



Transportation Asset Management Program 2019 Federal Aid PASER Road Survey

February 2020



WMSRDC
WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION

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**WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION
(WMSRDC)**

The WMSRDC is a regional council of governments representing 127 local governments in the West Michigan counties of Lake, Mason, Muskegon, Newaygo, Oceana, and northern Ottawa.

The mission of WMSRDC is to promote and foster regional development in West Michigan... through cooperation amongst local governments.



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2019 Federal Aid PASER Road Survey

I. Background

What Is Asset Management?

Asset management is a concept in the transportation industry that is emerging as an important planning tool for public officials, planners, engineers, and others. Asset Management is based on an inventory of each local road network within the region. It will provide data that will allow transportation officials to monitor, plan, and strategically improve the road network. This strategic method of investment marks a break from the traditional “tactical” method of fixing roads that have the most severe problems.

The Michigan Transportation Commission has formed an Asset Management Council, with the objective to implement a state law that enacted the Asset Management Program. The Council is appointed by the Transportation Commission and answers directly to the Commission and legislature. Its five main elements include: policy goals and objectives, data collection, planning and programming, program delivery, and monitoring and reporting. Its goal is to inventory all 39,000 miles of federal aid eligible roads within the State of Michigan, and according to the data collected, determine future distribution of ACT 51 transportation funds. In the future, the Asset Management Council may implement a similar initiative to collect similar information on the remaining local road network.

Regional Commission Involvement

Annually, WMSRDC staff, along with the Michigan Department of Transportation (MDOT) and a county road commission employee, collects this data within our region. Annually, staff attends a training session to review the previous year’s collection process and to retrain those who will be involved.

Each region within the State of Michigan receives a laptop equipped with GIS, a GPS device, and software to collect the data. The data collection effort will require the collection of three items: PASER rating, surface type, and the number of lanes. PASER is a visual rating assessment system that rates the road surface condition for a given segment on a scale of 1-10.

Purpose

The purpose of this task is to help satisfy the requirements of P.A. 499 of 2002, which establishes an Asset Management Council and charges it to develop an Asset Management Process for the State of Michigan. Regional transportation planning agencies play a significant role in this process as outlined in the following task assignments:

Method

The Asset Management Council has developed a statewide process that will result in approximately 50 percent of federal aid eligible roads in the state to be rated per year. Activities to be undertaken as part of this task include:

1. Attendance at a 1-day training seminar on the use of PASER.
2. Participation as part of a 3-person team that will rate the federal-aid eligible roads in the region.
3. Providing the results of the PASER ratings to local agencies for review and revise where appropriate.
4. Public display of PASER ratings on the WMSRDC website or through other public means so it is available for public review and use in project and plan development activities.
5. Transmit PASER ratings along with other roadway data (i.e. traffic counts).

Products

1. Road network loaded in ROADSOFIT.
2. PASER data collected on federal-aid eligible roads in region.
3. Web based or other public display of PASER road ratings on network.
4. Report to the Asset Management Council with PASER and other roadway data and transportation project completion information for the region.

II. Data Collection Process

In previous years, regional staff assisted in rating 100 percent of roads on the Federal Aid system. Beginning in 2008, regional staff rated 50 percent of the Federal Aid system miles. Due to an increase in funding and a desire to provide better data to member road agencies, data was once again collected for 100% of the Fed Aid system in 2018. In 2019, some counties elected to have 100% of their system rated while others elected to only collect data on 50% of their system. Annually, WMSRDC staff, along with an MDOT employee and a county road commission employee, collects this data within the region.

The first step in this process is for each of the County Road Commissions to decide which roads will be included in the current year's rating survey. Once this has been decided a network is created in RoadSoft and exported to the Region's Laptop Data Collector (LDC). The LDC software is housed on the Region's laptop computer and connected to a GPS unit. The rating group then drives the entire network that was previously selected by the Road Commission. For each segment of road the three person team agrees on a road rating by using the PASER system, giving a numerical value for the condition of the road, 10 being new and 1 being failed.

Once the entire network has been rated, the data is exported back to the county road commission's RoadSoft program. After this is completed the county's data is exported to the Region, which passes the information back to the Asset Management Council.

Computer Equipment and Software

Staff collects data using a laptop computer with the RoadSoft GIS Laptop Data Collector software. A Garmin GPS unit was connected to the laptop to track position and locate road segments. RoadSoft GIS is an asset management software package created and distributed free of charge by the Michigan Technology Institute's Technology Development Group. The current version of the program was designed with a special module to collect PASER rating data.

Staff Time

For the purpose of collecting PASER data, it is most efficient to have three people in the vehicle, one driver, one navigator/rater, and the third member who is assigned to enter information into the computer. For each county road rating project, there is always one representative from the region, one road commission employee, and one MDOT representative present.

