

**SR 522, I-5 (SEATTLE) TO SR 2 (MONROE),  
ARM 0.00 TO ARM 24.68, SR MP 0.00 TO SR MP 24.68**

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**CHARACTERISTICS**

**Segment Description:**

SR 522, I-5 (Seattle) to SR 2 (Monroe), Arm 0.00 to Arm 24.68, SR Milepost 0.00 to SR Milepost 24.68.

**County/Counties:** King and Snohomish

**Cities/Towns Included:** SR 522 serves the City of Seattle, Lake Forest Park, Kenmore, Bothell, Woodinville and Monroe.

**Number of lanes in the corridor:** 1 to 5

**Lane width:** 10 to 24 feet.

**Speed limit:** 30 to 60 mph.

**Median width:** 0 to 180 feet.

**Shoulder width:** 3 to 10 feet.

**Highway Characteristics:**

SR 522 has been designated as both HSS and NHS. SR 522 has been assigned the functional class Urban Other Principal Arterial in the vicinity of Arm 0.00-10.46 and Urban Principal Arterial in the vicinity of Arm 10.46-24.68. Also, the SR 522 corridor is designated T-1 with annual tonnage of 12,956,000 in the vicinity of Arm 0.00-14.09 and T-2 in the vicinity of 14.09-24.68 with annual tonnage of 7,821,000.

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

There are transit lanes on the left in the vicinity of Arm 4.43 - 7.49 and on the right in the vicinity of Arm 3.72-4.30 and 5.46-7.59. There are two-way-left-turn lanes in the vicinity of Arm 2.16-4.14, 4.33-8.18 and 9.17-9.73. There are weave/speed change lanes located on the right in the vicinity of Arm 11.48-11.83 and on the left in the vicinity of Arm 11.58-11.87. There is one climbing lane located on the left in the vicinity of 14.40-15.54.

**Access Control Type(s):**

There is full access control in the vicinity of ARM 0.00 - 0.56 and 10.41-24.68. There is Managed Class 4 control in the vicinity of ARM 0.56-10.41.

**Terrain Characteristics:**

The terrain is considered rolling for the entire length of this corridor.

**Natural Features:**

This corridor provides access to many recreational areas on or near the northerly portion of Lake Washington,

