

Wyoming Connects



Corridor 3 Plan

BORDER JUNCTION TO I-80



MAY 2013

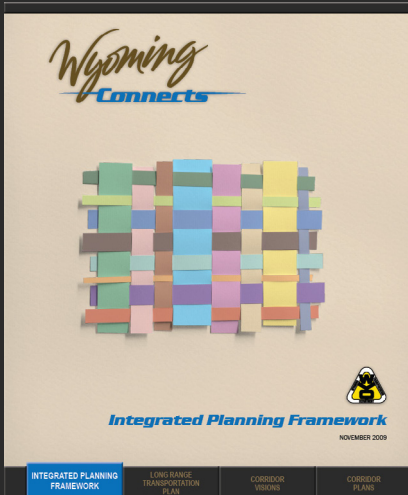
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FRAMEWORK

LONG RANGE
TRANSPORTATION
PLAN

CORRIDOR
VISIONS

CORRIDOR 3
PLAN



The Integrated Planning Framework describes the planning process in detail, including the linkage between strategic goals and project programming - and all the steps in between.



The Long Range Transportation Plan evaluates the state transportation needs from a systems level, describes the issues and problems facing the State including future revenue and programming, and presents options for future investments, all within the context of the Integrated Planning Framework.



Corridor Visions are created for each State Significant Corridor (SSC) as a supplement to the LRTP. These define long term goals and objectives for each corridor based on the strategic goals of the Department, the investment goals of the LRTP, and the specific context of each corridor. The SSC system represents high volume routes in the state that connect major activity centers to each other and to points external to Wyoming. Urban areas are also evaluated as a group.



Corridor Plans build on the Corridor Visions by providing a more detailed look at specific needs and location-based solutions. The plans identify a set of solutions and a recommended program of improvements to be implemented over time that address specific, documented needs.

CORRIDOR PLAN PURPOSE

This Corridor Plan is part of a set of documents created through a comprehensive planning process entitled Wyoming Connects. This set of documents captures consistent, transparent, and repeatable planning steps, analysis, and results designed to provide information to guide project selection and programming decision makers. Each document is designed to build upon prior documents and cascade the Strategic Goals of WYDOT forward from the overarching Strategic Plan to the system wide Long Range Transportation Plan, applied in the development of Corridor Visions, and the definition of Needs and potential Solutions to achieve the vision in Corridor Plans.

PERFORMANCE BASED NEEDS

The Corridor Plan utilizes a performance based approach to needs definition. A system of performance measures is used to evaluate the corridor. The architecture of this tiered system is focused on the three Investment Categories identified in the Long Range Transportation Plan: System Preservation, Safety, and Mobility. Performance measures include both absolute and comparative targets. Absolute measures gauge progress towards long term goals, while comparative measures between corridor and system performance provide information to assist in prioritization.

A need is defined as a deviation between these targets and measured performance. The first tier of the system allows for rapid identification of need in each of the Investment Categories through a Performance Indicator. The second tier provides additional information to qualify potential causes through a set of Performance Qualifiers. GIS based Mapping Analysis tools provide for a spatial analysis of these measurements to further investigate causes and identify overlapping needs.

TIERED APPROACH:

A method to evaluate performance goals at a general level and then advance through the system/hierarchy to filter data and define needs.

INVESTMENT CATEGORY

PERFORMANCE INDICATOR:

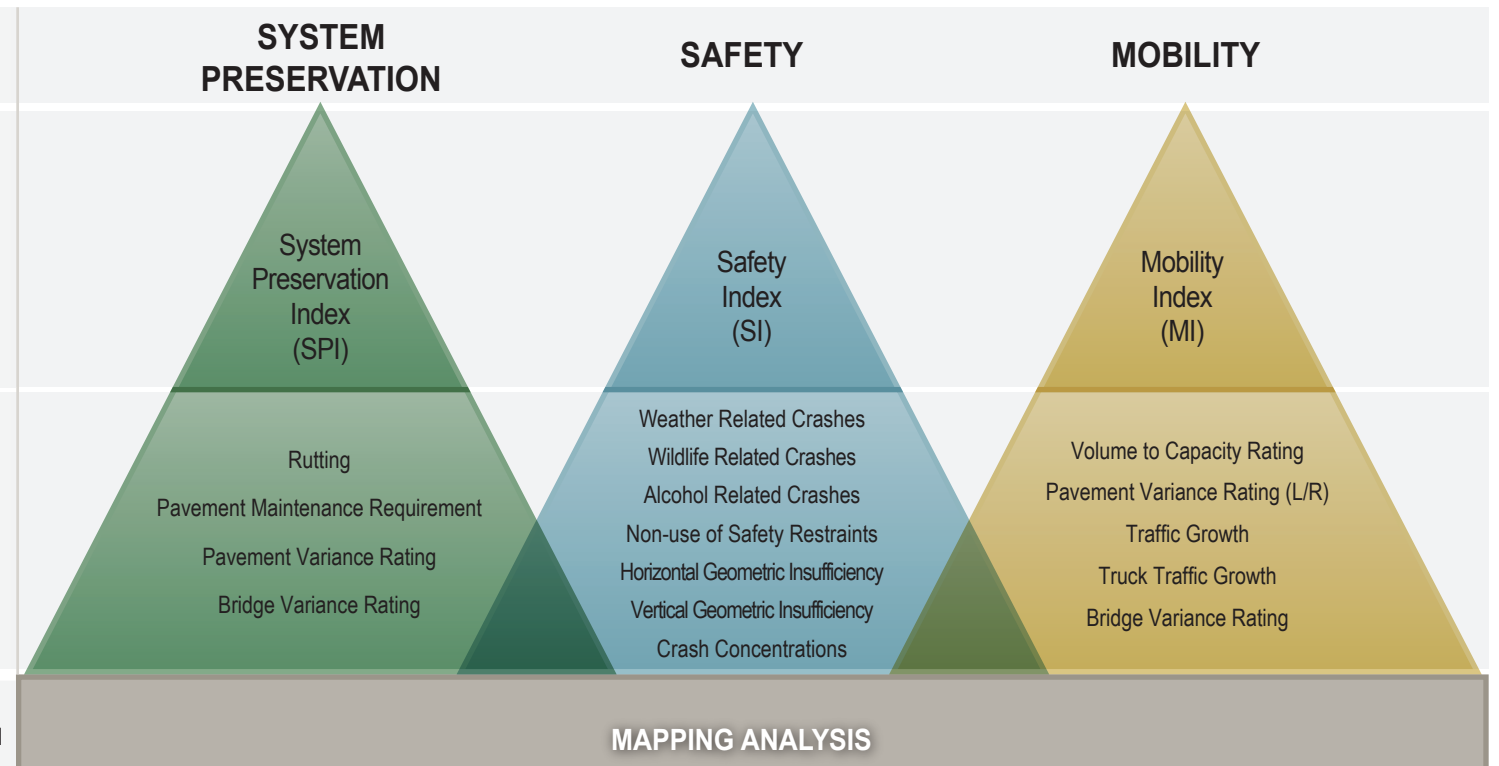
These are quantifiable and repeatable measurements that reflect the overall performance of the transportation corridor being analyzed. Targets for these indicators may be absolute and indicate a desired condition or comparative to current performance of the overall system to indicate relative priority.

PERFORMANCE QUALIFIER:

These measures include items that may contribute to the results of the indicator. These variables are measurable and actionable. They are used to qualify the need so that solution sets may be applied.

MAPPING ANALYSIS:

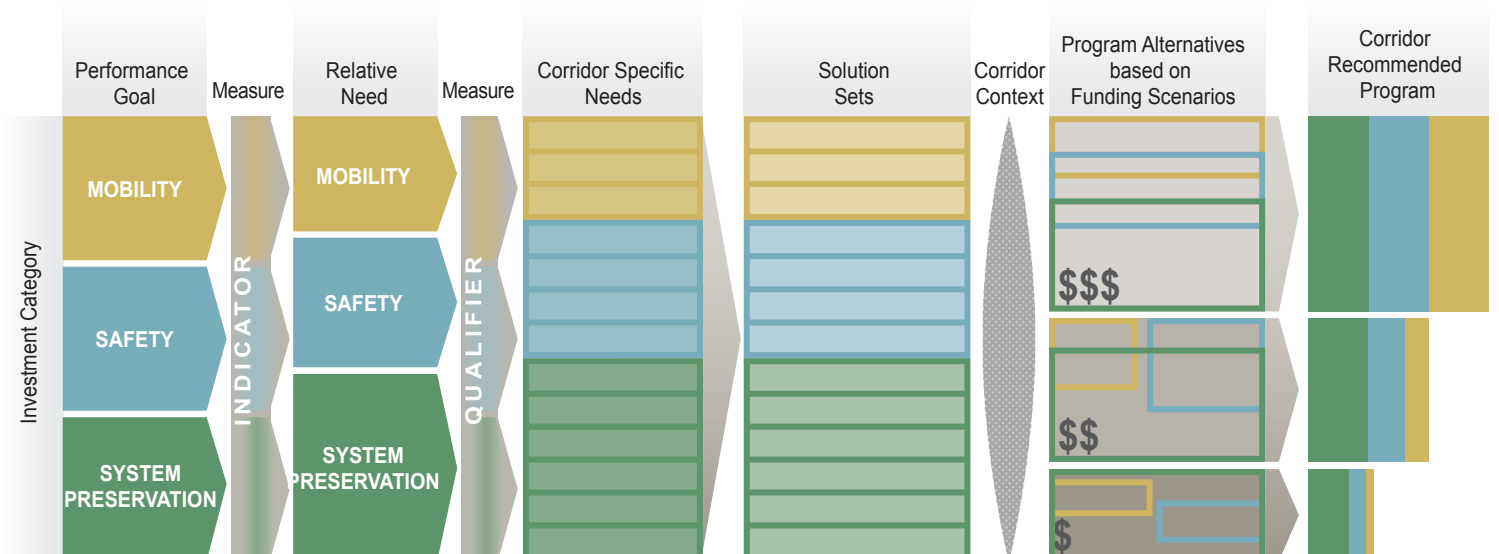
Mapping the deviated performance qualifiers against several factors to effectively prioritize, locate, and identify needs.



NEEDS DRIVEN SOLUTIONS:

Performance based needs are captured and documented. These needs remain until the performance is changed. This approach also separates the discussion of need from the discussion of projects, which enhances the transparency of prioritization.

From WYDOT's list of preferred remedies to specific problems, preliminary solutions sets are developed for the identified needs. These sets may be tailored by the specific context of the corridor. For each of the three funding scenarios of the long range plan, the solutions to be considered may vary and the size of the program change. A recommended program can be selected based on anticipated funding levels.