Training

New trainees are required to participate in a webinar containing background information on Asset Management. All participants who will rate are required to attend a daylong training session. Participants receive an overview of the project and are given instruction on how to use the RoadSoft software and the PASER road rating system for data collection. Once out in the field, experienced staff members show the new participants how to use the RoadSoft program and guide them through the rating process. Most participants feel comfortable after an hour of working the computer and rating the roads. In addition, every three years raters are required to complete a webinar training on how to rate unpaved roads

III. PASER Rating System

The PASER road rating system was developed by the University of Wisconsin-Madison Transportation Information Center to be used as the State of Wisconsin's standard road rating system. PASER is a "windshield" road rating system that uses a 1 to 10 rating scale, with a value of 10 representing a new road and a value of 1 representing a failed road. Condition ratings are assigned by monitoring the type and amount of visual defects along a road segment while driving the segment. The PASER system interprets these observations into a condition rating. A sample PASER rating chart has been included with this report.

The State of Michigan Asset Management Council has requested that the information gathered in this survey be reported using the following categories:

- **Roads with PASER ratings of 8-10 require Routine Maintenance.** Routine maintenance is the day-to-day maintenance activities that are scheduled, such as street sweeping, drainage clearing, shoulder gravel grading, and sealing cracks to prevent standing water and water penetration.

- **Roads with PASER ratings of 5-7 require Capital Preventive Maintenance.** Capital preventive maintenance is a planned set of cost effective treatments to an existing roadway system and its appurtenances that preserves, retards future deterioration and maintains or improves the functional condition of the system without significantly increasing structural capacity. The purpose of capital preventive maintenance is to protect the pavement structure, slow the rate of pavement deterioration and/or correct pavement surface deficiencies. Surface treatments are targeted at pavement surface defects primarily caused by the environment and by pavement material deficiencies.

- **Roads with PASER ratings of 1-4 require Structural Improvements.** This category includes work identified as rehabilitation and reconstruction which address the structural integrity of a road.

This Road Rating system is illustrated on the following page.

Surface Rating		Visible Distress	General Condition / Treatment Measures
10	Excellent	<ul style="list-style-type: none"> None 	New construction
9	Excellent	<ul style="list-style-type: none"> None 	Recent overlay, like new.
8	Very Good	<ul style="list-style-type: none"> No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40' or greater). 	Recent sealcoat or new road mix. Little or no maintenance required.
7	Good	<ul style="list-style-type: none"> Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks (open 1/4") spaced due to reflection or paving joints. Transverse cracks (open 1/4") spaced 10 feet or more apart, little or slight crack raveling. No patching or very few patches in excellent condition. 	First signs of aging. Maintain with routine crack filling.
6	Good	<ul style="list-style-type: none"> Slight raveling (loss of lines) and traffic wear. Longitudinal cracks (open 1/4" - 1/2") due to reflection and paving joints. Transverse cracking (open 1/4" - 1/2") some spaced less than 10 feet. Slight to moderate flushing or polishing. Occasional patching in good condition. 	Show signs of aging, sound structural condition. Could extend life with sealcoat.
5	Fair	<ul style="list-style-type: none"> Moderate to severe raveling (loss of lines and coarse aggregate). Longitudinal cracks (open 1/2") show some slight raveling and secondary cracks. First signs of longitudinal cracks near wheel path or edge. Transverse cracking and first signs of block cracking. Slight crack raveling (open 1/2"). Extensive to severe flushing or polishing. Some patching or edge wedging in good condition. 	Surface aging, sound structural condition. Needs sealcoat or non-structural overlay.
4	Fair	<ul style="list-style-type: none"> Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Block cracking (over 25 - 50% of surface). Patching in fair condition. Slight rutting or distortions (1" deep or less). 	Significant aging and first signs of need for strengthening. Would benefit from recycling or overlay.
3	Poor	<ul style="list-style-type: none"> Closely spaced longitudinal and transverse cracks often showing raveling and crack erosion. Block cracking over 50% of surface. Some alligator cracking (less than 25% of surface). Patches in fair to poor condition. Moderate rutting or distortion (1" or 2" deep). Occasional potholes. 	Need patching and major overlay or complete recycling.
2	Very Poor	<ul style="list-style-type: none"> Alligator cracking (over 25% of surface). Severe distortions (over 2" deep). Extensive patching in poor condition. Potholes. 	Severe deterioration. Needs reconstruction with extensive base repair.
1	Failed	<ul style="list-style-type: none"> Severe distress with extensive loss of surface integrity. 	Failed. Needs total reconstruction.

IV. County Projects

Summary: West Michigan Shoreline Regional Development Commission

In 2019, region staff rated approximately 1,870 miles of federal aid eligible roads. Individual county summaries are included in the following pages. A summary of road ratings for all counties is illustrated in the following table.

	# of Miles Needing Structural Improvements	# of Miles Needing Capital Preventive Maintenance	# of Miles Needing Routine Maintenance
Mason	182.16	91.54	24.66
Lake	52.29	62.73	27.6
Newaygo	133.345	80.669	25.147
Muskegon	149.568	337.026	142.066
Ottawa	55.24	81.155	53.079
Oceana	141.196	103.486	127.502
TOTAL MILES	713.799	756.606	400.054
PERCENTAGE	38.16%	40.45%	21.39%

The largest percent of federal aid eligible roads, 40.45%, are in need of capital preventive maintenance. These activities may include crack sealing, seal-coating, or non-structural overlays. The next level of roads, those needing structural improvements, total 38.16% of the federal aid eligible roads within the region. Typical actions required for this category would consist of reconstruction, major overlay, or complete rehabilitation. The highest level of roads, those only needing routine maintenance, totals 21.39%. Roads in this category need little to no maintenance.