**Adjacent Land Description:**

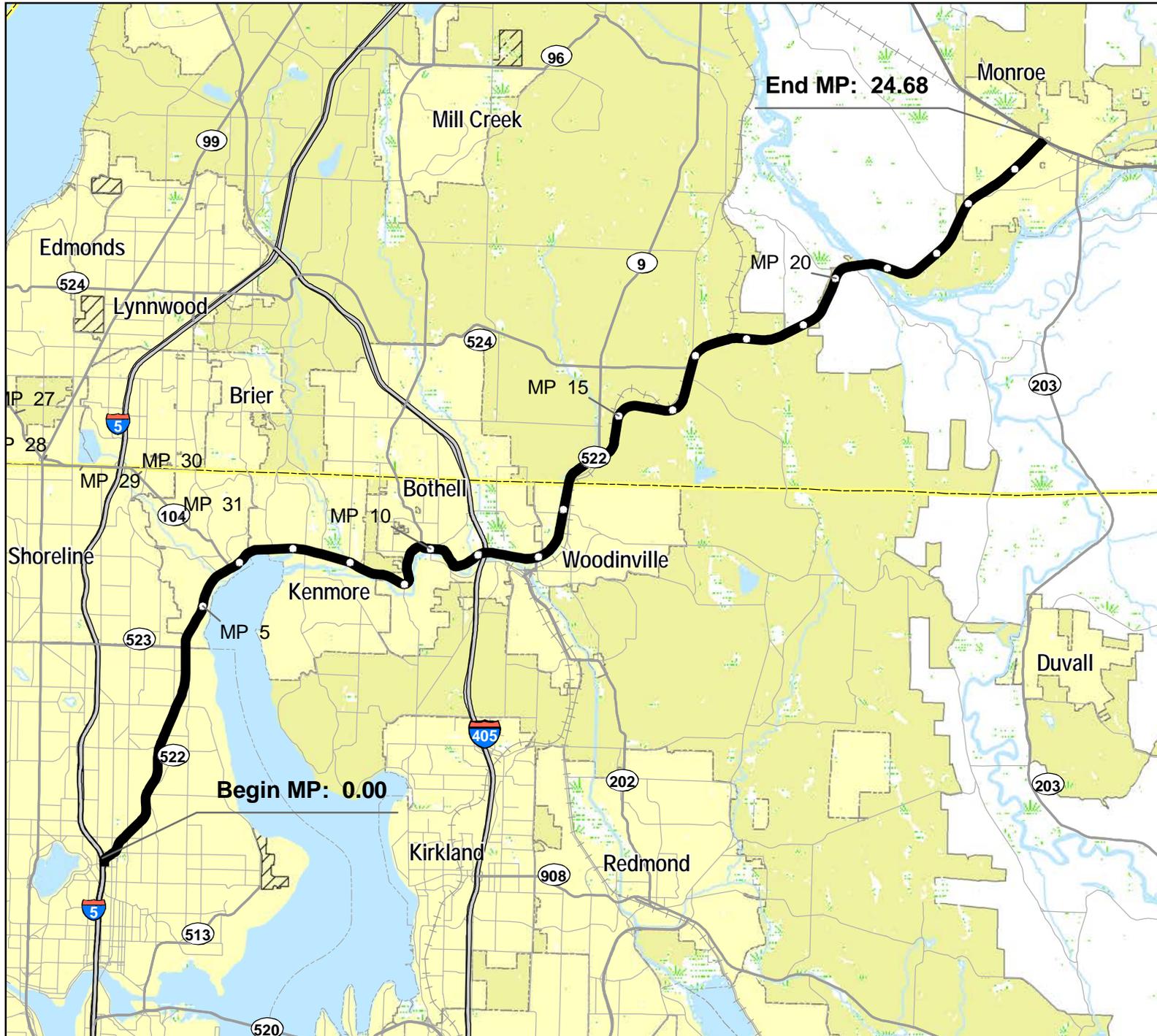
SR 522 varies between Urban and Semi-Urban and Rural in the vicinity of Milepost 0.00-24.80. Rural Residential land, Light Industrial/Commercial land occurs throughout the corridor.

**Environmental Issues:**

Throughout the design and construction of all projects on SR 522, WSDOT will give the highest consideration to reducing impacts to the environment and improving current environmental conditions. Storm water ponds, treatment facilities, and construction erosion control measures will be built to prevent dirty water runoff from reaching area streams and wetlands. New and bigger culverts will be installed where needed, helping to keep water off the roadway during storms and giving salmon in area streams more room to maneuver when crossing them.

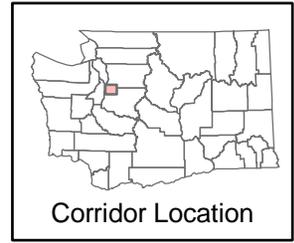
**Major Economic Issues:**

People use this route to travel to business or recreational facilities. Commercial truck drivers haul freight to, from and around the Puget Sound area.



### HSP Congested Corridor Analysis Characteristics

- Milepost Marker
- ▬ HSP Corridor Location
- ▬ U.S. Interstate
- ▬ U.S. Highway
- ▬ State Route
- ▬ Local Roads
- ▬ Railroad
- ▬ Wetlands
- ▬ Military Reservation
- ▬ Tribal Lands
- ▬ City Limits
- ▬ Urban Area
- ▬ County Line



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***ASSETS***

**Pavement:**

There are approximately 79 lane miles of Hot Mix Asphalt and 5 miles of Portland Cement concrete on this segment of SR 522.

**Signal:**

There are 17 traffic signals located along this corridor as SR 522 intersects cross roads at 30th Ave. NE, NE 125th St. (Old SR 513), NE 127th St., NE 130th St., Erickson Pl. NE, SR 532-NE 145th St., NE 165th St., NE 170th St., 61st Ave. NE, 68th Ave. NE, 73rd Ave NE, 80th Ave. NE, 96th Ave. NE, NE 180th St., SR 527/Main St., Kaysner Way/Mobile Home Park, and Fales Rd./Echo Lake Rd.

**Structures:**

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

**Features Crossed:**

SR 522 crosses Swamp Creek, North Creek and the Snohomish River.