SSC 3 - BORDER JUNCTION TO I-80 - US 30 CORRIDOR PLAN

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I. STATE SIGNIFICANT CORRIDOR 3 - DESCRIPTION

CORRIDOR DESCRIPTION

State Significant Corridor (SSC 3) is 100 miles long, entering the State from Idaho at Border Junction. US 30 travels south through the Bridger-Teton National Forest, serving the towns of Cokeville and Sage before heading east to Kemmerer, Diamondville, and Granger near I-80. The I-80/US 30 interchange at Granger was recently redesigned for US 30 to provide a full access link with I-80. SSC 3 is located in WYDOT District 3 and crosses two counties in southwestern Wyoming in rural, flat, and rolling terrain.

As SSC 3 enters Wyoming, it parallels the Bear River before entering the town of Sage. The corridor continues southeast through Kemmerer. Just west of Kemmerer is the Fossil Butte National Monument. This site preserves the best paleontological record of Tertiary aquatic communities in North America within the 50-million-year-

old Green River lake beds. Just outside of Kemmerer, WYDOT has installed wildlife underpasses to assist migrating mule deer and help protect motorists from crashes with game animals. Between Kemmerer and Granger Junction is the Seedskedee National Wildlife Refuge. The majority of the corridor passes through land managed by the Bureau of Land Management and consists of high desert sagebrush plains. The entire corridor serves an agricultural economy.

The corridor is a significant truck route connecting I-80 to the Pacific Northwest. A large increase in truck traffic is documented just east of Kemmerer to the junction with I-80. The UPRR parallels the entire corridor. The local economy along SSC 3 is mainly supported by ranching. Energy development, including coal, wind, oil, and gas also play a prominent role in the region.

Additional information including environmental context, key issues, and emerging trends is provided in the Corridor Visions and LRTP phases of Wyoming Connects. This Corridor Plan focuses on the identification of the corridor needs through the analysis of corridor performance.

CORRIDOR SEGMENTS

SSC 3 has been divided into 5 planning segments. Planning segments identify generally consistent sections of the corridor for planning level analysis. The planning segments vary in length depending on the context of the corridor. The corridor was segmented at all urban areas and at the intersection of other SSCs. Other context changes may include: roadway typical section (through lanes, shoulders, etc.), average daily traffic, intersecting routes, and terrain. Each segment break or endpoint was assigned as closely as possible to the nearest maintenance section endpoint; segments generally encompass multiple maintenance sections. The planning segments allow for an appropriate analysis and evaluation of corridor needs at a planning level while still providing geographic reference.

Table 1 and the accompanying map on the next page describe general characteristics of each corridor segment.



Fossil Butte National Monument

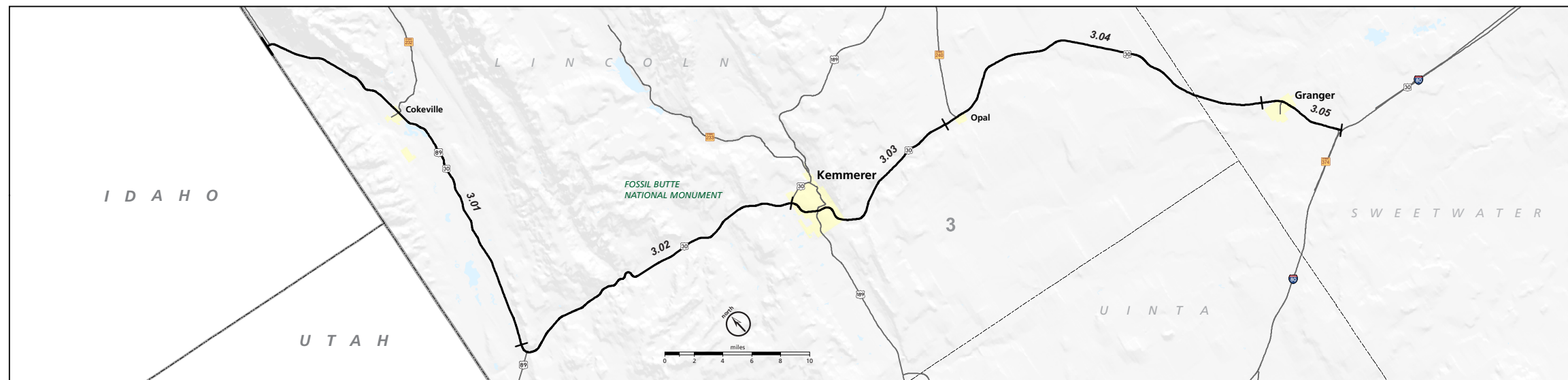
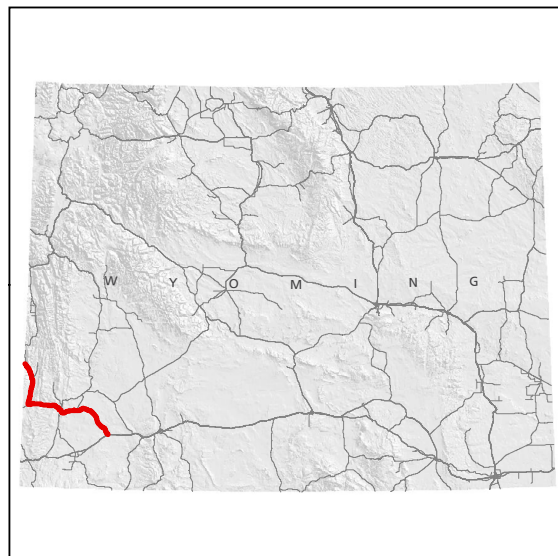


Table 1 - Segments for State Significant Corridor 3

Corridor 3	Segment	ML Route	Begin	End	Length	Description
	3.01	12	0.00	29.47	29.47	Border Jct./ID State Line to Sage. Features: Two-lane cross section; intersects Local Routes WYO 89, WYO 231 and 232 are Big Spring Scenic Backway; river crossings at Smith's Fork River, Spring Creek, Sublette Creek, Horse Creek; parallel to UPRR; range and ranch lands; wildlife; flat to rolling terrain.
3.02	12	29.47	52.63	23.16	Sage to Kemmerer. Features: 2-lane cross section with occasional passing and accel/decel/turn lanes; intersects Local Routes WYO 89 and US 30 Business in Kemmerer; road close gates; parallel to UPRR with 2 grade separations; game crossings and underpasses; Fossil Butte National Monument; range and ranch land with oil field development; mostly rolling terrain.	
3.03	12	52.63	67.06	14.44	Kemmerer to WY 240. Features: Segment ends at maintenance section break 2.25 miles west of WYO 240; 2-lane cross section with occasional passing and accel/decel/turn lanes; intersects with Regional Route WYO 189 and Local Route US 30 Business; road close gates; UPRR grade separation; Ham's Fork River; wildlife crossings; large coal mine/power plant; includes the 4-lane bypass around the town of Kemmerer, which is more urban in character, then transitions to rural rolling terrain.	
3.04	12	67.06	94.04	26.97	WYO 240 to Granger Jct. Features: 2-lane cross section with a few passing lanes; intersection with Local Route WYO 240; UPRR grade separation; town of Opal; range and ranch lands; rolling to flat terrain.	
3.05	12	94.04	100.02	5.99	Granger Jct to I-80. Features: Mixed 2-, 3-, and 4 lane cross sections; town of Granger; intersection with Local Route WYO 375, 374; Black's Fork River UPRR grade separation; range and ranch lands; flat terrain.	

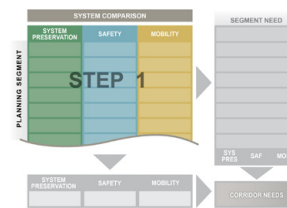
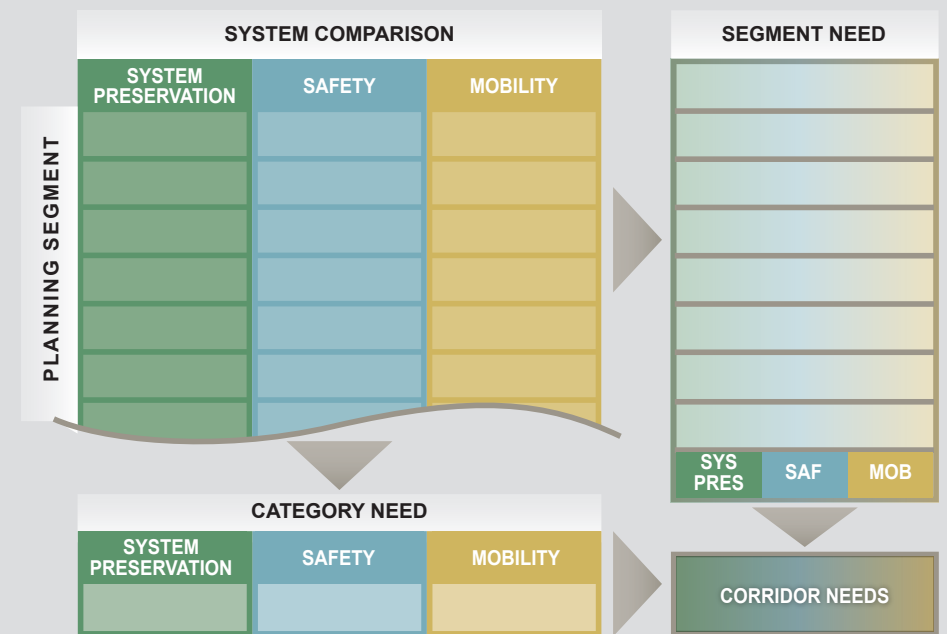
Source: URS Windshield Survey June 2012; Maintenance Section Reference Book 2012; Wyoming Connects: LRTP and Corridor Visions. Note: Descriptions of beginning and endpoints are approximate.



II. EVALUATION OF CORRIDOR PERFORMANCE

This section describes the evaluation of specific corridor needs based on the performance based process defined in the IPF. The Performance Based Needs Process, shown below, illustrates the steps followed for this corridor plan. Indicative Performance measures based on existing or simply defined index measurements for each investment category of System Preservation, Safety, and Mobility were evaluated to preliminarily identify need relative to long term goals. Qualifying performance measures were evaluated to better assess contributing factors to the primary need indicators. The indicators and qualifiers were evaluated and analyzed relative to system averages and, when available, previously specified performance targets. This gap analysis identifies locations where needs exist, qualifies the nature of the need, and provides information on the priority relative to the system of SSCs and available funding.

Many of the measures were established as comparisons to the system average, therefore good performance indicates performance better than the system average. The reverse is also true, poor performance indicates that performance is below the average or rated as poor for a particular indicator or qualifier. As additional corridors are evaluated, specific performance targets may be set to measure absolute performance. The IPF process recommends a mix of absolute measures to evaluate true need relative to long term goals and comparative measures to assist in determining priority.