Lake County

Project overview

In 2019, WMSRDC staff, along with representatives of the Lake County Road Commission (LCRC) and the Michigan Department of Transportation (MDOT), assessed the condition of 50% of Lake County's federal-aid eligible roads using the PASER road rating system, as requested by the State of Michigan Asset Management Council.

Results

Approximately 142 miles of federal-aid eligible roads were rated in 2019 for this project. The following summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

- Roads receiving a rating of 8 or higher require only Routine Maintenance
- Roads receiving a rating of 5-7 require Capital Preventative Maintenance
- Roads receiving a rating of 4 or less require Structural Improvements

2019

PASER Rating Prescribed Fix Miles Percent of Total Miles Rated

8-10 Routine Maintenance 27.60 miles (19.41%)

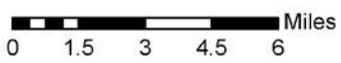
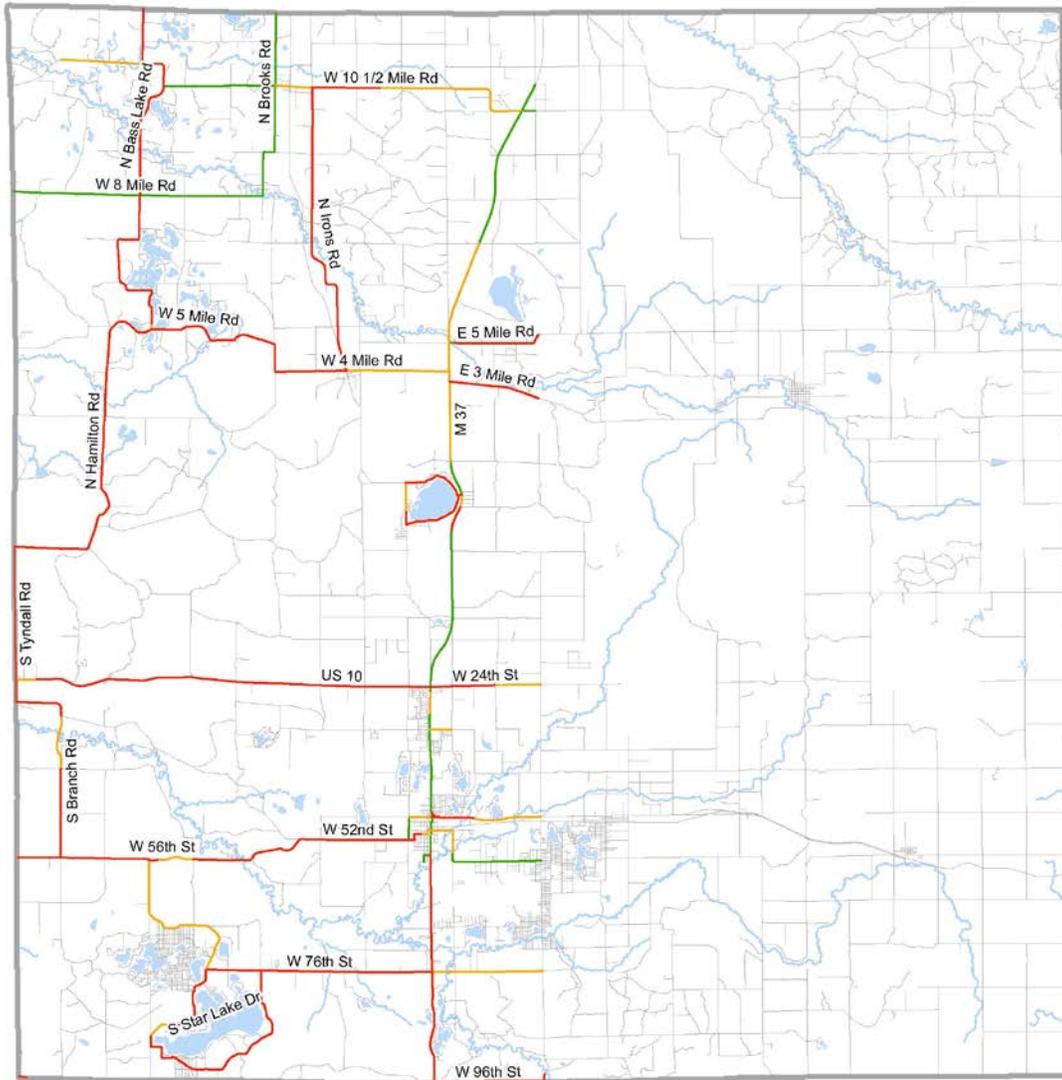
5-7 Capital Preventative Maintenance 62.73 miles (43.95%)

1-4 Structural Improvements 52.29 miles (36.64%)

2019 PASER Ratings Lake County

Legend

- 4-1 - Structural Improvements Needed
- 7-5 - Capital Preventive Maintenance
- 10-8 - Routine Maintenance
- Unrated
- County
- Lake
- River



