

**SR 18, SR 167(AUBURN) TO I-90,
ARM 3.40 TO ARM 28.41, SR MP 2.87 TO SR MP 27.91**

CHARACTERISTICS

Segment Description:

SR 18, SR 167(Auburn) to I-90, ARM 3.40 to ARM 28.41, SR MP 2.87 to SR MP 27.91.

County/Counties: King

Cities/Towns Included: Along its route, the corridor serves Auburn, Covington and Maple Valley.

Number of lanes in the corridor: 2 to 4

Lane width: 11 to 12 feet.

Speed limit: 45 to 60 mph.

Median width: 0 to 88 feet.

Shoulder width: 2 to 20 feet.

Highway Characteristics:

SR 18 has been designated as HSS and as NHS for the entire corridor segment. SR 18 has been assigned the functional class Urban Principal Arterial in the vicinity of MP 2.87 to 16.88 and Rural Principal Arterial in the vicinity of MP 16.88 to 27.91. Also, the SR 18 corridor is designated T-1 with annual tonnage of 17,290,083.

Special Use Lane Information (HOV, Bicycle, Climbing):

There are Weave/Speed Change lanes located on the left in the vicinity of ARM 3.81 to 4.01, and 4.33 to 4.50. There is a Climbing lane located on the left in the vicinity of ARM 21.46 to 24.37 and on the right in the vicinity of ARM 26.93 to 27.54.

Access Control Type(s):

The access control is designated as Full Access Control.

Terrain Characteristics:

The terrain is considered Mountainous in the vicinity of ARM 20.76 to 26.30 and Rolling in the vicinity of ARM 3.40 to 20.76 and 26.30 to 28.41.

Natural Features:

This route serves as both a bypass to the more densely populated areas of central Puget Sound and at the same time provides direct access to many historic and recreational attractions such as White River Valley Historic Museum, Seattle International Raceway, and Tiger Mountain State Forest.

Adjacent Land Description:

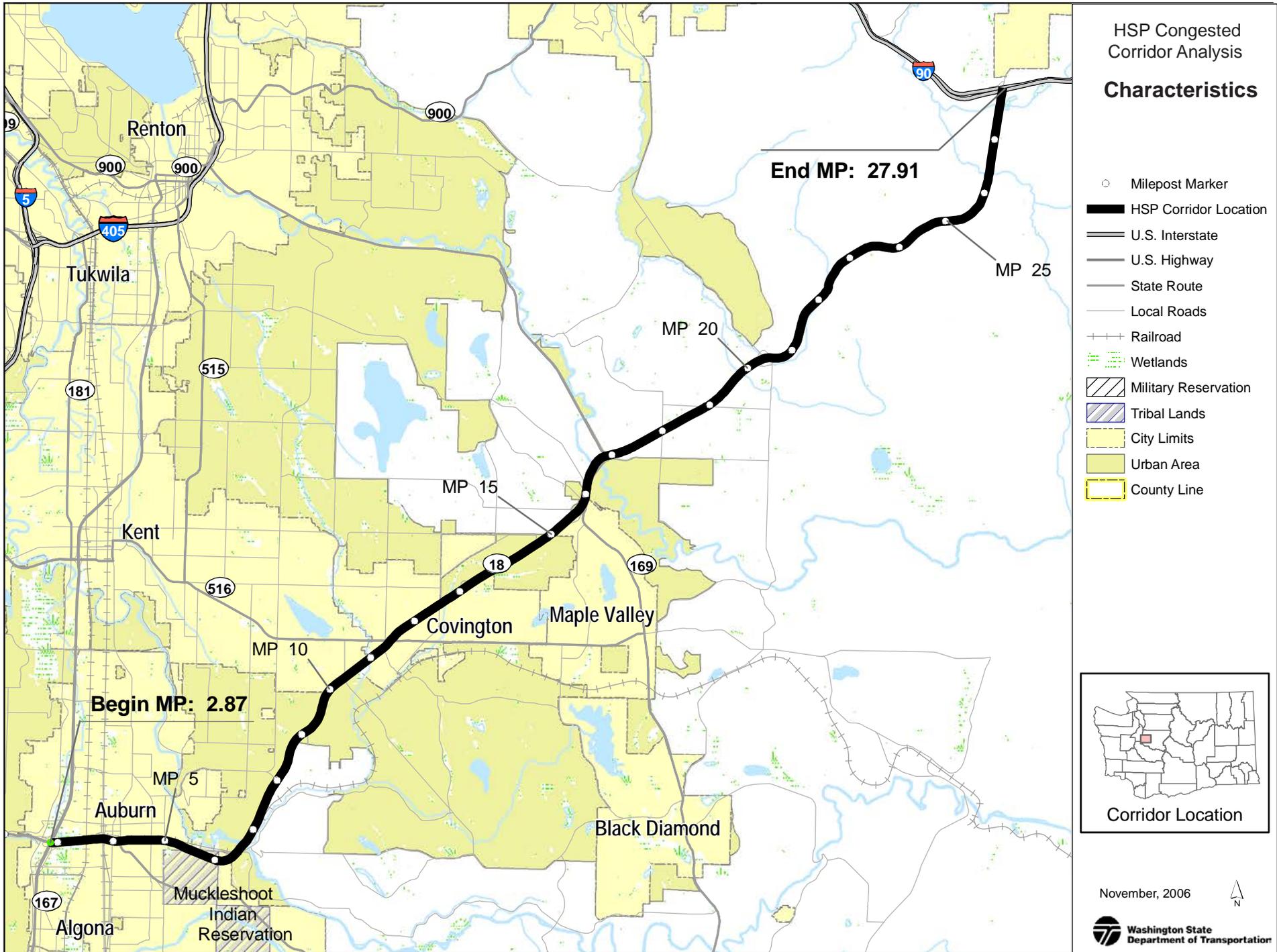
The route traverses rural and forested areas, as characterized by the Roadside Classification Plan. At WSDOT we seek to address the concerns of the tribal nations using the process outlined in Section 106 of The National Historic Preservation Act and the WSDOT Tribal Consultation Policy adopted in 2003 by the Transportation Commission as part of the WSDOT Centennial Accord Plan. WSDOT has continuously coordinated with the Muckleshoot Indian Tribe throughout the design and construction of the SR 18 corridor. In response to concerns of the Muckleshoot Indian tribe, WSDOT, in cooperation with Eastern Washington University, completed archeological studies within the 180th Avenue Southeast to Maple Valley project limits. Eastern Washington University is now conducting archeological studies between Maple Valley and I-90.