STEP 1: SUMMARY OF INDICATOR AND QUALIFIER PERFORMANCE MEASURES

This corridor plan evaluates System Preservation, Safety, and Mobility performance using the process described in the Integrated Planning Framework, published separately. The plan analyzes the performance of planning segments described in Table 1 as compared to system averages. It identifies good, fair, poor or less, average, more performance for each segment in an overall index and for each contributing qualifier measurement.

Throughout this report, the color green is used to represent System Preservation, blue represents Safety, and yellow represents Mobility. Lighter shades represent better performance and darker shades represent worse performance compared to the system average.

Table 2 summarizes the results for each performance index and qualifier for each planning segment on the corridor.

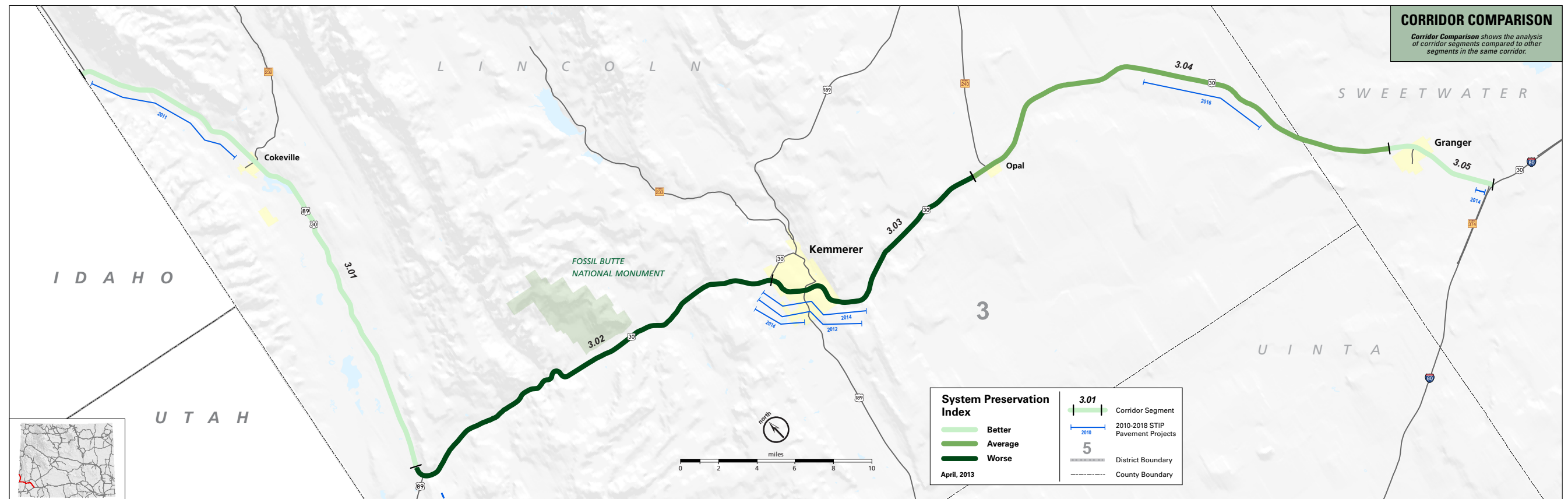
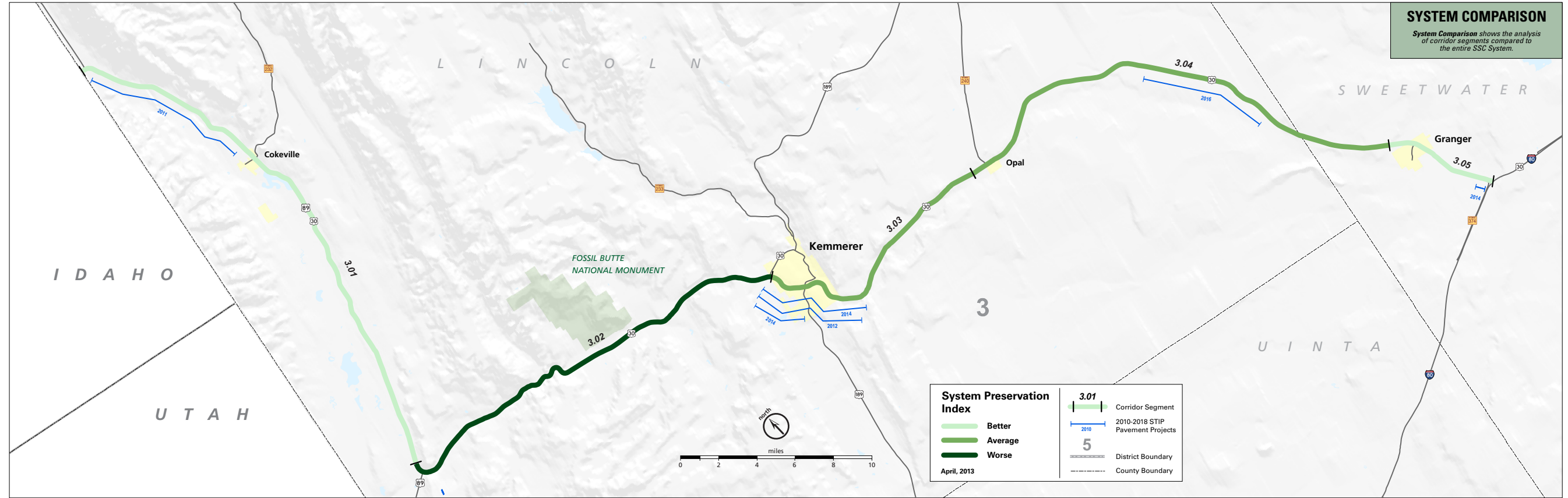
Table 2 - Indicator and Qualifier Performance of SSC 3

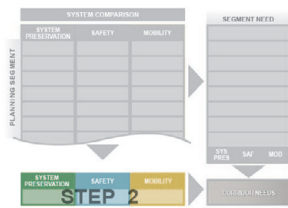
Segment	SYSTEM PRESERVATION					SAFETY								MOBILITY					
	System Preservation Index	Rutting	Pavement Maint. Requirement	Pavement Variance Rating	Bridge Variance Rating	Safety Index	Weather Related Crashes	Wildlife Related Crashes	Alcohol Related Crashes	Non-use of Safety Restraints	Horizontal Geometric Insufficiency	Vertical Geometric Insufficiency	Crash Concentrations	Mobility Index	Volume to Capacity Rating	Pavement Variance Rating (L/R)	Traffic Growth	Truck Traffic Growth	Bridge Variance (L/R)
3.01	Better	Good	Average	Good	Less	Good	Average	More	Average	Average	Less	Average	Good	Better	Good	Good	Average	More	Less
3.02	Worse	Good	More	Good	Average	Fair	Average	More	Average	Average	Less	Good	Worse	Good	Poor	Average	More	More	
3.03	Average	Fair	More	Fair	Less	Poor	Average	Average	More	Average	Less	Less	Fair	Worse	Good	Fair	Average	Average	Average
3.04	Average	Good	More	Good	Less	Fair	Average	Average	More	Average	Less	Less	Poor	Better	Good	Good	Average	More	Less
3.05	Better	Good	Average	Good	Less	Poor	Average	Less	Less	More	Less	Less	Good	Better	Good	Fair	Average	More	Less



CORRIDOR 3

SYSTEM PRESERVATION - INDEX





Performance Index

The System Preservation Index for all segments in this corridor is average or better than average, with the exception of segment 3.02, which is worse than average.

Performance qualifiers with a negative effect on the System Preservation Index:

- The Pavement Maintenance Rating on segment 3.02 is more than the system average.

Refer to the sections below for more information.

Segment	SYSTEM PRESERVATION				
	System Preservation Index	Rutting	Pavement Maint. Requirement	Pavement Variance Rating	Bridge Variance Rating
3.01	Better	Good	Average	Good	Less
3.02	Worse	Good	More	Good	Average
3.03	Average	Fair	More	Fair	Less
3.04	Average	Good	More	Good	Less
3.05	Better	Good	Average	Good	Less

Performance Qualifiers

Rutting

There are no locations where the pavement falls within the poor category for rutting.

Pavement Maintenance Requirements

The pavement maintenance sections that were recommended by the Pavement Management System (Agile Assets) and not yet selected to receive funding within the STIP will continue to decline. If not treated fairly soon, the treatments will become more costly as conditions deteriorate.

Approximately 2% of Corridor 3 has been identified as having a 1S need. This represents 2 miles of pavement. Segments 3.01, 3.02 and 3.05 had 1S treatments recommended by the Pavement Management System. Based upon current available funding, only two projects, representing 8.3 miles of pavement, have been selected to be completed within the next several years.

Approximately 56% of Corridor 3 has been identified as having a 2S need. This represents 56 miles of pavement. Segments 3.01, 3.02, 3.03, 3.04, and 3.05 have 2S treatment recommended by the Pavement Management System. Based upon current available funding, no projects have been selected to be completed within the next several years.

Approximately 42% has been identified as having a 3S need. This represents 41 miles of pavement. Segments 3.01, 3.02, 3.03, 3.04, and 3.05 have 3S treatments recommended by the Pavement Management System. Based upon current available funding, only one project, representing 7.3 miles of pavement, has been selected to be completed within the next several years.

Pavement Variance Rating

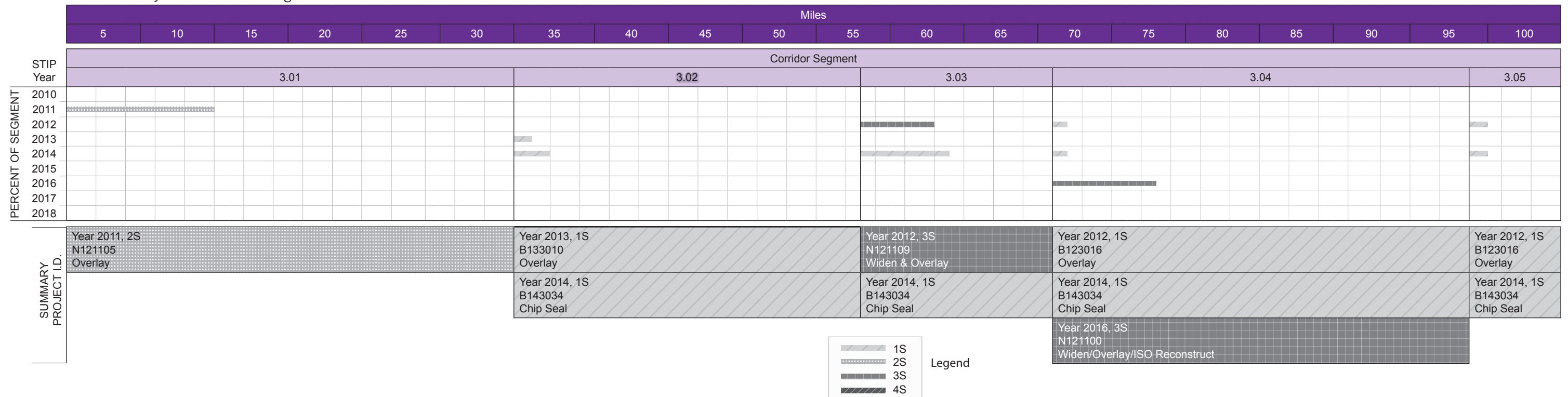
The Pavement Variance Rating is fair or better for the entire corridor. Pavement hotspots, identified by length and severity, occur in three different locations (most or moderately severe).