Surface Rating Mileage Summary For A Given Year

Surface Subtype	PASER Rating										Total Centerline Mileage	APR*
	10	9	8	7	6	5	4	3	2	1		
Asphalt-Standard	0.000	5.626	9.379	3.754	1.387	11.729	31.200	8.861	1.017	0.000	72.953	5.104
Sealcoat-Standard	0.000	0.147	12.544	0.549	1.022	11.139	1.951	30.891	9.798	1.724	69.765	4.145
Total Centerline Mileage	0.000	5.773	21.923	4.303	2.409	22.868	33.151	39.752	10.815	1.724	142.718	4.635

*APR=Average Paser Rating calculated by weighting the mileage with the paser value

Mason County

Project overview

In 2019, West Michigan Shoreline Regional Development staff, along with representatives of the Mason County Road Commission (MCRC) and the Michigan Department of Transportation (MDOT), assessed the condition of 100% of Mason County's federal-aid eligible roads using the PASER road rating system, instead of the 50% requested by the State of Michigan Asset Management Council.

Results

Approximately 298 miles of federal-aid eligible roads were rated for this project in 2019. The following summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

- Roads receiving a rating of 8 or higher require only Routine Maintenance
- Roads receiving a rating of 5-7 require Capital Preventative Maintenance
- Roads receiving a rating of 4 or less require Structural Improvements

2019

PASER Rating Prescribed Fix Miles Percent of Total Miles Rated

8-10 Routine Maintenance 24.66 miles (8.28%)

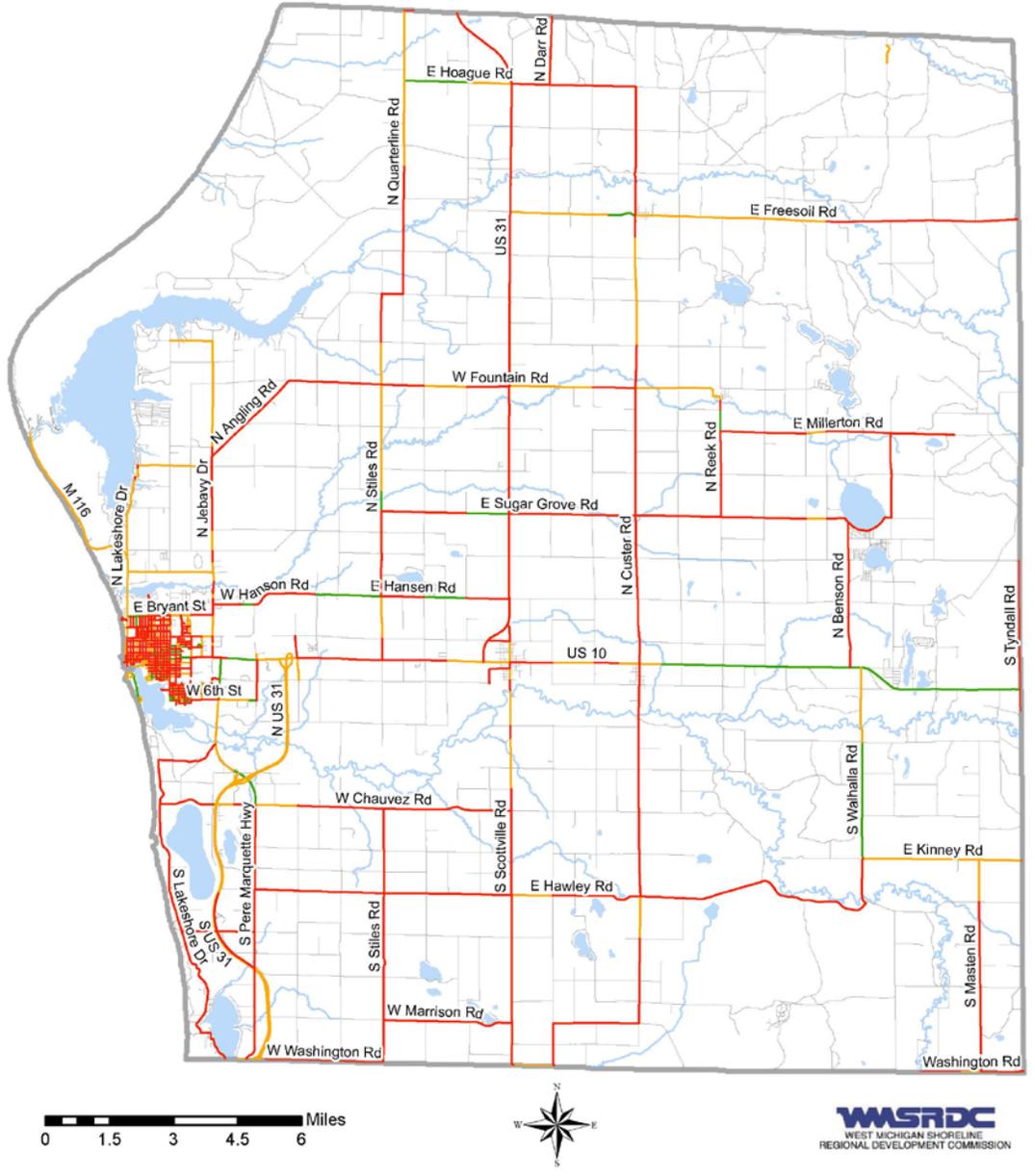
5-7 Capital Preventative Maintenance 91.54 miles (30.72%)