Environmental Issues:

Sensitive areas, such as wetlands and streams within the corridor, are marked early design in order to avoid negative impacts whenever reasonably possible. The Maple Valley to Issaquah Hobart Road section includes creation, enhancement and purchase of wetlands; realignment of streams; and replacement of culverts with bridges to improve fish passage. During construction WSDOT strives to keep environmental impacts to a minimum. The contractor must comply with federal, state and local environmental regulations, and follow rules to address water quality; water pollution control; storm water control; stream mitigation; wetland mitigation; revegetation; and collection, containment and disposal of slurry water. Highway 18 projects build detention ponds to capture and clean highway runoff; offset wetland impacts by creating new wetlands or enhancing existing ones; replace narrow culverts with bridges to help fish swim up and down streams.

Major Economic Issues:

SR 18 is a crucial freight and people mover in southeast King County. Transforming a two-lane rural road to a four-lane modern freeway keeps traffic moving and improves safety.



**SR 18, SR 167(AUBURN) TO I-90,
ARM 3.40 TO ARM 28.41, SR MP 2.87 TO SR MP 27.91**

ASSETS

Pavement:

There are approximately 89 lane miles of Hot Mix Asphalt on this segment of SR 18.

Signal:

There are 8 traffic signals located along this corridor at SR 18 ramp terminals that intersect with C St (EB), SR 164 (EB & WB), SR 516 (EB & WB), SE 232nd St (EB & WB), and Issaquah/Hobart Rd (EB).

Structures:

There are thirty structures in this corridor that consist of: five Concrete Box Girder, three Concrete Slab, nineteen Pre-Tensioned Concrete Beam, one Post-Tensioned Box Girder, one Steel Beam and one Steel Truss Concrete Box Girder. (Ramps, and locally owned structures (if any exist) are not identified in this section and may not be reflected on maps.)

Features Crossed:

SR 18 crosses Carey Creek Tributary, Carey Creek, Holder Creek and Raging River.

ITS Facilities:

SR 18 has an extensive ITS system in place, that includes Ramp Meters, closed circuit television cameras (CCTV) , Data Stations, and related conduit and fiber.