Bridge Variance Rating

The Bridge Variance Rating for all of the corridor is average or better than the system average. All segments have at least one bridge with the exception of Segment 3.04. There is one structurally deficient bridge along SSC 3, in Segment 3.02, with a bridge deck of 23,180 ft² and the lowest WYDOT severity rating, resulting in a Bridge Variance Rating of average when compared to the system average.

NOTE: See Appendix for maps documenting each performance qualifier.

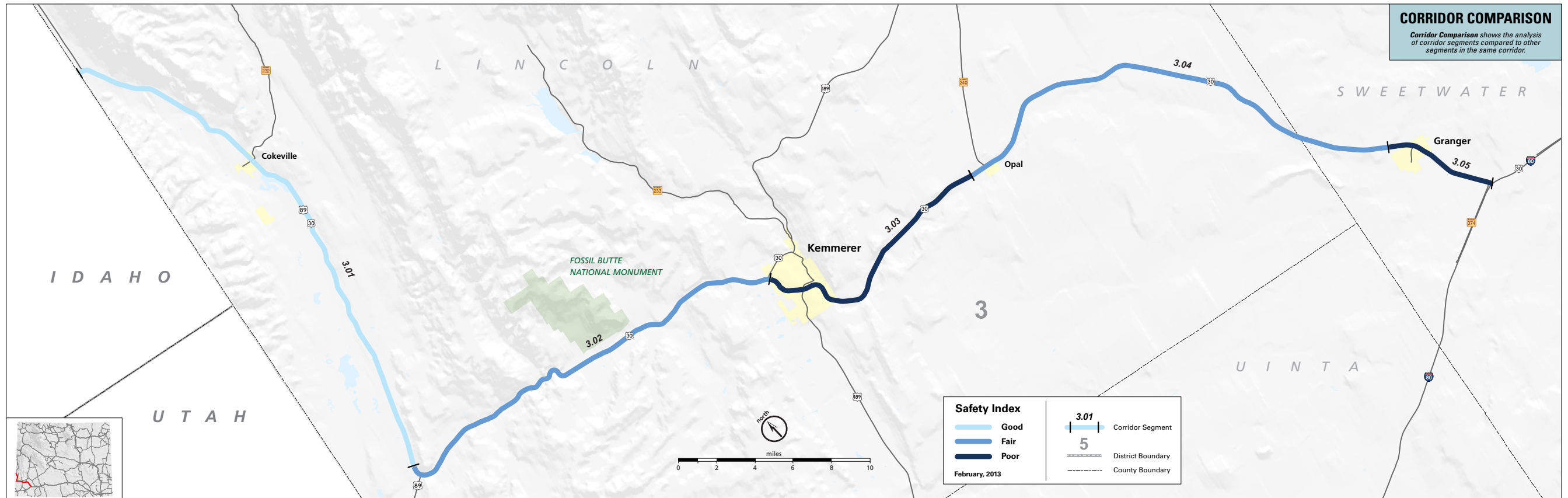
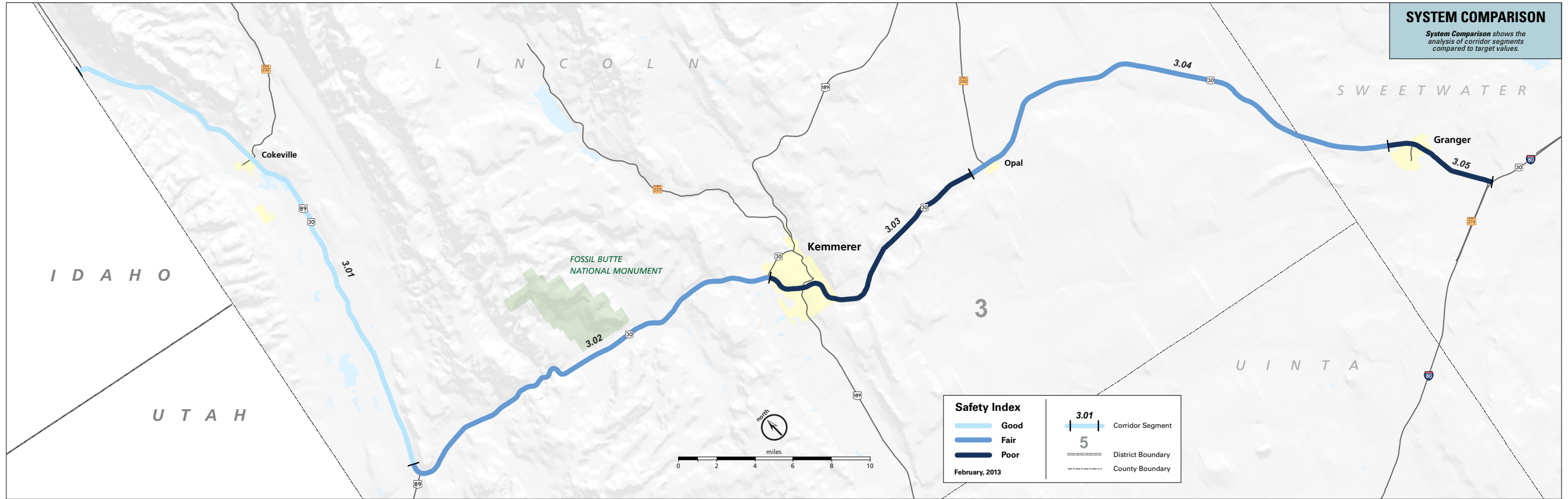
Table 3 - SSC 3 STIP by Year and Corridor Segment

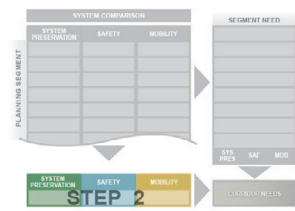




CORRIDOR 3

SAFETY - INDEX





Performance Index

The Safety Performance Index ranges from fair to poor across the corridor. Segments rated poor include 3.03, and 3.05.

Performance qualifiers with poor performance include:

- Wildlife Related Crashes are more than the average on segments 3.01 and 3.02.
- Alcohol Related Crashes are more than the average on segments 3.03 and 3.04.
- Non-Use of Safety Restraints is more than the average on segment 3.05.
- Crash Concentrations are rated poor on segment 3.04.

Refer to the sections below for more information.

Segment	SAFETY							
	Safety Index	Weather Related Crashes	Wildlife Related Crashes	Alcohol Related Crashes	Non-use of Safety Restraints	Horizontal Geometric Insufficiency	Vertical Geometric Insufficiency	Crash Concentrations
3.01	Good	Average	More	Average	Average	Less	Average	Good
3.02	Fair	Average	More	Average	Average	Average	Less	Good
3.03	Poor	Average	Average	More	Average	Less	Less	Fair
3.04	Fair	Average	Average	More	Average	Less	Less	Poor
3.05	Poor	Average	Less	Less	More	Less	Less	Good

Performance Qualifiers

Weather Related Crashes

The ratio of weather related crashes to total crashes varied within SSC 3 from below the system average to slightly above the system average. The rate of the weather related crashes increases from west to east in this corridor. When compared to total crashes, the percentage rate of weather related crashes increased from 16% in Segment 3.01 to 33% in segment 3.05.

Wildlife Related Crashes

Corridor 3 is varied in its wildlife related collisions. The northern segments, 3.01 (49%) and 3.02 (53%), have a high rate of accidents involving wildlife compared to the statewide average (31%).

Segments 3.01 and 3.02 is a rural highway where a significant portion of the wildlife related crashes are with deer. These crashes occurred mostly during darkness and throughout the segment. However, the wildlife related crashes were slightly higher near RM 49. The Wyoming Game and Fish Department have documented significant migration routes within Segment 3.02.

Alcohol Related Crashes

The percentage of alcohol related crashes varies within the corridor. Segment 3.05 did not have any alcohol related crashes. Segments 3.03 and 3.04 have a higher percentage of alcohol related crashes than the system average. Crash locations did not appear to be concentrated in any particular area.

Non-use of Safety Restraint

The ratio of crashes in which a restraint device was not worn to total crashes is at the system average. Segment 3.05 had the highest percentage (81%) of crashes in which seat belts were not worn.

Horizontal Geometry Insufficiency

Corridor 3 had a few alignments that were found to be insufficient based on the associated posted speed and an assumed emax of 8%. Segment 3.02 has the most insufficient horizontal alignments within the segment. Further study will need to take place to determine specific needs of each alignment and the constraints to which it was designed and built.

Following is a summary of locations where a horizontal insufficiency corresponded to a crash. The data is not clear if the crash was directly related to geometry. However, locations with several accidents should be further studied. Table 4 summarizes locations of insufficient curves with more than one crash in near vicinity within the 5 year accident analysis period.

Table 4 - Horizontal Geometry Insufficiency

Segment	ML Route	Route Marker	# of Crashes
3.02	ML12	38.98	5
3.02	ML12	39.71	3

Vertical Geometry Insufficiency

SSC 3 has two vertical alignments that were found to be insufficient based on the associated posted speed and the length of the curve for stopping sight distance. Two crashes were recorded at the crest curve along ML 12 at mile marker 0.6. The data is not clear if the crash was directly related to the geometry. Further study will need to take place to determine specific needs of this alignment and the constraints to which it was designed and built.

The other vertical insufficiency occurred at mile marker 5.3 along ML 12. There are no reported crashes at this crest curve. Because of the low number of crashes, it is suggested funding be spent in other locations where there are more crashes that can be attributed to poor roadway geometry.

Table 5 - Vertical Geometry Insufficiency

Segment	ML Route	Route Marker	Curve Type	# of Crashes
3.01	ML12	0.56	CREST	2

Crash Concentrations

Crash concentrations are identified by locating spatially significant clusters of individual crash events that are of a similar severity level. The concentrations fall into one of two severity types: Critical, which consists of only “Critical” level crashes, and Other, which consists of “Severe” and “Damage” level crashes.

There are three Critical concentrations on Corridor 3, which are listed in Table 6. Additionally, there is one Other type concentration. Segment 3.04 exhibits the most crash concentrations with 2 Critical concentrations, which occur between RM 77 and 77.1 and between RM 84.6 and 85.1.