**ITS Facilities:**

Currently there are no ITS components on SR 522.

**Railroad Crossings:**

There are railroad crossings in the vicinity of Milepost 14.13 and Milepost 24.61. Neither are at-grade.

**Asset Other:**

There are transit, park and ride facilities in the general vicinity of this corridor.



### 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

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**USAGE**

**General Origin and Destination Travel Characteristics:**

This highway serves as the main arterial for access to the communities of Lake Forest Park, Kenmore, Bothell and Woodinville. Users of this corridor include:

Local residents traveling to work and school.

Longer distance commuters traveling between Seattle and the outer suburbs of Northeast King County

Long distance trips to Snohomish County communities and beyond to areas east of the Cascade Mountains.

Customers of businesses along the route.

People traveling to recreational facilities.

**Snow/ice Issues:**

There are minor snow and ice issues in this location due to curbing, driveways and intersections.

**Annual Average Daily Traffic:**

Ranges from 14,972 to 81,116.

**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 522, the annual average daily traffic (AADT) in the vicinity of 75th St. NE is 37,200 and increases to 48,600 in the vicinity of SR 104. It decreases to 35,800 in the vicinity of SR 527 and increases to 81,100 in the vicinity of I-405. It then decreases to 57,800 in the vicinity of SR 202 and again decreases to 40,600 in the vicinity of 195th and further decreases to 29,700 in the vicinity of SR 9. It further decreases to 23,800 in the vicinity of Echo Lk Rd and finally drops to 14,900 in the vicinity of 164th St.

**Freight:**

**Freight Classification:** T-1 and T-2

**Yearly Tonnage:** 13M

**Truck Percentage of Annual Average Daily Traffic:** 4.9% to 14.9%

**Additional Usage Comments:**

There are no additional comments.

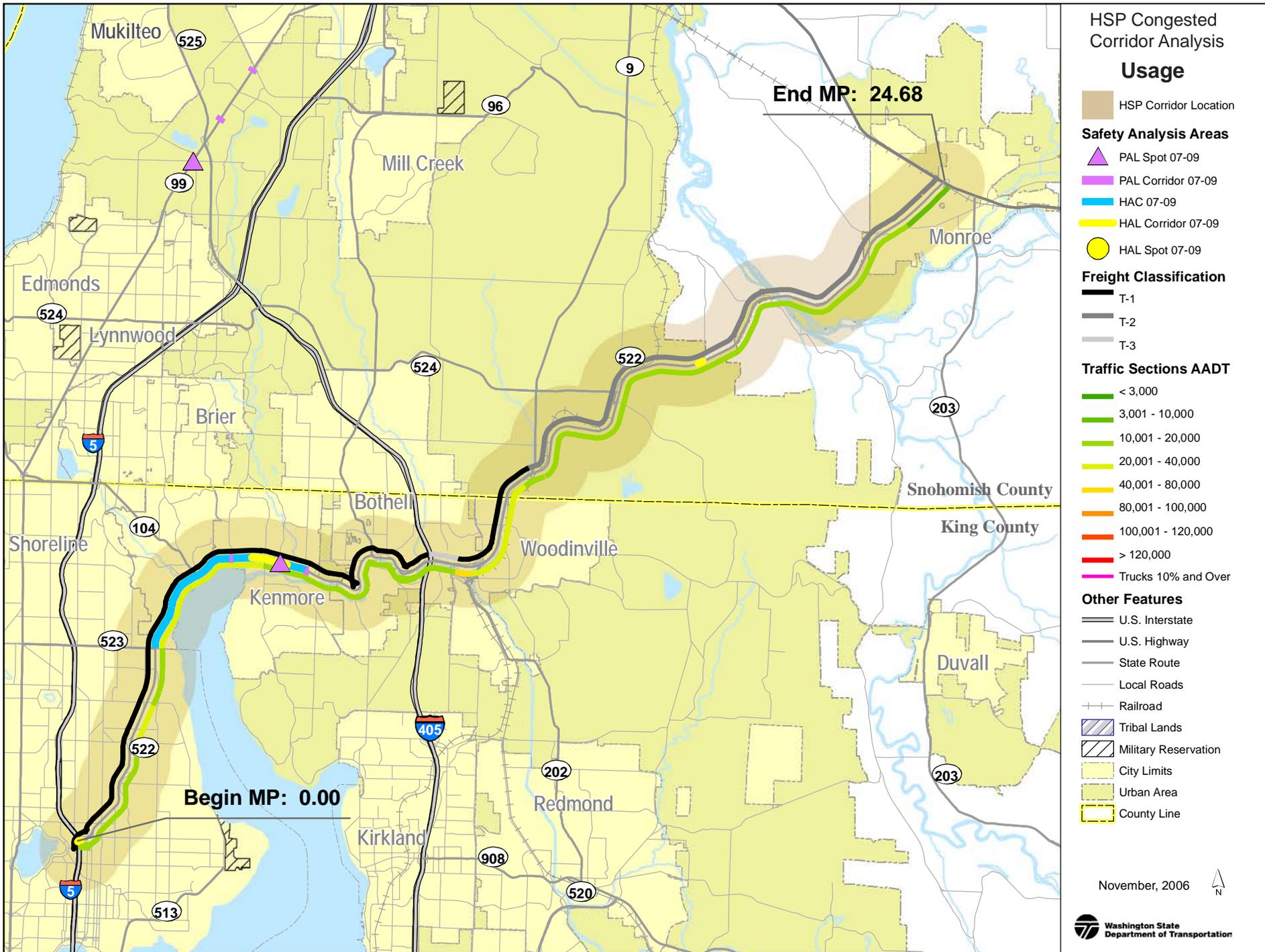
**Average Annual Societal Cost of All Collisions:** Approximately \$31M