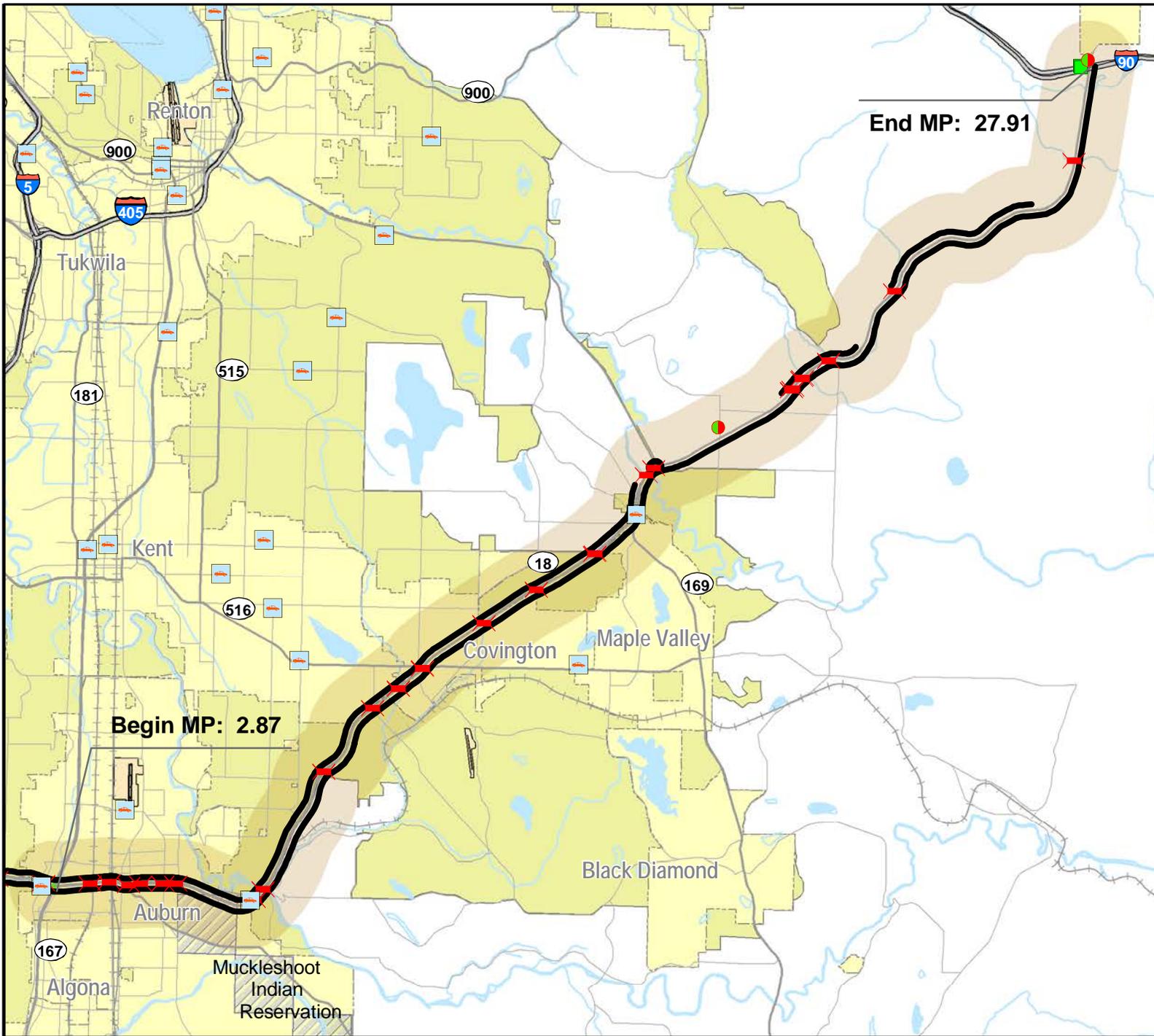
Railroad Crossings:

There are four railroad crossings along this corridor. None are at-grade.

Asset Other:

There is one transit center near this corridor located in the City of Auburn. There are three Park & Ride lots located near this corridor. They are in the cities of Auburn (Peady Canyon and Auburn/Black Diamond Rd) and Maple Valley. There is one local airport and one private located near this corridor. The local airport is in the City of Auburn. The private airport is in the City of Kent. There is one Sounder Commuter Railroad Station near this corridor located in the City of Auburn. There are two pit sites located near this corridor. One is the Wax Road Pit Site located just north of SR 18 in the City of Covington. The other is the SR 516 Pit Site located south of SR 18 near SR 416 in the City of Covington. There is one quarry located near this corridor. It is an unnamed quarry site close to SR 18 approximately 2.3 miles eastbound from SR 169.

HSP Congested Corridor Analysis Assets



- Corridor Location
- Assets**
 - Signalized Intersection
 - At Grade Railroad Crossings
 - Bridge
 - Weigh Stations
 - Rest Area Sites
 - Ferry Terminal
 - Park and Ride
- Corridor Pavement Type**
 - HMA
 - BST
 - PCCP
- Other Features**
 - U.S. Interstate
 - U.S. Highway
 - State Route
 - Local Roads
 - Ferry Route
 - Railroad
 - Military Reservation
 - Tribal Lands
 - City Limits
 - Urban Area
 - Airports
 - County Line

**SR 18, SR 167(AUBURN) TO I-90,
ARM 3.40 TO ARM 28.41, SR MP 2.87 TO SR MP 27.91**

USAGE

General Origin and Destination Travel Characteristics:

Users of this corridor include:

Local residents traveling to work and school.

Long-distance commuters

Interstate and intrastate freight

Customers of businesses along the route.

People traveling to recreational facilities

Snow/ice Issues:

There are no sections within this corridor which present a problem for normal snow/ice control.

Annual Average Daily Traffic:

Ranges from 14,000 to 76,500.

Significant Seasonal Average Annual Daily Traffic Changes:

This corridor is one of many corridors in the Puget Sound region that experience consistent high use throughout the year.

General Description of Major Average Annual Daily Traffic Locations:

On SR 18, the annual average daily traffic (AADT) in the vicinity of SR 164 is 76,500 and decreases to 50,900 in the vicinity of Auburn/Black Diamond Rd. and decreases to 34,800 in the vicinity of SE 304th St. and drops to 22,900 at SE 256th St.

Freight:

Freight Classification: T1

Yearly Tonnage: 17.3M

Truck Percentage of Annual Average Daily Traffic: 6.6% to 17.7%

Additional Usage Comments:

There are no additional comments.