Table 6 - Critical Crash Concentrations

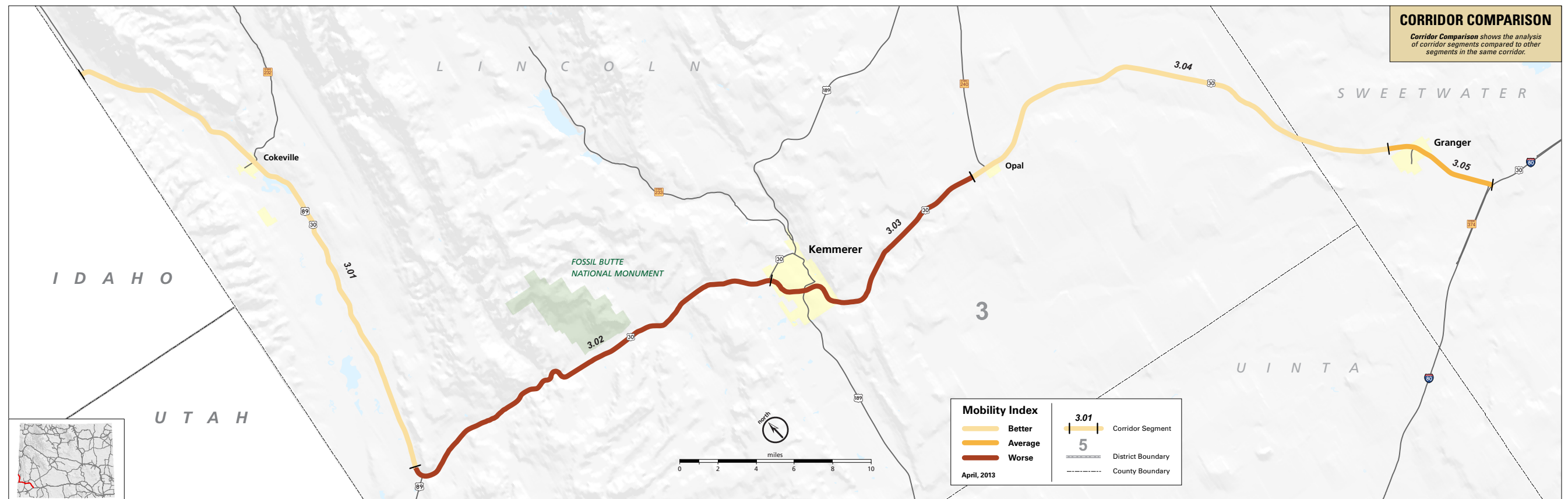
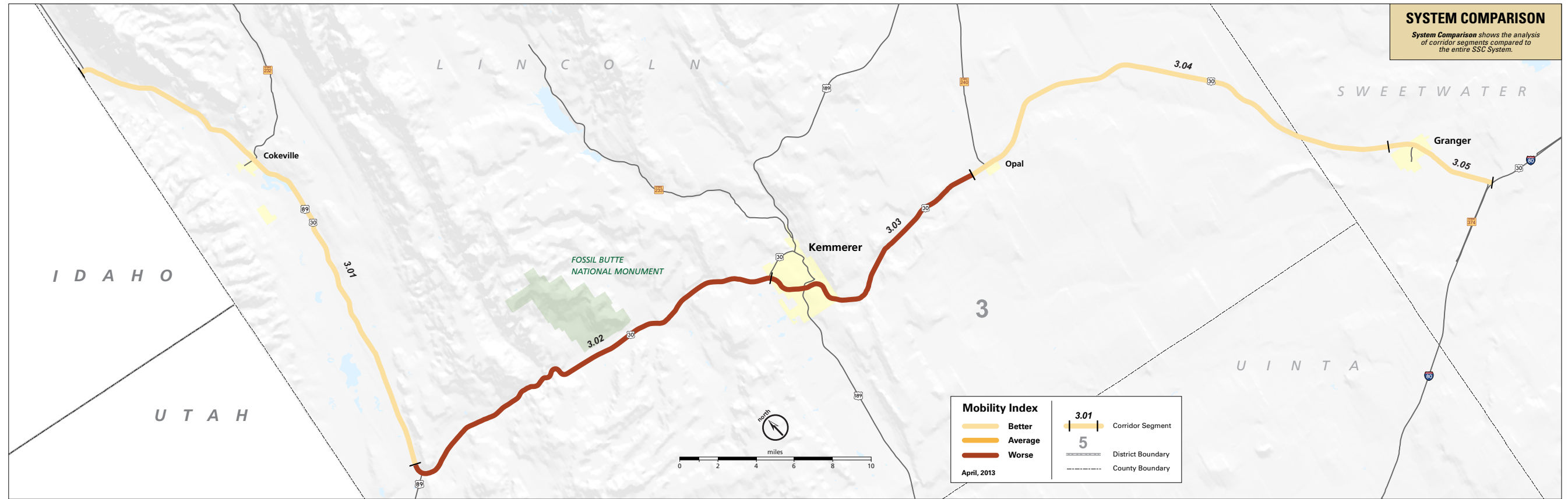
Segment	ML Route	Route Marker	
		From	To
3.03	ML12	61.6	62
3.04	ML12	77	77.1
3.04	ML12	84.6	85.1

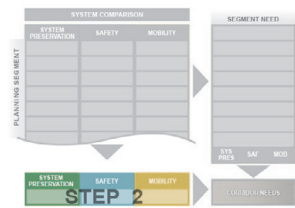
NOTE: See Appendix for maps documenting each performance qualifier.



CORRIDOR 3

MOBILITY - INDEX





Performance Index

The Mobility Performance Index for segments on SSC 3 ranges from better to worse than average. Segments rated worse than average include 3.02 and 3.03.

Segment	MOBILITY					
	Mobility Index	Volume to Capacity Rating	Pavement Variance Rating (L/R)	Traffic Growth	Truck Traffic Growth	Bridge Variance (L/R)
3.01	Better	Good	Good	Average	More	Less
3.02	Worse	Good	Poor	Average	More	More
3.03	Worse	Good	Fair	Average	Average	Average
3.04	Better	Good	Good	Average	More	Less
3.05	Better	Good	Fair	Average	More	Less

One regional route connects to SSC 3. The condition of each local and regional route is associated with a planning segment and directly influences the mobility of that segment. The condition of these local and regional routes is for the most part good. There are currently two structurally deficient bridges on the local and regional routes.

SSC 3 serves the towns of Cokeville and Sage before heading east to Kemmerer, Diamondville, and Granger near SSC 1. This route is subject to heavy tourist and recreational traffic. The entire corridor serves an agricultural economy. Shoulder widths vary from 0' to 4' with no rumble strips noted. This is adequate for low volume highways.

Table 7 - Major Traffic Generators

Major Traffic Generators
Oil/gas/coal production and transport
Employment center - Kemmerer
Truck route connection to Pacific Northwest

Performance Qualifiers

Volume to Capacity Rating

Volume to Capacity Ratio (V/C) is a measure that reflects mobility and quality of travel of a corridor or section of a corridor. It compares roadway demand (vehicle volumes) with roadway supply (carrying capacity). The volume to capacity rating for the entire SSC 3 is good.

Traffic Growth

The average traffic growth within the SSC System is 1.42%. All segments in this corridor are below this average except Segment 3.05. Segment 3.05 has the highest average annual traffic growth rate. This segment is between Granger and the connection with I-80 on ML12.

Table 8 - Traffic Growth

Segment	AADT 2010	Average 20 Year Growth
3.01	2,101	1.41%
3.02	1,623	1.16%
3.03	2,758	1.36%
3.04	2,601	1.27%
3.05	2,408	1.66%

Truck Traffic Growth

The average truck traffic growth within the SSC System is 1.34%. All segments within SSC 3 are above this average and have a roadway classification of 2-lane rural. The highest truck growth rates were found in the western segments of 3.01 and 3.02, as well as the eastern segments 3.04 and 3.05. Segment 3.05 has the highest average annual truck growth rate. This segment is located from Granger to I-80 via ML12.

Table 9 - Truck Traffic Growth

Segment	AADTT 2010	% Trucks 2010	Truck Traffic Growth
3.01	839	43.32%	2.27%
3.02	666	42.99%	2.20%
3.03	1096	40.00%	2.13%
3.04	1152	45.25%	2.92%
3.05	1188	40.86%	3.00%

Local and Regional Roads

Local and Regional Routes that connect to the SSC affect the Mobility Performance Indicator. These routes serve the important function of connecting rural areas to the primary routes. While traffic volumes are typically low on these secondary routes, maintaining them in acceptable condition is important to general mobility for the state. This analysis includes pavement and bridge condition as qualifiers.

Local and Regional Roads Impacting Pavement Variance Rating (L/R)

The Mobility Index may be affected by local and regional routes that have poor pavement condition as reflected by the Pavement Variance Rating (PVR). The PVR is the product of Pavement Sufficiency Rating (PSR) calculated as the deviation from the system average. Poor PSR is reported on local/regional routes associated with segments 3.02 and 3.03. Table 10 lists the local/regional routes with poor PSR.

Table 10 - Local/Regional Routes with Poor PSR

Segment	Average PVR	ML Route	Route Marker		Average PSR
			Begin	End	
3.02	1.85	ML1202	0.00	19.67	1.40
3.02	1.30	ML1210	152.47	154.52	1.95
3.02	1.48	ML1211	11.59	15.74	1.77
3.03	1.85	ML1202	0.00	19.67	1.40
3.03	1.22	ML1203	0.00	4.49	2.03

Bridge Variance Rating (L/R)

The bridge variance rating for local and regional routes on SSC 3 shows 3 structurally deficient bridges. The locations of the bridges are shown in the table below.