**Collisions:**

**Severe No of Collisions:** 52

**Less Severe No of Collisions:** 1,685

**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 94% flexible and 6% rigid. Of the flexible pavement 36% 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:**

There are twenty-five structures in this corridor. Nine of the twenty-five bridges need seismic retrofit. (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. To achieve these objectives, nine bridges would be retrofitted. Of nine bridges that need seismic retrofit, three bridges are planned to be retrofitted in 20 years. All others are planned to be retrofitted by 2053.

#### **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. There are 8 unstable slopes identified along this corridor. Of the 8 unstable slopes 1 has a conceptual design solution, and 7 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 three locations along SR 522 that have been identified as a major drainage issues. These locations are located along SR 522 in the vicinity of Milepost 6.23, Milepost 7.98 and Milepost 24.00.

#### **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:**

As a result of continued growth in traffic volumes, there are now serious delays at many signalized intersections due to traffic congestion. There has also been an increase in the number of accidents along the corridor.

#### **Mobility Management Strategies:**

Improve the severe bottlenecks that occur during the a.m. and p.m. commutes and greatly reduce the number of accidents. Improve the environment by providing new drainage facilities that will enhance water quality.

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, BAT lanes, added Bus service will be developed and refined over the next 20 to 50 years improvement management strategies.

#### **Safety Condition and Needs:**

There are four High Accident Locations, along SR 522 in the vicinity of Milepost 0.04 to 0.24, 6.96 to 7.34, 7.41 and 18.50 to 18.60. In addition, there are two High Accident Corridors identified on SR 522 in the vicinity of Milepost 1.06 to 5.05 and 5.06 to 8.05.

#### **Safety Management Strategies:**

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An extra lane in each direction in strategic locations will help decrease rear-end collisions in stop-and-go traffic. Separating opposing lanes of traffic will also increase safety and help prevent traffic from crossing over into the opposite lanes.

Develop strategies that will reduce and prevent deaths and the frequency and severity of disabling injuries, and reduce the societal costs of collisions (Focus on the rate of severity and frequency).