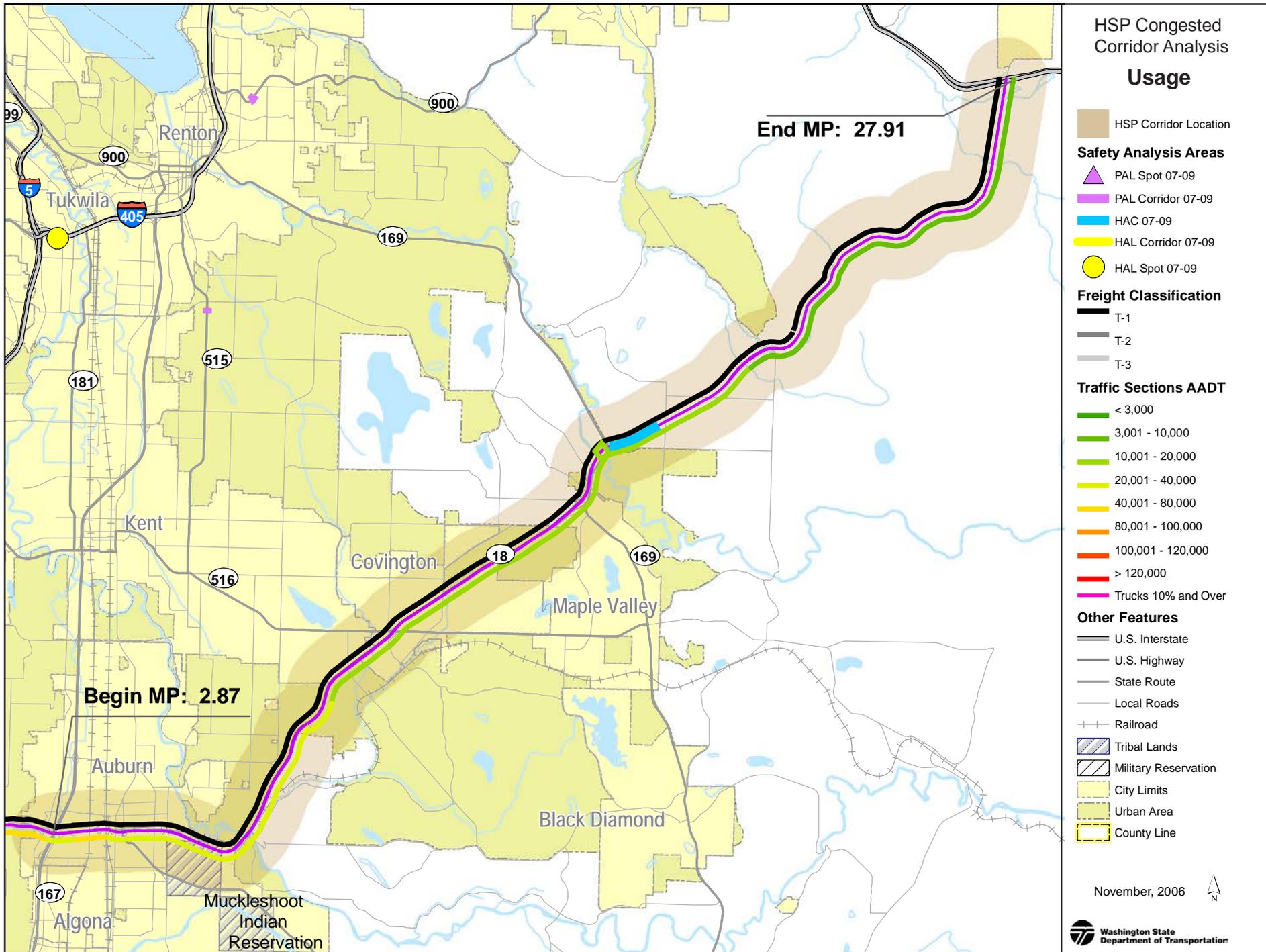
Average Annual Societal Cost of All Collisions: Approximately \$13M

Collisions:

Severe No of Collisions: 24

Less Severe No of Collisions: 633

List Data Years: 2002 to 2004



NEEDS AND STRATEGIES

Preservation

Pavement Condition and Needs:

Preserve transportation infrastructure to achieve the lowest life cycle cost and prevent failure. Pavements should be programmed targeting the lowest life cycle cost per the Washington State Pavement Management System "due" date. This is the point in a pavement's life cycle where optimum pavement life has been achieved and the least cost to resurface is obtained. Pavements that have past this point typically incur more costs to rehabilitate. Existing safety features shall be restored to provide basic design level standards.

Pavement Management Strategies:

The pavement in the corridor is 100% flexible. Of the flexible pavement none is composite. It would seem that for future paving hot-mix asphalt (HMA) will be the pavement of choice. Pavements will be programmed targeting the lowest life cycle cost per the Washington State Pavement Management System "due" date.