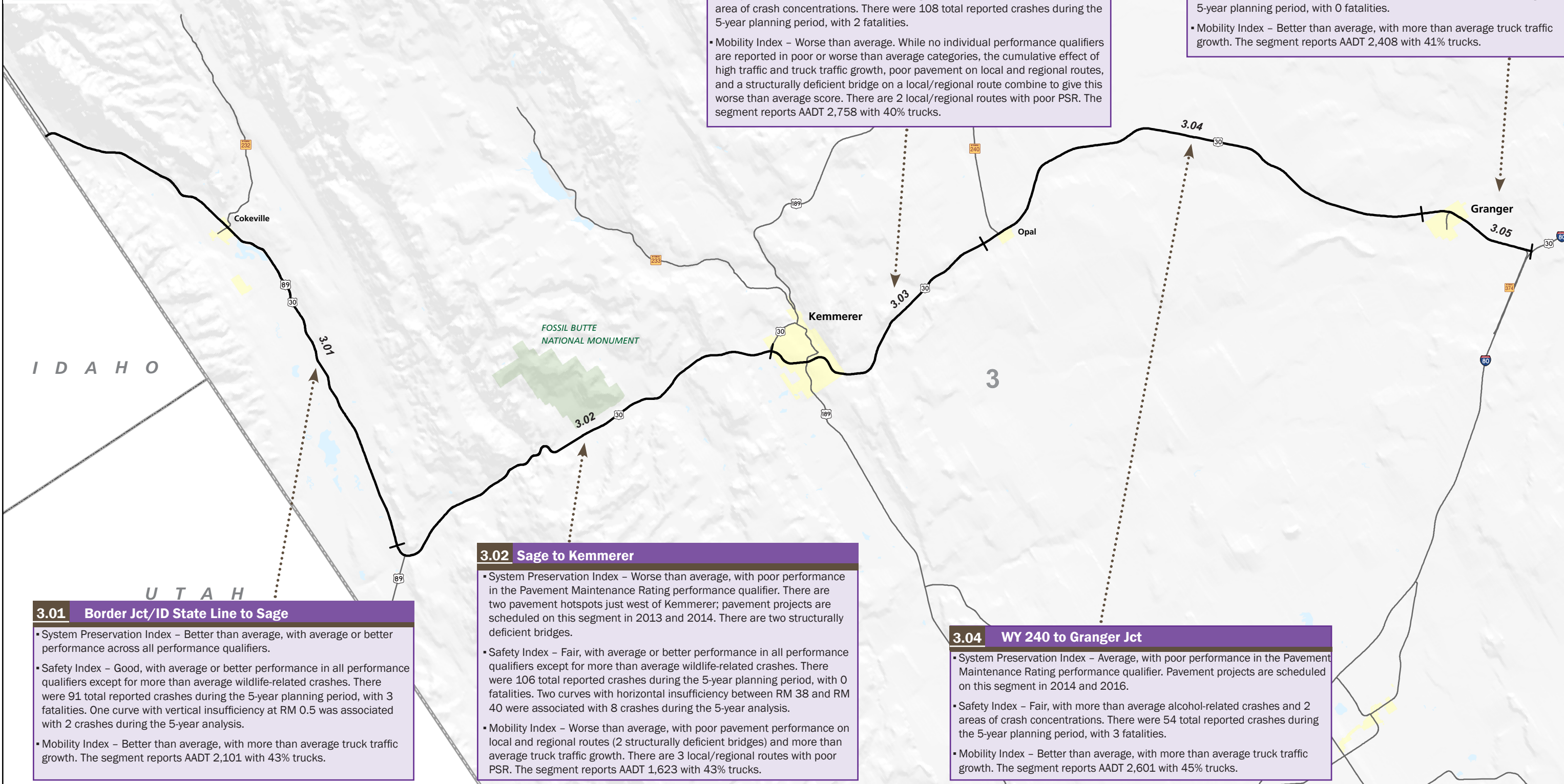
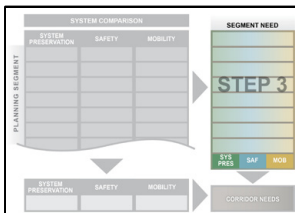
Table 11 - SSC 3 Structurally Deficient Bridges on Local/Regional Routes

Segment	ML Route	Route Marker
3.02	ML1202	4.43
3.02	ML1211	15.68
3.03	ML1202	4.43

NOTE: See Appendix for maps documenting each performance qualifier.



STEP 3: ANALYSIS OF PLANNING SEGMENT NEEDS



3.01 Border Jct/ID State Line to Sage

- System Preservation Index - Better than average, with average or better performance across all performance qualifiers.
- Safety Index - Good, with average or better performance in all performance qualifiers except for more than average wildlife-related crashes. There were 91 total reported crashes during the 5-year planning period, with 3 fatalities. One curve with vertical insufficiency at RM 0.5 was associated with 2 crashes during the 5-year analysis.
- Mobility Index - Better than average, with more than average truck traffic growth. The segment reports AADT 2,101 with 43% trucks.

3.02 Sage to Kemmerer

- System Preservation Index - Worse than average, with poor performance in the Pavement Maintenance Rating performance qualifier. There are two pavement hotspots just west of Kemmerer; pavement projects are scheduled on this segment in 2013 and 2014. There are two structurally deficient bridges.
- Safety Index - Fair, with average or better performance in all performance qualifiers except for more than average wildlife-related crashes. There were 106 total reported crashes during the 5-year planning period, with 0 fatalities. Two curves with horizontal insufficiency between RM 38 and RM 40 were associated with 8 crashes during the 5-year analysis.
- Mobility Index - Worse than average, with poor pavement performance on local and regional routes (2 structurally deficient bridges) and more than average truck traffic growth. There are 3 local/regional routes with poor PSR. The segment reports AADT 1,623 with 43% trucks.

3.03 Kemmerer to WY 240

- System Preservation Index - Average, with poor performance in the Pavement Maintenance Rating performance qualifier. There is one pavement hotspot in Kemmerer; a pavement project is scheduled on this segment in 2014. There is one structurally deficient bridge.
- Safety Index - Poor, with more than average alcohol-related crashes and 1 area of crash concentrations. There were 108 total reported crashes during the 5-year planning period, with 2 fatalities.
- Mobility Index - Worse than average. While no individual performance qualifiers are reported in poor or worse than average categories, the cumulative effect of high traffic and truck traffic growth, poor pavement on local and regional routes, and a structurally deficient bridge on a local/regional route combine to give this worse than average score. There are 2 local/regional routes with poor PSR. The segment reports AADT 2,758 with 40% trucks.

3.04 WY 240 to Granger Jct

- System Preservation Index - Average, with poor performance in the Pavement Maintenance Rating performance qualifier. Pavement projects are scheduled on this segment in 2014 and 2016.
- Safety Index - Fair, with more than average alcohol-related crashes and 2 areas of crash concentrations. There were 54 total reported crashes during the 5-year planning period, with 3 fatalities.
- Mobility Index - Better than average, with more than average truck traffic growth. The segment reports AADT 2,601 with 45% trucks.

3.05 Granger Jct to I-80

- System Preservation Index - Better than average, with average or better performance across all performance qualifiers. A pavement project is scheduled on this segment in 2014.
- Safety Index - Poor, with more than average number of non-use of safety restraint-related crashes. There were 26 total reported crashes during the 5-year planning period, with 0 fatalities.
- Mobility Index - Better than average, with more than average truck traffic growth. The segment reports AADT 2,408 with 41% trucks.



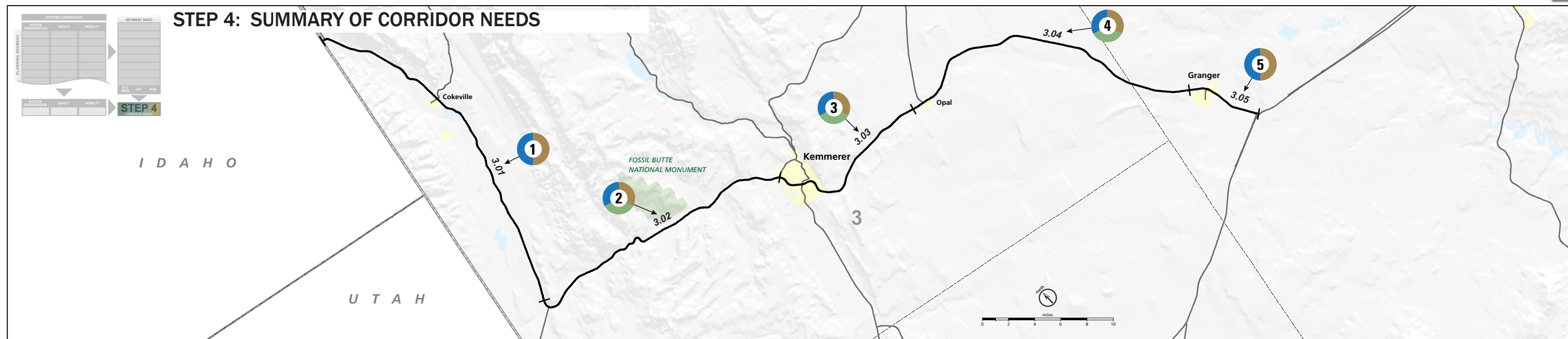
Environmental Overview

The Wyoming Interagency Spatial Database and Online Management System (WISDOM) was queried to identify natural resources that could be impacted by transportation projects. The following summary lists the general type of potentially impacted resources. The project development phase should investigate these resources in more detail to determine if mitigation activities are required. Please see Appendix and <http://wisdom.wygisc.org/> for detailed information.

There are eleven different terrestrial habitat types located throughout the eight special management areas within SSC 3. Four federally listed species within the corridor fall into one of three categories, candidate, endangered, and threatened. Four big game species and ten raptor species are found in SSC 3. There are four different categories that fall under the aquatic habitat. There are nine watersheds, one aquatic crucial priority area, two aquatic enhancement priority areas, and one combined crucial priority area. See Table 12 for general locations.

Table 12 - Environmental Considerations

Category	WEST (West State Line - Kemmerer)	CENTRAL (Kemmerer - 240)	EAST (240 - East of Granger)
Big Game Crucial Range	Elk Moose Mule Deer Pronghorn Antelope	Mule Deer Pronghorn Antelope	Pronghorn Antelope
Big Game Migration Route	Elk Moose Mule Deer Pronghorn Antelope	Moose	Moose
WGFD Aquatic Crucial Priority Areas SHP	Lower Bear River	na	na
WGFD Terrestrial Crucial Priority Areas SHP	Bear River - Southern Wyoming Range	na	Unita
WGFD Combined Crucial Priority Areas SHP	na	Green River - Blacks Fork - Hams Fork	Green River - Blacks Fork - Hams Fork
Occurrence & Distribution (Federally Listed Species)	Black-footed Ferret Gray Wolf Greater Sage Grouse Whooping Crane	Gray Wolf Greater Sage Grouse	Black-footed Ferret Greater Sage Grouse



Summary of Needs

This section summarizes needs by planning segment for each of the three performance indicators and the supporting performance qualifiers. The summary identifies overlapping needs, which provides guidance in the efficient prioritization of projects to best address deficiencies. The practice of completing projects that simultaneously address multiple needs may present cost savings as well as being most effective in improving performance indexes across the system. The summary also lists other needs in each of the three performance measurement areas. For more information about needs at the corridor level, see the maps in the appendix which compare both system level and corridor level needs.

SSC 3 needs occur in several categories: higher truck volumes throughout the route contribute to a high level of pavement needs and the need to accommodate trucks and other vehicles in a safe and efficient manner. The pavement condition on some local or regional routes also contributes to low scores in the Kemmerer area. Wildlife and alcohol related crashes, as well as the non-use of safety restraints, contribute to safety problems on some segments.

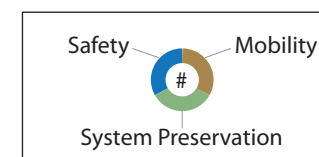
Big game crucial range and migration routes intersect much of the corridor. Several federally listed endangered species are found in the corridor and should be considered in all project planning.