Eliminate high accident locations on state highways through hazard mitigation. Eliminate Pedestrian Collision Locations on state highway through hazard mitigation. Eliminate high collision 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:

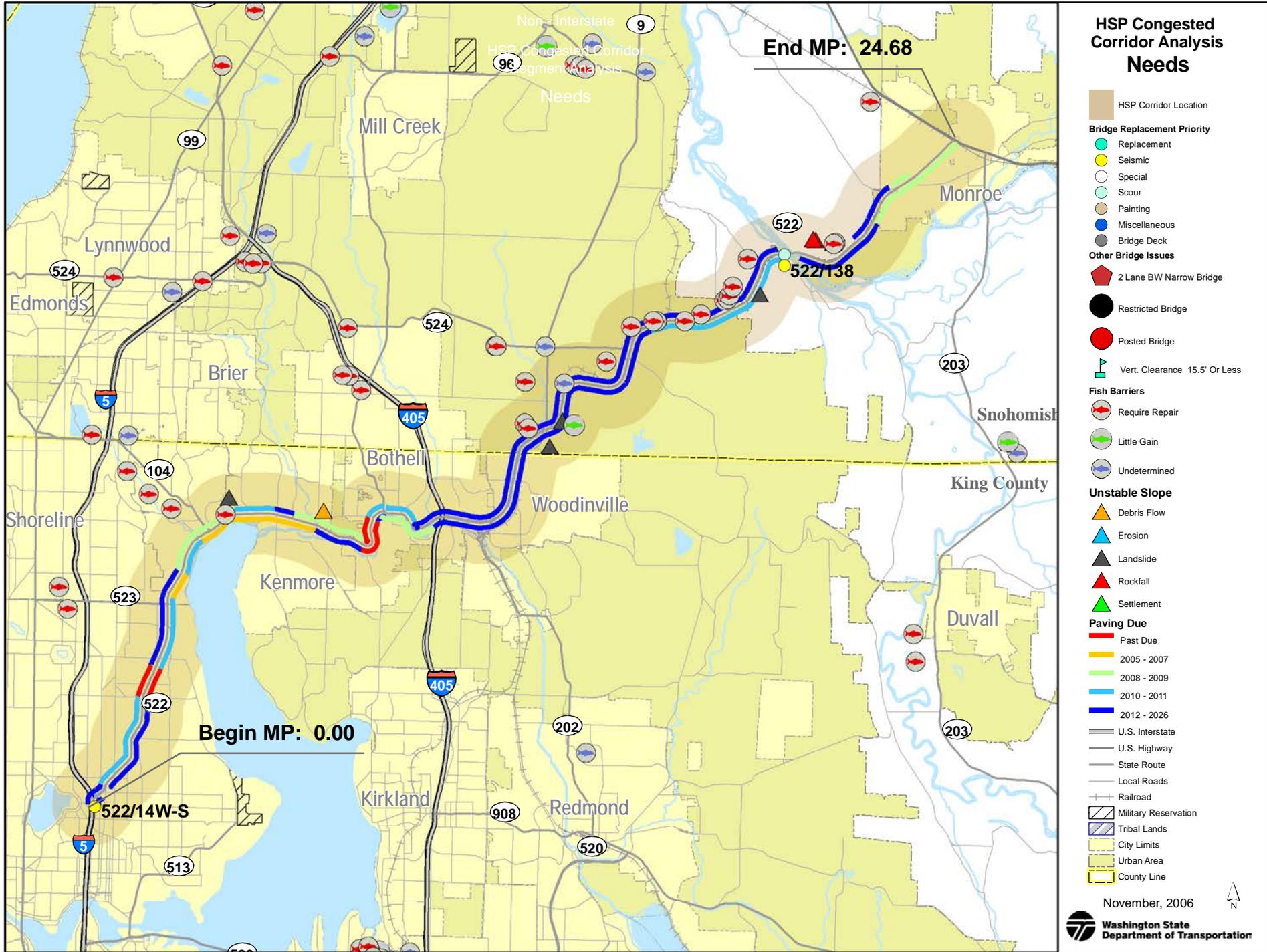
Strategically prioritize and retrofit existing state transportation facilities for noise reduction. Implement all transportation control measures as identified by the Washington State Implementation Plan for Air Quality. Strategically prioritize repair, replace, and retrofit existing state transportation 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:**

When all planned projects on SR 522 are completed between Bothell and Monroe, drivers will have two lanes in each direction (including widened bridges), two new interchanges and numerous safety improvements. Business access and transit lanes will also be in place from Seattle to Bothell.