Structures Condition and Needs:

This corridor has 59 bridge structures. Of these, 15 bridges are in need of preservation work. They include six concrete box bridges, four pre-tensioned concrete beam bridges, four steel thru truss bridges, and one concrete slab (hollow). 11 bridges need seismic retrofit, two bridges need bridge deck repair-overlay, one bridge needs painting. One of the steel thru truss bridges has non-standard vertical clearance and it needs to be raised. This includes ramps and locally owned structures if any exist. (This may include ramps and locally owned structures if any exist.)

Structures Management Strategies:

Preserve transportation infrastructure to achieve the lowest life cycle cost and prevent failure. Painting of one bridge, overlay of two bridges, and raising of vertical clearance of one bridge are planned within 20 years. Seismic retrofit of 11 bridges are planned between 2047 and 2059.

Additional Condition and Needs:

Preserve transportation infrastructure such as electronic/mechanical systems, major drainage, safety rest area refurbishment, traffic control systems, unstable slopes, weight facilities.

Unstable Slopes:

There are 14 unstable slopes identified along this corridor. Of the 14 unstable slopes 2 are inactive, 2 have been mitigated, 3 are programmed to be addressed, 3 have a conceptual design solution, and 4 are active and being monitored. There were no weight facilities identified for this corridor. There are no weigh station improvements planned for this corridor. There are two locations along SR 18 that have been identified as a major drainage issues. These locations are located along SR 18 in the vicinity of MP 16.88 and MP 22.20.

Additional Management Strategies:

Replace or rehabilitate electrical, electronic, and mechanical systems when they reach the end of their service life. Replace or rehabilitate drainage features that have structurally failed or fails to protect the roadway prism event of 10 years or less. Refurbish deficient safety rest area buildings, utilities and sites. Upgrade existing traffic control and monitoring systems as technology changes to avoid obsolescence and capture the benefits of new technology. Stabilize 100% of unstable slopes.

Improvement

Mobility Condition and Needs:

This highway functions as an eastern bypass around one of the more congested areas of Pierce county and south King county connecting I-5 and SR 512/SR167 to I-90. Bottlenecks in the vicinity of SR 167/Auburn and the I-90 interchange along with the remaining the northerly two lane portion of SR 18 is often congested and considered an impediment to the movement of freight and goods.

Mobility Management Strategies:

WSDOT is in the midst of a several-phase project to widen SR 18 to four lanes from Auburn to I-90. This effort includes many interchange projects and other details, with the aim of increasing capacity, reducing congestion and improving safety. Determine the most cost-effective improvements for this corridor. Near term strategies include investments that address system chokepoints. A combination of added general purpose lanes, high occupancy vehicle lanes, managed lanes, added Bus service

**SR 18, SR 167(AUBURN) TO I-90,
ARM 3.40 TO ARM 28.41, SR MP 2.87 TO SR MP 27.91**

will be developed and refined over the next 20 to 50 years improvement management strategies. It will be a median divided, four-lane, grade separated freeway when all necessary work has been accomplished. Consideration should be given to improving the I-90/SR 18 interchange as a first order of work.

Safety Condition and Needs:

There is one High Accident Corridor in the vicinity of MP 16.88 to 17.87.

Safety Management Strategies:

Safety enhancements include a 48-foot grass median separating oncoming traffic, interchanges in place of intersections, and truck climbing lanes.

Reduce and prevent deaths and the frequency and severity of disabling injuries, and reduce the societal costs of accidents (Focus on the rate of severity and frequency).

Safety improvements that will be strategically considered include: Eliminate high accident locations on state highways through hazard mitigation. Eliminate Pedestrian Accident Locations on state highway through hazard mitigation. Eliminate high accident corridors using standards based highway safety solutions. Construct and improve intersection channelization and/or signals in compliance with federal guidelines to improve safety. Improve the geometrics of the Interstate system per Federal Highways Administration (FHWA)/WSDOT stewardship agreement. Eliminate major at-grade intersections on multi-lane, divided highways with speeds of 45 MPH or greater. Improve roadways where geometrics, traffic volumes, and speed limits indicated a high accident potential by instituting standards based highway safety solutions. Proactively address pedestrian safety along state highway segments that exhibit high pedestrian use and the potential for future accidents. Address highway safety through statewide low-cost, high benefit and short-term projects.

Environmental Condition and Needs:

Reduce impacts by addressing noise reduction, air quality, storm water, wetland mitigation, chronic environmental deficiencies, and fish barriers.

Environmental Management Strategies:

Environmental improvements that will be strategically considered include:

Strategically prioritize and retrofit existing state transportation facilities for noise reduction. Implement all transportation control measures as identified by the Washington State Implementation Plan for Air Quality. Strategically prioritize repair, replace, and retrofit existing state transportation facilities for storm water runoff quality and quantity to reduce environmental impacts.