1-4 Structural Improvements 182.16 miles (61.13%)

2019 PASER Ratings Mason County

Legend

- 4-1 - Structural Improvements Needed
- 7-5 - Capital Preventive Maintenance
- 10-8 - Routine Maintenance
- Unrated
- County
- Lake
- River



Surface Rating Mileage Summary For A Given Year

Surface Subtype	PASER Rating										Total Centerline Mileage	APR*
	10	9	8	7	6	5	4	3	2	1		
Asphalt-Standard	2,689	9,962	9,772	35,537	20,897	26,437	36,370	96,886	44,455	3,573	286,578	4,291
Composite	0.000	1.516	0.000	1.534	5.548	0.073	0.000	0.000	0.000	0.000	8.671	6.693
Concrete-Standard	0.000	0.000	0.723	0.609	0.407	0.000	0.160	0.000	0.000	0.000	1.899	6.914
Sealcoat-Standard	0.000	0.000	0.000	0.000	0.498	0.000	0.000	0.000	0.717	0.000	1.215	3.640
Total Centerline Mileage	2,689	11,478	10,495	37,680	27,350	26,510	36,530	96,886	45,172	3,573	298,363	4,375

*APR=Average Paser Rating calculated by weighting the mileage with the paser value

Muskegon County

Project overview

In 2019, WMSRDC staff, along with representatives of the Muskegon County Road Commission (MCRC) and the Michigan Department of Transportation (MDOT), assessed the condition of 100% of Muskegon County's federal-aid eligible roads using the PASER road rating system, instead of the 50% requested by the State of Michigan Asset Management Council.

Results

Approximately 628 miles of federal-aid eligible roads were rated for this project in 2019. The following summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

- Roads receiving a rating of 8 or higher require only Routine Maintenance
- Roads receiving a rating of 5-7 require Capital Preventative Maintenance
- Roads receiving a rating of 4 or less require Structural Improvements

