside of the existing road surface, the remaining 21 are pavement reconstruction or resurfacing projects that would not expand the current roadway. Following is a list of the number of possible projects that may impact environmental sensitive resources within BCATS.

Environmental Sensitive Resource	Number of Expansion Projects	Number of Pavement Projects
Flood prone areas (within 1320 ft.)	0	11
Historic Sites (within 250 ft.)	1	3
Heritage routes (within 250 ft.)	1	4
Wetlands (within 1320 ft.)	2	12
Cemeteries (within 250 ft.)	0	0
Parks and Recreation Areas (within 250 ft.)	1	2
Lakes and Streams (within 1320 ft.)	3	17
Woodland (within 1320 ft.)	4	8
Non-motorized Trails (within 250 ft.)	1	1
Hydric Soils (within 1320 ft.)	4	25

The analysis of possible impacts from planned transportation projects on environmental sensitive resources should not be used to infer that simply because an impact is possible, the transportation project is not justified. It is simply designed to draw attention to the range of possible impacts and to elevate the consideration of environmental resources in all phases of project planning, design, construction, and maintenance.

BCATS and the implementing agencies in the area shall take appropriate measures to minimize the impact on these environmental sensitive resources for these and future project by using the guidelines set forth by the American Association of State Highway and Transportation Officials (AASHTO) Center for Environmental Excellence located on the Internet at http://www.environment.transportation.org/.


BCATS MTP Projects and Environmental Sensitive Resources
Except: Wetlands, Hydric Soils, & Woodlots
Legend
Public Recreation Areas
MTP Identified Projects
Township/City Boundaries
M 15 Recreational Heritage Route
M 25 Historic Heritage Route
State Trunklines
Local Roads
Cemeteries
Historic Sites
Historic Site Areas
Railroads
Bay County Main Trails
STATUS
Existing Non-Motorized Trails
Possible Future Trails
Rivers & Drains
Lakes
Distance from MTP Project
250 ft.
1/4 Mi.
Flood Zone
1% Annual Flood Change
0.2% Annual Flood Change
Miles
April 2012


BCATS LRP Projects and Environmental Sensitive Resources
Wetlands, Hydric Soils, & Woodlots
Legend
MTP Identified Projects
Township/City Boundaries
State Trunklines
Local Roads
Distance from MTP Project
250 ft.
1/4 Mi.
Woodlots
NWI Wetlands
Railroads
Rivers & Drains
Lakes
Hydric Soils
Miles
0 0.25 0.5 1 1.5 2 2.5 3 3.5
April 2012
E Hampton Rd
N Fairy Rd
E Youngs Ditch Rd
E Cass Avenue Rd
S Fairy Rd
E Kinney Rd
N Knight Rd
W Hampton Rd
W Borton Rd
W Cass Avenue Rd
S Tuscola Rd
S Knight Rd
W Kinney Rd
W Munger Rd
N Pine Rd
S Pine Rd
W German Rd
N Tuscola Rd
Shady Shores Rd
Palmerton Rd
Bangor Rd
Marquette Ave N
Center Ave
Rydel Rd
22nd St
Columbus Ave
Cass Ave
E Fremont Ave
Bullock Rd
S River Rd
Broadway Ave
S Water St
Killarney Beach Rd
State Park Dr
Old Lakewalk Rd
E Wilder Rd
S Henry St
S Weiona Ave
S Euclid Ave
N Euclid Ave
E Hotchkiss Rd
S 2 Mile Rd
E North Union Rd
Brevard Dr
S Huron Rd
E Chip Rd
E Midland Rd
E Salzburg Rd
N 7 Mile Rd
3 Mile Rd
Freeland Rd
Delta Rd
S Mackinaw Rd
E Beaver Rd
E Wheeler Rd
E US 10
W US 10
S 7 Mile Rd
Hampton Twp
Merritt Twp
Bay City
Bangor Twp
Monitor Twp
Kawkawlin Twp
Frankenlust Twp
Portsmouth Twp