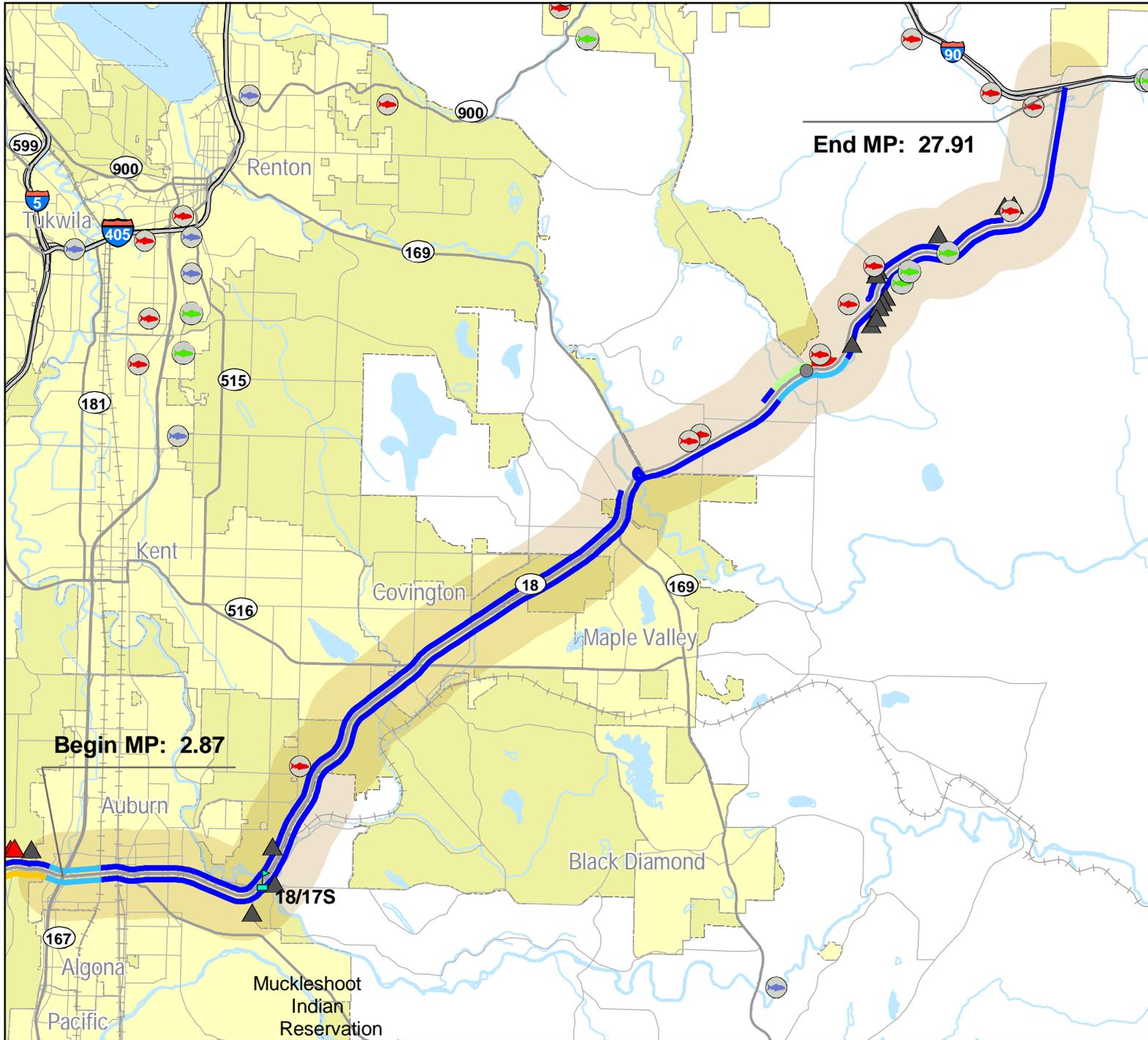
Strategically prioritize and re-mediate wetland mitigation sites during the later stages of the monitoring phase to ensure they function as conditioned by the issuance of permits. Develop criteria, strategically prioritize and repair existing chronic environmental deficiencies of transportation facilities. Strategically prioritize, repair, replace and retrofit existing barriers to fish passage on the state highway system within 20 years as appropriate to reduce existing barriers to fish passage statewide.

Restrictions:

There are none identified.

50-Year Configuration:

The corridor will be progressively improved to provide a grade separated four lane connection between I-5 and I-90.



HSP Congested Corridor Analysis

Needs

- HSP Corridor Location
- Bridge Replacement Priority**
- Replacement
- Seismic
- Special
- Scour
- Painting
- Miscellaneous
- Bridge Deck
- Other Bridge Issues**
- 2 Lane BW Narrow Bridge
- Restricted Bridge
- Posted Bridge
- Vert. Clearance 15.5' Or Less
- Fish Barriers**
- Require Repair
- Little Gain
- Undetermined
- Unstable Slope**
- Debris Flow
- Erosion
- Landslide
- Rockfall
- Settlement
- Paving Due**
- Past Due
- 2005 - 2007
- 2008 - 2009
- 2010 - 2011
- 2012 - 2026
- U.S. Interstate
- U.S. Highway
- State Route
- Local Roads
- Railroad
- Military Reservation
- Tribal Lands
- City Limits
- Urban Area
- County Line

November, 2006



**SR 18, SR 167(AUBURN) TO I-90,
ARM 3.40 TO ARM 28.41, SR MP 2.87 TO SR MP 27.91**

TIERED PROPOSED SOLUTIONS

Minimum Fix

Description:

SR 18 (BARM 3.41 to EARM 3.41): Construct NB SR 167 to WB SR 18 and EB SR 18 to SB SR 167 ramps (\$24M - \$32M Solution cost) (30 % Collision Reduction + 800 Reduction in Daily Vehicle hours of Delay = \$43M Benefit)

SR 18 (BARM 4.22 to EARM 4.77): Add an auxiliary lane each direction on SR 18 from C Street to SR 164 (\$21M - \$28M Solution Cost)(10-30 % Collision Reduction + 64% Reduction in Daily Vehicle hours of Delay = \$41M Benefit)

SR 18 (BARM 28.36 to EARM 28.41): Reconstruct the SR 18/I-90 interchange (\$9M - \$12M Solution Cost)

SR 18 (BARM 2.87 to EARM 27.91): Install signals as planned by NW Region Traffic (\$1.8M - \$2.5M Solution Cost)

SR 18 (BARM 2.21 to EARM 28.41): Install ITS including CCTV, data station, HARS, HART, ramp meter, VMS, and fiber optic line throughout the entire corridor (\$31,650,000).

Delay Reduction: 60 to 70%

Collision Reduction: 10 to 30%

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: \$84 M - \$112 M

Cost Estimate Explanation:

The estimated Cost is the total of the costs for the solutions described for minimum fix.

Minimum Fix Benefits:

The Collision and Delay Reductions occur in the vicinity of the proposed solutions and vary according to the proposed solution. The lack of direct ramp connections between SR 167 and SR 18 was sighted by the Trucking Association as a freight bottleneck. By providing these missing links, freight travel will be enhanced in this corridor. Interchange improvements will improve access to SR 164 for both amphitheater traffic as well as Crystal Mountain as well as improving the flow for through truck movements on SR 18.

Moderate Fix

Description:

SR 18 (BARM 20.84 to EARM 24.11): four lane widening from Issaquah-Hobart Road to Tigergate (\$18M to \$24M Solution Cost)(10 to 30 % Collision Reduction + 92% Reduction in Daily Vehicle hours of Delay = \$84.5M Benefit)

Delay Reduction: 85 to 95%

Collisions Reduction: 10 to 30%

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: \$18 M to \$24 M

Cost Estimate Explanation:

The estimated Cost is the total of the costs for the solutions described for moderate fix.

Moderate Fix Benefits:

The Collision and Delay Reductions occur in the vicinity of the proposed solutions and vary according to the proposed solution.

Maximum Fix

Description:

SR 18 (BARM 24.11 to EARM 28.41): Complete four lane widening from Tigergate to I-90 (\$23M to \$31M Solution Cost)(10 to 30 % Collision Reduction + 86% Reduction in Daily Vehicle hours of Delay = \$121M Benefit)

Delays Reduction: 85 to 95%

Collisions Reduction: 10 to 30%

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: \$23 M to \$31 M

**SR 18, SR 167(AUBURN) TO I-90,
ARM 3.40 TO ARM 28.41, SR MP 2.87 TO SR MP 27.91**

Cost Estimate Explanation:

The estimated Cost is the total of the costs for the solutions described for maximum fix.

Maximum Fix Benefits:

The Collision and Delay Reductions occur in the vicinity of the proposed solutions and vary according to the proposed solution.

Project Benefits

- Safety. Replaces intersections with freeway interchanges; reduces likelihood of head-on collisions by building 48-foot median to divide opposing directions of traffic; constructs truck climbing lanes. Our data show that these improvements are significantly improving safety (pdf 343 kb) on SR 18.

- Congestion relief. Increases capacity by two lanes, remove intersections and signals that slow down traffic.

- Environment. Highway 18 projects build detention ponds to capture and clean highway runoff; offset wetland impacts by creating new wetlands or enhancing existing ones; replace narrow culverts with bridges to help fish swim up and down streams.

Off-System Solutions:

None identified.

Special Studies/Reports:

SR 18 Route Development Plan.

Required Studies

Corridor studies will be identified in the future.

Start/Completion Date of Study:

None identified.

Expected Results

The study would develop a strategy that would identify incremental phases of construction that would progressively build toward the 50 Year corridor vision.

Funded Projects within Corridor Limits

Project No	Title
101809A	SR 18/"C" St SW I/C to SE 304th St Br
101809B	SR 18/"C" St SW I/C to SE 304th St Br
101809C	SR 18/Auburn Black Diamond Rd Vic to Green River Vic
101811C	SR 18, Green River Bridge - Deck Rehab.
101812H	Green River Bridge 18/17
101810S	SR 18/Green River Vicinity-Unstable Slope
101813F	SR 18/SE 304th to SR 516 - Median Cross Over Protection
101817C	SR 18/Covington Way to Maple Valley
101820C	SR 18/Maple Valley to Issaquah/Hobart Rd.
101821A	SR 18/Issaquah/Hobart Road Vicinity
197910G	Management of Environmental Wetland Mitigation Sites
101821Q	SR 18/Median Barrier and WSP Crossing Upgrade @ MP 19.92
101821P	SR 18/Carey Creek Tributary to Issaquah-Hobart Rd Vic
101818S	SR 18/Holder Creek Bridge Bridge Deck Overlay
101824E	SR 18/Issaquah/Hobart Rd I/C to I-90

**SR 18, SR 167(AUBURN) TO I-90,
ARM 3.40 TO ARM 28.41, SR MP 2.87 TO SR MP 27.91**

Additional Comments:

None identified.