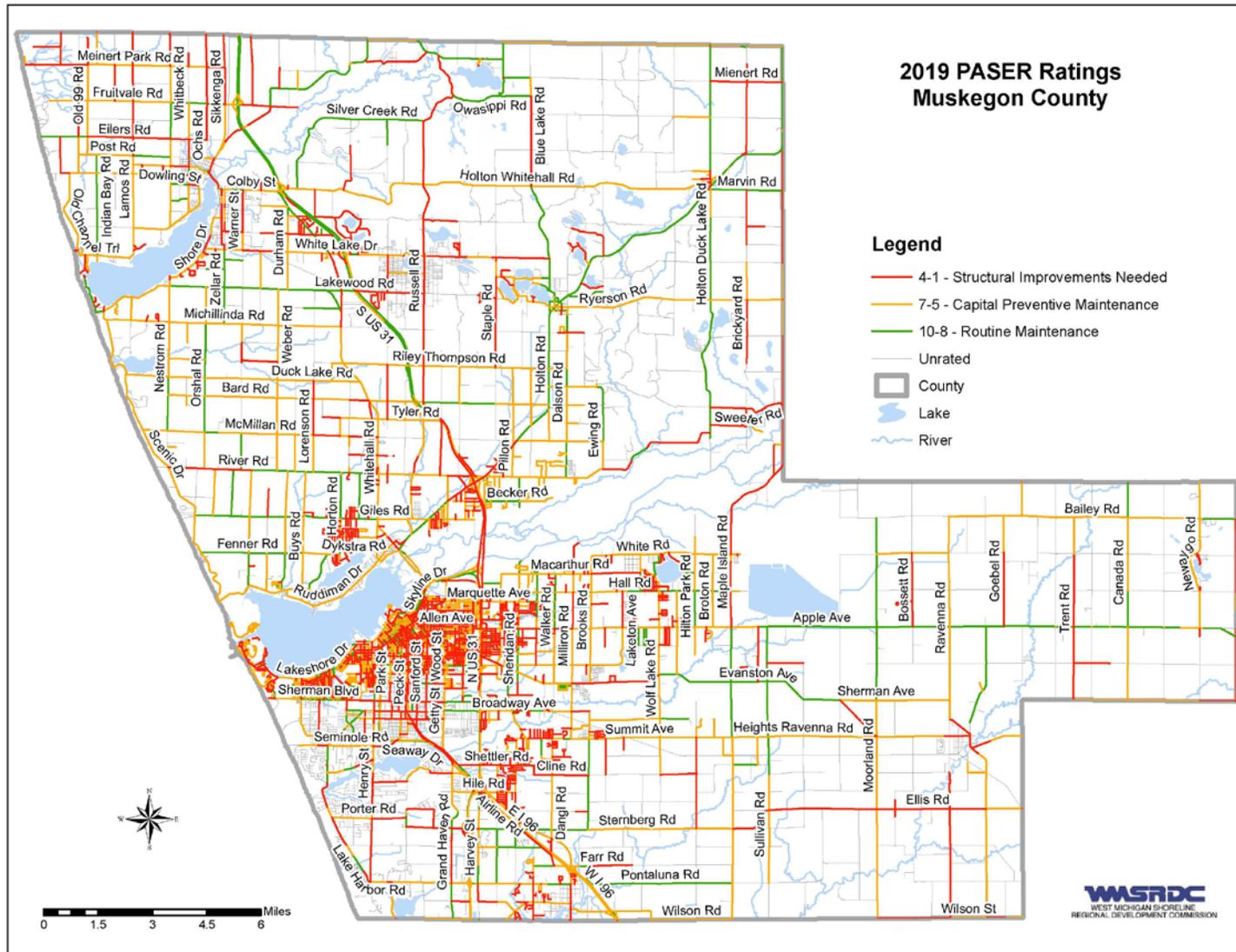
2019

PASER Rating Prescribed Fix Miles / Percent of Total Miles Rated

8-10 Routine Maintenance 142.066 miles (22.60%)

5-7 Capital Preventative Maintenance 337.026 miles (53.61%)

1-4 Structural Improvements 149.568 miles (23.79%)



Surface Rating Mileage Summary For A Given Year

Surface Subtype	PASER Rating										Total Centerline Mileage	APR*
	10	9	8	7	6	5	4	3	2	1		
Asphalt-Standard	17,575	26,798	64,845	139,066	110,245	53,400	63,281	56,200	10,742	1,989	546,131	6,022
Composite	10,908	8,448	8,619	7,155	7,593	3,480	2,106	7,033	2,572	1,603	59,517	6,778
Concrete-Standard	0.000	0.172	4,439	10,472	2,358	3,181	0,865	0,984	0,110	0,075	22,656	6,494
Crushed Asphalt Base	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.008	4,000
Gravel-Standard	0.000	0.000	0.000	0.086	0.000	0.000	0.000	0.000	0.000	0.000	0.086	7,000
Sealcoat-Standard	0.000	0.000	0.262	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.262	8,000
Total Centerline Mileage	28,483	35,418	78,165	156,769	120,196	60,081	66,260	66,217	13,424	3,667	628,660	6,111

*APR=Average Paser Rating calculated by weighting the mileage with the passer value

Newaygo County

Project overview

In 2019, WMSRDC staff, along with representatives of the Newaygo County Road Commission (NCRC) and the Michigan Department of Transportation (MDOT), assessed the condition of 50% of Newaygo County's federal-aid eligible roads using the PASER road rating system as requested by the State of Michigan Asset Management Council.

Results

Approximately 239 miles of federal-aid eligible roads were rated for this project. The following summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

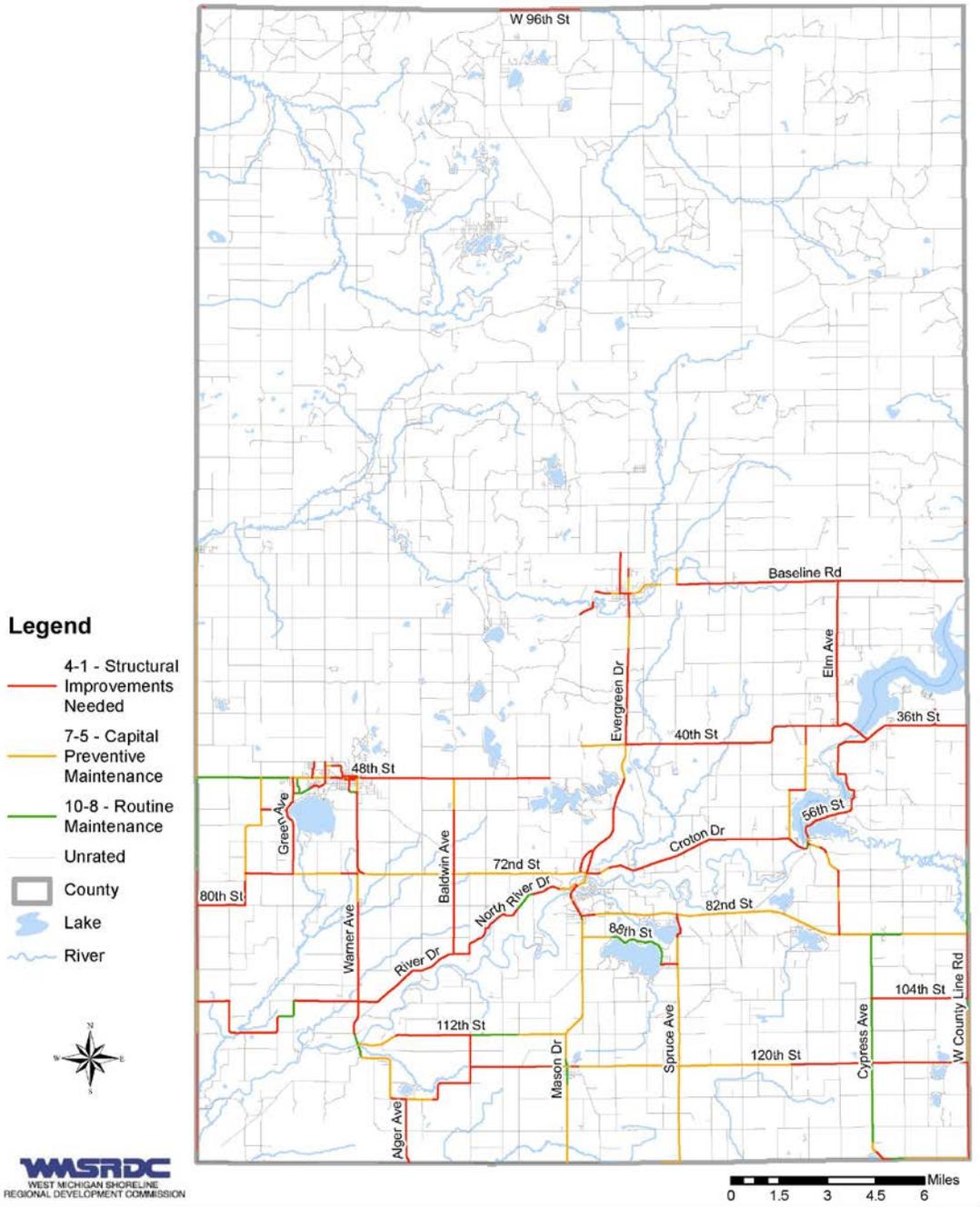
- Roads receiving a rating of 8 or better require only Routine Maintenance
- Roads receiving a rating of 5-7 require Capital Preventative Maintenance
- Roads receiving a rating less than or equal to 4 require Structural Improvements