Based on the needs identified in this analysis and the recommended strategies and solution sets, this plan does not identify specific needs to preserve or acquire additional rights of way to accommodate needed improvements. Local and specific ROW requirements based on urban on needs in urban areas should be evaluated in the Urban Areas Corridor Plan in cooperation with local governments and planning organizations. ROW in the Kemmerer area should be evaluated for future improvements.

Overlapping Needs

Overlapping needs are identified on all segments:

- 1** 3.01 - SAFETY/MOBILITY: Wildlife Crashes, Truck Traffic Growth
- 2** 3.02 - SYSTEM PRESERVATION/SAFETY/MOBILITY: Pavement Maintenance Requirement, Wildlife Crashes, Pavement Variance Rating (L&R), Truck Traffic Growth, Bridge Variance Rating (L&R)
- 3** 3.03 - SYSTEM PRESERVATION/SAFETY/MOBILITY: Pavement Maintenance Requirement, Alcohol Related Crashes, Crash Concentrations, Mobility Index
- 4** 3.04 - SYSTEM PRESERVATION/SAFETY/MOBILITY: Pavement Maintenance Requirement, Alcohol Related Crashes, Crash Concentrations, Truck Traffic Growth
- 5** 3.05 - SAFETY/MOBILITY: Non-use of Safety Restraints, Truck Traffic Growth





III. SOLUTION SETS

A solutions menu was created to address the needs identified in the previous sections. This menu identifies potential solution strategies grouped by performance measure categories. The strategies are a preliminary list based on industry accepted approaches and the efforts to date of WYDOT programs to document preferred approaches. This list is not intended to be all-inclusive, but represents types of improvements that may be employed to address documented needs.

Section IV recommends how the solution sets may be efficiently grouped depending on funding availability.

Table 13 - Recommended Solution Sets to Improve Performance in Each Index

System Preservation	Safety		Mobility	
<p><i>Pavement Maintenance Requirement & Pavement Variance Rating</i></p> <p><i>Rutting</i> Mill Mill and overlay</p> <p><i>1S Treatments</i> Mill and overlay Seal Coat Cleaning and sealing joints Patching pavement Micro surfacing</p> <p><i>2S Treatments</i> Roadway Restoration</p> <p><i>3S Treatments</i> Reconstruct Roadway Roadway widening Upgrade geometric design</p> <p><i>Bridge Variance Rating</i> Bridge Replacement Channel reconstruction Cleaning and sealing bridge members Lower weight limits Restore drainage systems Scour countermeasures</p>	<p><i>Weather Related</i> Signage Automated anti-icing systems Grooved pavement ITS Larger signs Snow berms/grading Snow fencing Warning beacons</p> <p><i>Wildlife Related</i> Animal detection systems Animal jump-out or one-way gates ITS Remove brush from ROW Signage Warning beacons Wildlife bridge/underpass Wildlife fencing</p> <p><i>Alcohol Related</i> Centerline rumble strips ITS Law Enforcement Media campaign Shoulder rumble strips</p>	<p><i>Horizontal Geometry</i> Centerline rumble strips Dynamic curve warning system Guardrail Improve/restore superelevation Lighting Oversize/length restrictions Reconstruction/realignment Reduce posted speed Reflectors Shoulder rumble strips Signage Warning beacons</p> <p><i>Vertical Geometry</i> Larger signs Reconstruction/realignment Reduce posted speed Reflectors Signage Warning beacons</p> <p><i>Safety Restraints</i> ITS Law Enforcement Media campaign</p>	<p><i>Volume to Capacity Rating & Traffic Growth / Truck Traffic Growth</i> Acceleration lane Capacity improvements Deceleration lane Increase lane width Intersection/interchange improvements Multimodal improvements Passing lanes Shoulder widening Through lanes Turn lane</p> <p><i>Bridge Variance (L/R)</i> Bridge Replacement Channel reconstruction Cleaning and sealing bridge members Lower allowable weight limits on bridge Restore drainage systems Scour countermeasures</p>	<p><i>Pavement Variance Rating (L/R)</i></p> <p><i>Rutting</i> Mill Mill and overlay</p> <p><i>1S Treatments</i> Cleaning and sealing joints Micro surfacing Mill and overlay Patching pavement Seal Coat</p> <p><i>2S Treatments</i> Roadway Restoration</p> <p><i>3S Treatments</i> Reconstruct Roadway Roadway widening Upgrade geometric design</p>



IV. RECOMMENDATIONS

This section describes recommendations for strategies and priorities to address corridor needs. The selected strategies address the needs described in previous sections and are organized by the three strategic performance areas: System Preservation, Safety, and Mobility. These recommendations provide information and guidance consistent with the Strategic and Long Range Plans to WYDOT help select projects in coordination with the STIP process.

The recommended strategies have been packaged into solution sets that recognize the inherent overlap that investments may have across performance areas. For example, truck passing lanes may simultaneously improve traffic flow (Mobility) and reduce crashes (Safety).

The solution sets are tiered to the three Funding Scenarios identified in the Long Range Transportation Plan. The funding scenarios describe a progressively increasing budget, with generally defined allocations to System Preservation, Safety, and Mobility. With each succeeding level of investment, additional funding is allocated to address shortfalls in performance-based goals.

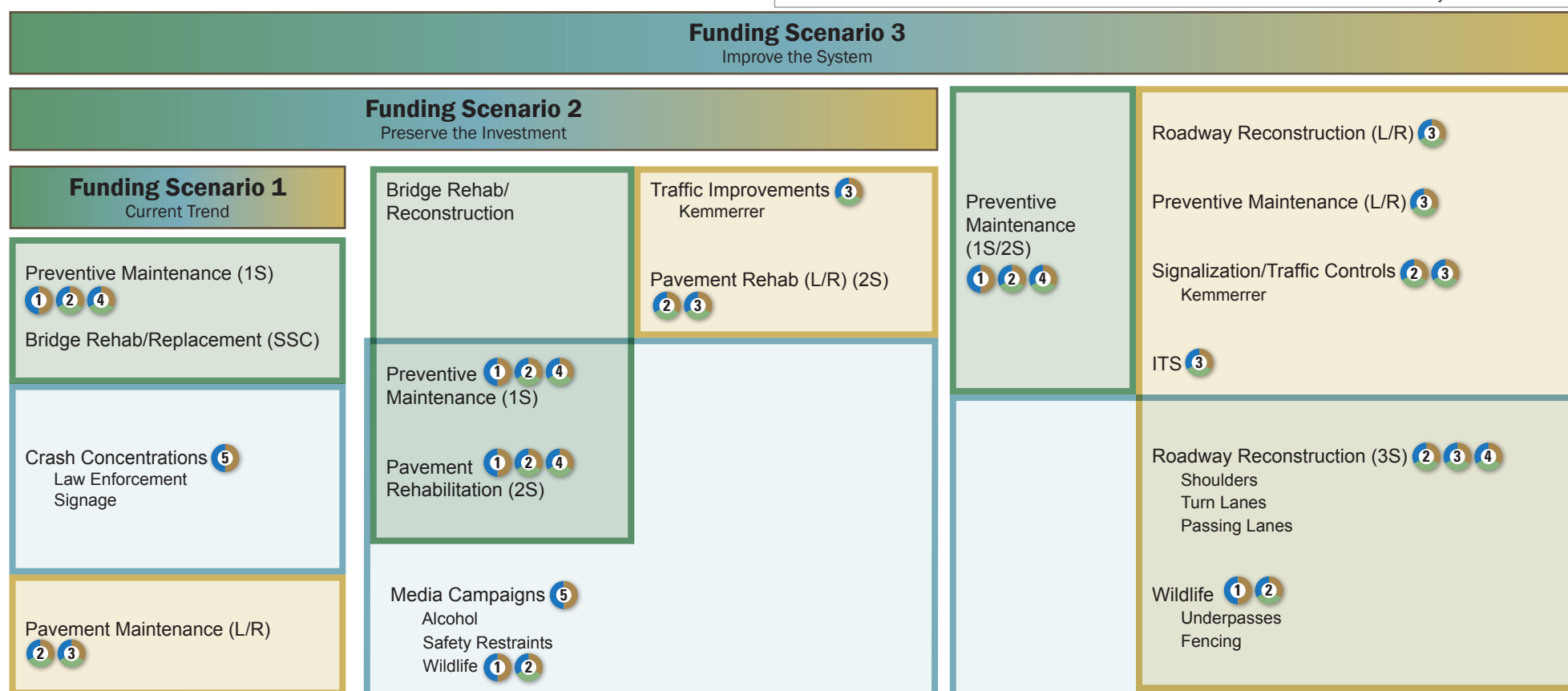
- Funding Scenario 1 – The continuation of program funding at current levels. Most funding is directed to System Preservation needs. System characteristics are expected to decline with inflation and increasing construction costs over time. Few major projects to address Safety, other than with specially restricted and allocated funds, or Mobility would be implemented.
- Funding Scenario 2 – Funding over and above the base level would allow additional investments in pavement and bridge projects to meet WYDOT goals.
- Funding Scenario 3 – Additional funding over and above Scenario 2 would allow WYDOT to maintain and improve existing conditions, achieve pavement and bridge condition goals, plus invest in major projects to improve Mobility.

Funding Scenario 1

Funding Scenario 1, defined as the continuation of current program funding, is focused primarily on addressing System Preservation needs through preventive maintenance efforts. For this corridor, the plan recommends that these funds remain allocated to preventive pavement maintenance, along with reserving a portion to address identified safety needs. Safety needs include specific wildlife-related accident prone areas, alcohol-related crashes, and the non-use of safety restraints. In addition, geometric insufficiencies related to critical crashes are documented at three locations. These needs may be only partially met under current funding and should be focused on areas with documented overlapping needs. Additional needs that cannot be met under Scenario 1 may be delayed pending additional funds under Scenarios 2 or 3.

- Minor surface treatments on the SSC mainline, including mill and overlay.
- Minor surface treatments on local and regional routes to extend service life.
- Bridge rehabilitation and replacement of structurally deficient bridges on the SSC mainline.
- Minor projects to improve safety not involving major construction, such as signage on deficient curves and wildlife crash areas, as well as alcohol/seatbelt-related law enforcement.

Table 14 - SSC 3 Recommended Strategies for Long Range Plan Funding Scenarios



Funding Scenario 2

If sufficient funds to preserve the system in at least its current operational form are made available, WYDOT will direct funding to strengthen pavement and bridge conditions across the system, including on local and regional routes. SSC 3 has significant pavement condition needs on the route as a result of heavy truck traffic. This scenario would allow investments to fully achieve WYDOT goals in the System Preservation investment category. Additional investments should be made to improve safety for wildlife/alcohol related crashes and the non-use of safety restraints.