Data Sources and Contacts used:

Washington State Highway System Plan: 2003-2022, dated February 2002

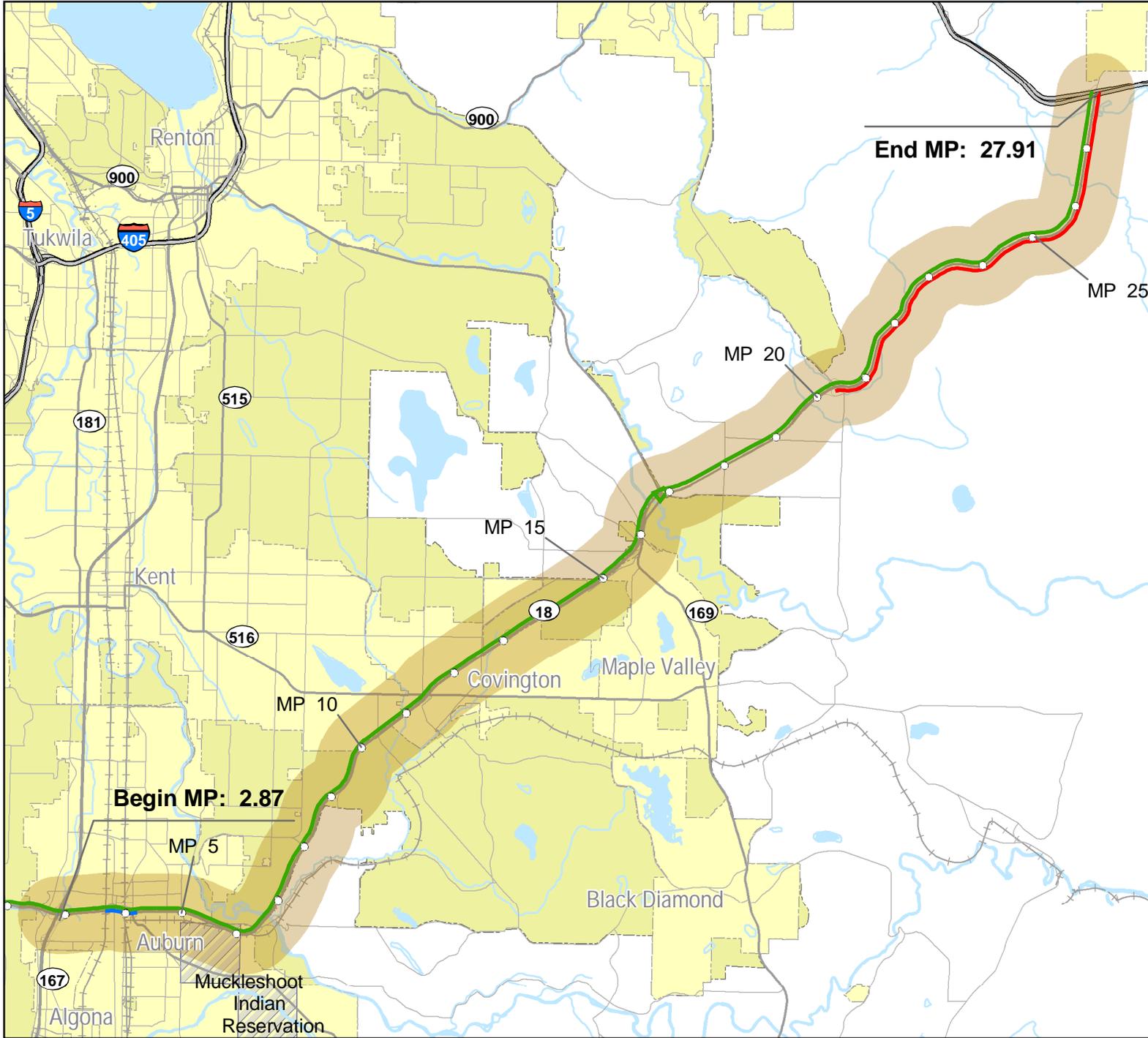
GIS Environmental and Transportation Workbench

Capital Improvement and Preservation Program

Studies from WSDOT NW Region Planning Library (internal)

Bridge Structures and Preservation Data - WSDOT Bridge

Transportation Data Office



HSP Congested Corridor Analysis Solutions

HSP Corridor Location

Solutions

- Tier 1
- Tier 2
- Tier 3

Other Features

- U.S. Interstate
- U.S. Highway
- State Route
- Milepost Marker
- Local Roads
- Railroad
- Tribal Lands
- Military Reservation
- City Limits
- Urban Area
- COUNTY

Begin MP: 2.87

End MP: 27.91

November, 2006