2019

PASER Rating Prescribed Fix Miles / Percent of Total Miles Rated

8-10 Routine Maintenance 25.147 miles (10.51%)
5-7 Capital Preventative Maintenance 80.669 miles (33.73%)
1-4 Structural Improvements 133.345 miles (55.76%)

2019 PASER Ratings Newaygo County



Surface Rating Mileage Summary For A Given Year

Surface Subtype	PASER Rating										Total Centerline Mileage	APR*
	10	9	8	7	6	5	4	3	2	1		
Asphalt-Standard	3.012	5.167	13.200	27.371	26.352	16.340	43.088	30.940	45.361	0.000	210.831	4.599
Asphalt-Standard2	0.000	0.000	0.000	0.000	0.000	0.000	1.009	0.000	0.000	0.000	1.009	4.000
Asphalt-Standard2.5	0.000	0.000	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.045	5.000
Composite	0.000	0.000	3.768	2.116	3.433	5.012	10.336	0.000	0.160	0.000	24.825	5.328
Sealcoat-Standard	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.451	0.000	2.451	2.000
Total Centerline Mileage	3.012	5.167	16.968	29.487	29.785	21.397	54.433	30.940	47.972	0.000	239.161	4.645

*APR=Average Paser Rating calculated by weighting the mileage with the passer value

Oceana County

Project overview

In 2019, WMSRDC staff, along with representatives of the Oceana County Road Commission (OCRC) and the Michigan Department of Transportation (MDOT), assessed the condition of 100% of Oceana County's federal-aid eligible roads using the PASER road rating system. Even though only 50% of the federal aid network is required by the State of Michigan, the Ottawa County Road Commission requested that 100% be rated in 2019.

Results

Approximately 372 miles of federal-aid eligible roads were rated for this project in 2019. The following summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

- Roads receiving a rating of 8 or higher require only Routine Maintenance
- Roads receiving a rating of 5-7 require Capital Preventative Maintenance
- Roads receiving a rating of 4 or less require Structural Improvements

2019

PASER Rating Prescribed Fix Miles / Percent of Total Miles Rated

8-10 Routine Maintenance 127.502 miles (34.26%)

5-7 Capital Preventative Maintenance 103.486 miles (27.81%)

1-4 Structural Improvements 141.196 miles (37.94%)

Surface Rating Mileage Summary For A Given Year

Surface Subtype	PASER Rating										Total Centerline Mileage	APR*
	10	9	8	7	6	5	4	3	2	1		
Asphalt-Standard	6.986	9.299	53.404	37.620	23.774	18.857	24.812	39.007	70.085	7.162	291.006	4.964
Composite	5.253	38.583	7.184	6.789	1.471	5.876	0.092	0.000	0.000	0.000	65.248	8.327
Concrete-Standard	0.000	3.889	2.904	6.417	0.963	1.643	0.000	0.038	0.000	0.000	15.844	7.397
Gravel-Standard	0.000	0.000	0.000	0.086	0.000	0.000	0.000	0.000	0.000	0.000	0.086	7.000
Total Centerline Mileage	12.239	51.771	63.492	50.912	28.198	26.376	24.904	39.045	70.085	7.162	372.184	5.658

*APR=Average Paser Rating calculated by weighting the mileage with the paser value

Ottawa County

Project overview

Northern Ottawa County is part of the WestPlan MPO which is administered by the West Michigan Shoreline Regional Development Commission (WMSRDC). In 2019, WMSRDC staff, along with representatives of the Ottawa County Road Commission (OCRC) and the Michigan Department of Transportation (MDOT), assessed the condition of 100% of Ottawa County Road Commission's federal-aid eligible roads in Spring Lake Township, Grand Haven Township, Robinson Township, and Crockery Township using the PASER road rating system. Even though only 50% of the federal aid network is required by the State of Michigan, the Ottawa County Road Commission requested that 100% be rated in 2019.