- Preventive maintenance could be deferred and/or advanced, depending on life cycle, as recommended by the Pavement Management System.
- Reconstruction (2S) to address geometric insufficiencies on the SSC mainline.
- Improvement of pavement condition of Local and Regional Routes, to include preventive maintenance and mill and overlay.
- Minor projects to improve safety not involving major construction, such as rumble strips, lighted signage (geometric deficiencies and wildlife-related crashes), and alcohol-related media campaigns.

Funding Scenario 3

If additional funds are made available to WYDOT under Funding Scenario 3, opportunities would be created to address all three investment categories, thus preserving the investment and improving the overall “health” of the system. Additional funds allow project selection to address overlapping needs, therefore investing funds most effectively. The additional funds would expand to include other items to improve performance in the Mobility Index.

- Roadway reconstruction (3S) to meet long term goals, including correction of geometric deficiencies.
- Roadway widening (3S), including shoulders, to better address growing vehicle and truck traffic.
- Turn lanes, passing lanes, and other auxiliary lanes to address spot congestion and safety issues in or near Kemmerer.
- Intersection and signalization improvements in Kemmerer.

Performance Measurement Over Time

As these performance measures are continually monitored over the coming years it will become evident how the recommended solution strategies and the selected projects address the needs of the corridor and the overall system. Addressing deficiencies documented in the corridor plan will effectively improve the System Preservation, Safety, and Mobility indexes at both the corridor and system level.

If the results of the performance measurement continue to decline the need for additional funding and/or a different solution will become evident. Ongoing performance measure documentation is critical to identify trends, capture the existing health of the system, and allowing an accurate forecast of the future health of Wyoming’s transportation system.

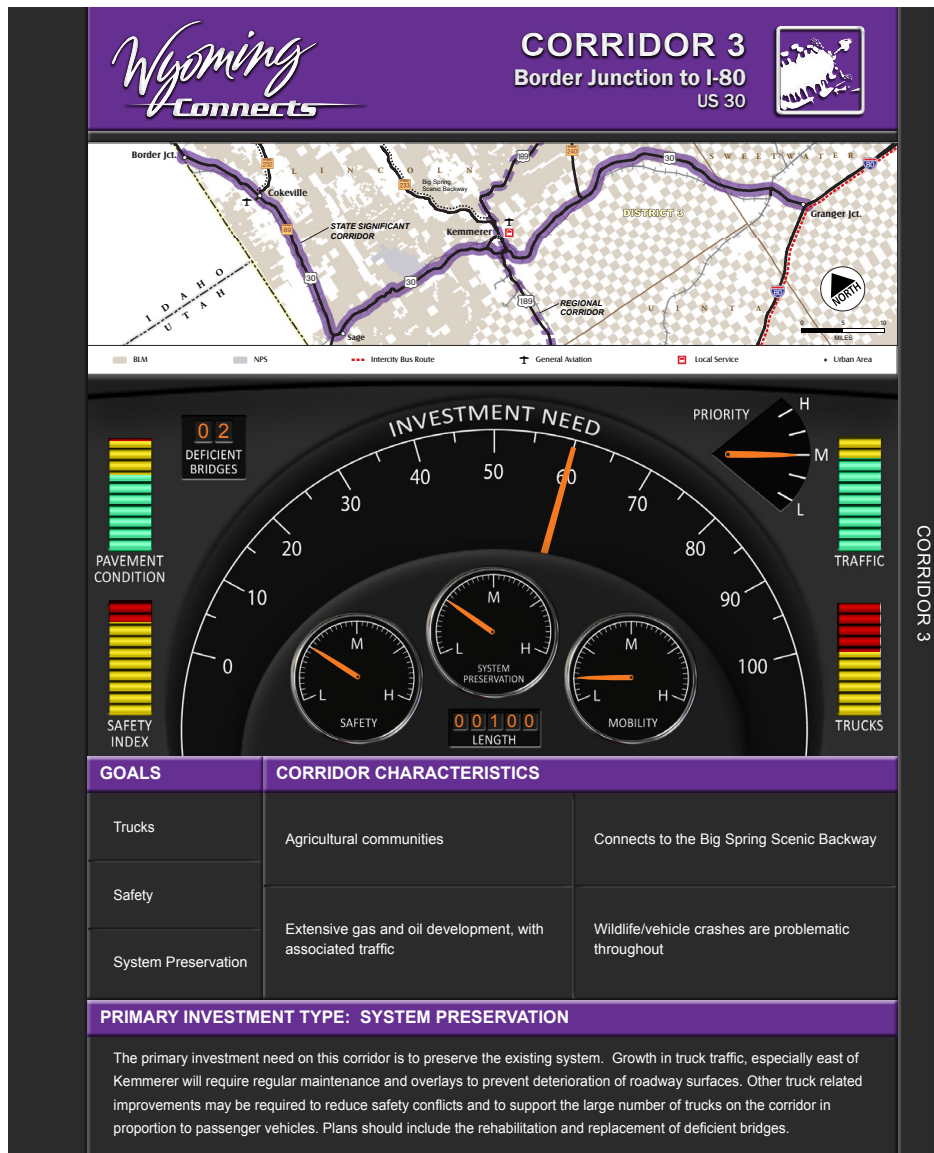


REALIZING THE CORRIDOR VISION

As part of the statewide Wyoming Connects and Long Range Transportation Plan, the Corridor Vision for SSC 3 - and all SSCs - focuses on the identification of overall system performance aggregated from the evaluations of each individual corridor's "health" relative to WYDOT's long-term Strategic Goals. The identified types of investment needs (system preservation, safety, and mobility) expressed in the Corridor Vision are reflected in the three primary need indicators of this Corridor Plan. The analysis of each investment type generated goals representing corridor health issues as communicated by the planning and public process used in development of the Vision. See *Wyoming Connects: Corridor Visions* for more information.

Corridor Vision Goals

The Border Junction to I-80 Corridor Vision captured Key Issues and Emerging Trends of critical importance and how SSC 3 could best serve the communities it connects over the long term. While issues were identified relative to each investment type, the Primary Investment Type is System Preservation:



to each investment type, the Primary Investment Type is System Preservation:

The primary investment need on this corridor is to preserve the existing system. Growth in truck traffic, especially east of Kemmerer will require regular maintenance and overlays to prevent deterioration of roadway surfaces. Other truck related improvements may be required to reduce safety conflicts and to support the large number of trucks on the corridor in proportion to passenger vehicles. Plans should include the rehabilitation and replacement of deficient bridges.

Additional goals which reflect the full context, character, and issues of SSC 3 were set as high priority goals as indicated in Table 15. A review of these Vision Goals compared to the findings of this Corridor Plan provides for a conformance check and identifies additional issues to be considered when evaluating potential projects and implementation plans.

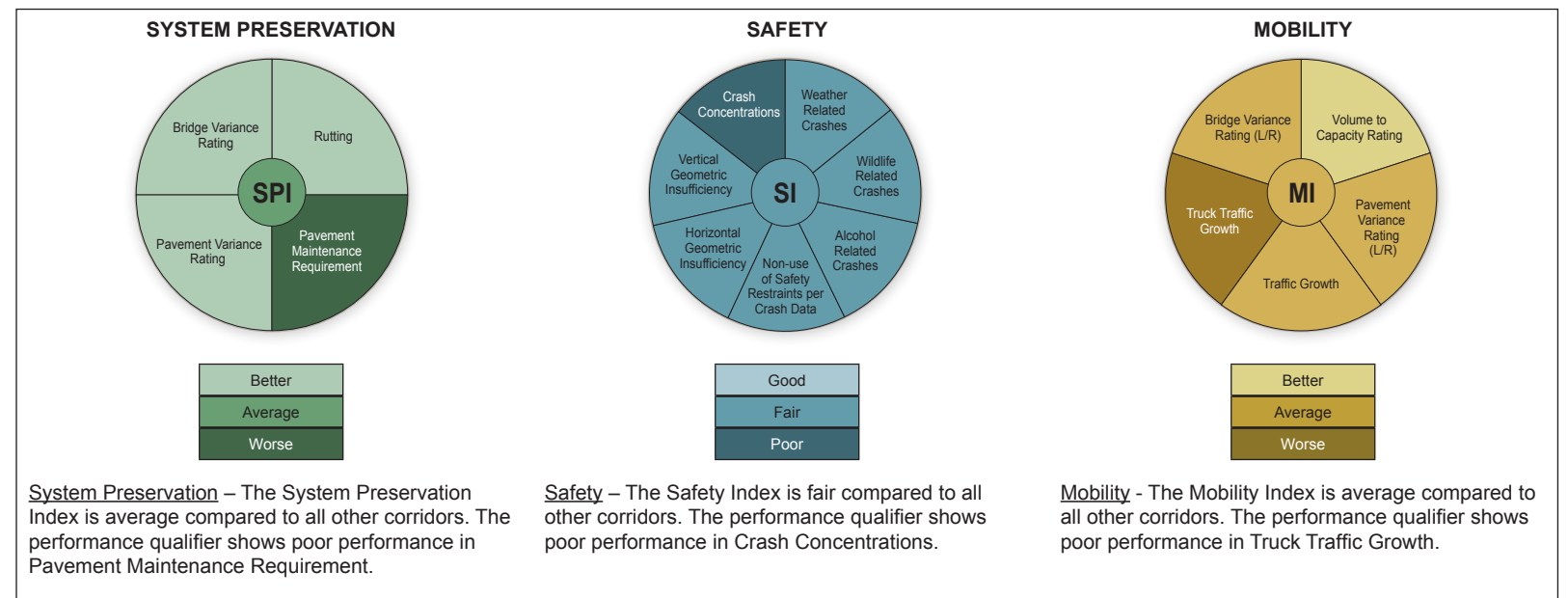
Table 15 - Review of Corridor Vision Goals and Other Considerations

Corridor Visions		High Priority	Other Considerations
Investment Category	Goal		
System Preservation	Preserve the existing transportation system	✓	System Preservation is identified as the primary investment area. Very heavy truck traffic dominates travel and contributes to maintenance needs.
Safety	Reduce fatalities, injuries, and property damage crash rate		High rates of weather and wildlife related crashes indicate the need for improvements.
Mobility	Accommodate growth in truck freight transportation		Maintaining adequate facilities to accommodate truck traffic is important for the regional economy.

CORRIDOR PERFORMANCE

Table 16 shows SSC 3 corridor performance compared to the system. The center of each chart indicates the value of the performance index, with each section indicating the performance qualifier for each measure.

Table 16 - Corridor Performance



Coordination with System Priorities

The corridor comparison can be used to help assign a priority level to entire corridors, if conditions warrant. The Corridor Plans – Executive Summary is published under separate cover and provides an overview of corridor comparisons. The summary identifies areas of greatest need within all performance indexes and for performance qualifiers across the state system. By addressing these areas of greatest need, whether by program, corridor, or corridor segment WYDOT will ensure positive changes in reported conditions throughout Wyoming.

Dashboard from Corridor Visions