Results

Approximately 136 miles of federal-aid eligible roads were rated for this project in 2019. The following summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

- Roads receiving a rating of 8 or higher require only Routine Maintenance
- Roads receiving a rating of 5-7 require Capital Preventative Maintenance
- Roads receiving a rating of 4 or less require Structural Improvements

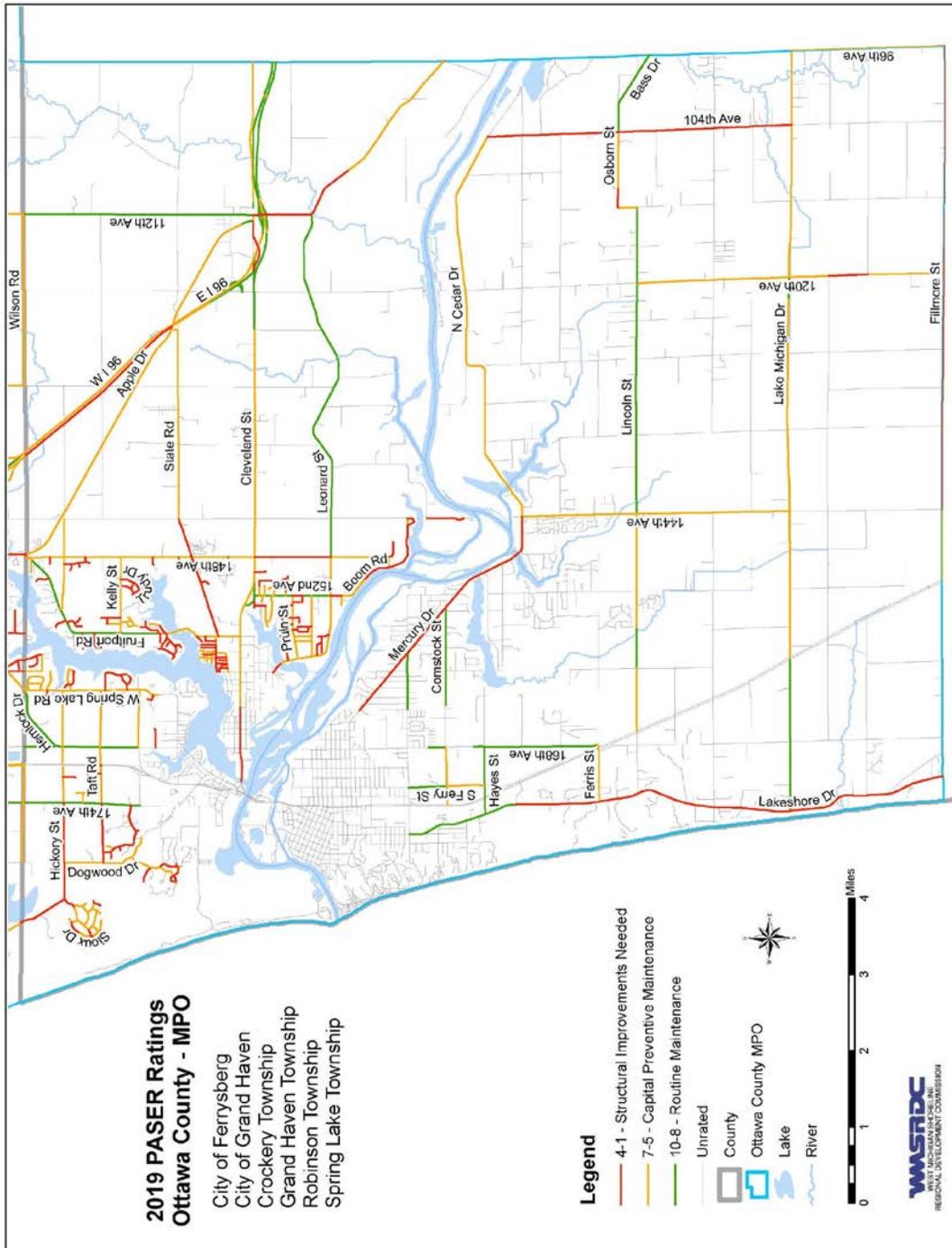
2019

PASER Rating Prescribed Fix Miles / Percent of Total Miles Rated

8-10 Routine Maintenance 45.611 miles (33.38%)

5-7 Capital Preventative Maintenance 63.055 miles (46.15%)

1-4 Structural Improvements 27.973 miles (20.47%)



Surface Rating Mileage Summary For A Given Year

Surface Subtype	PASER Rating										Total Centerline Mileage	APR*
	10	9	8	7	6	5	4	3	2	1		
Asphalt-Standard	1.740	9.698	30.611	19.117	20.755	11.503	21.809	5.824	0.000	0.000	121.357	6.368
Composite	0.000	0.701	2.561	4.191	2.829	3.990	0.029	0.311	0.000	0.000	14.612	6.440
Concrete-Standard	0.000	0.000	0.000	0.000	0.670	0.000	0.000	0.000	0.000	0.000	0.670	6.000
Total Centerline Mileage	1.740	10.689	33.172	23.308	24.254	15.493	21.838	6.135	0.000	0.000	136.639	6.374

*APR=Average Paser Rating calculated by weighting the mileage with the paser value