### 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
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***TIERED PROPOSED SOLUTIONS***

**Minimum Fix**

**Description:**

(SR 522 BARM 11.1 to EARM 24.68): Install ITS including closed circuit television (CCTV), data station, Highway Advisory Radio System (HARS), Highway Advisory Radio Transmitter (HART), ramp meter, variable message system (VMS), and fiber optic line from I-405 to US-2 (Monroe). (\$17M and \$23M, Solution Cost) (60-70 % Collision Reduction + 2-10% Reduction in Daily Vehicle hours of Delay = \$25M Benefit).

**Delay Reduction:** 2-10%

**Collision Reduction:** 60-70%

**Deficient Concrete Lane Miles:** None identified.

**Total Estimate Cost:** \$17 M to \$23 M

**Cost Estimate Explanation:**

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

**Minimum Fix Benefits:**

The preliminary analysis results indicates the proposed solutions will provide reductions in collisions and travel delay.

**Moderate Fix**

**Description:**

(SR 522 BARM 3.72 to EARM 4.22): Construct a westbound Business Access and Transit (BAT) lane from NE 135th St. to SR 523 (NE 145th St.). (\$7M - \$9M, solution cost)(10-30% Collision Reduction + 20-40% Reduction in Daily Vehicle hours of Delay = \$4.3M Benefit)

(SR 522 BARM 4.22 to EARM 5.54): Construct an eastbound Business Access and Transit (BAT) lane from SR 523 (NE 145th St.) to 41st Ave. NE. (\$5M - \$7M, solution cost)(10-30% Collision Reduction + 30-60% Reduction in Daily Vehicle hours of Delay = \$22M Benefit)

(SR 522 BARM 7.49 to EARM 9.1): Construct Business Access and Transit (BAT) lanes in both directions from 73rd Ave. NE to 96th Ave. NE. (\$24M - \$32M, solution cost)(10-30% Collision Reduction + 40-45% Reduction in Daily Vehicle hours of Delay = \$14M Benefit)

(SR 522 BARM 9.51 to EARM 10.08): Construct a new four lane arterial roadway to the south of existing SR 522 extending eastward from SR 522 at NE 180th St. and reconnecting with SR 522 near 104th Ave. NE. SR 527 will extend to the south connecting to the the new SR 522 alignment. (\$25M - \$33M, solution cost)(10-30% Collision Reduction + 45-60% Reduction in Daily Vehicle hours of Delay = \$7M Benefit)

(SR 522 BARM 12.93 to EARM 12.93): Construct second half of the existing half-diamond interchange making a full diamond interchange at NE 195th St. (\$25M - \$33M, solution cost)

(SR 522 BARM 16.6 to EARM 16.6): Construct a new grade separated diamond interchange at Paradise Lake Rd. (\$57M - \$75M, solution cost)

**Delay Reduction:** 20-60%

**Collisions Reduction:** 10-30%

**Deficient Concrete Lane Miles:** None identified.

**Total Estimate Cost:** \$85 M to \$114 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. The interchange improvements and added lanes in conjunction with Transit enhancements will provided significant congestion relief along this corridor.

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**Maximum Fix**

**Description:**

(SR 522 BARM 16.6 to EARM 18.6): Add two lanes converting a two lane arterial roadway to a four lane divided highway from Paradise Lake Rd. to Snohomish River. (\$33M - \$45M, solution cost)(10-30% Collision Reduction + 60-70% Reduction in Daily Vehicle hours of Delay = \$16M Benefit)

**Delays Reduction:** 60-70%

**Collisions Reduction:** 10-30%

**Deficient Concrete Lane Miles:** None identified.

**Total Estimate Cost:** \$90 M to \$120 M

**Cost Estimate Explanation:**

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

**Maximum Fix Benefits:**

Project Benefits

- Safety. Crews will build medians to separate opposing directions of traffic, decreasing the likelihood of collisions. Building interchanges will reduce much of the stop-and-go traffic caused by traffic signals, which will help reduce rear-end collisions.
- Congestion relief. widening SR 522 to four lanes will improve traffic flow, thus decreasing travel times and frustration for drivers. New interchanges will keep traffic moving and help prevent bottlenecks.
- Environment. We will build storm water ponds, treatment facilities and construct erosion control measures to prevent dirty water runoff from reaching area streams and wetlands, improving water quality and benefiting salmon and other wildlife in the area.

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**Off-System Solutions:**

None identified.

**Special Studies/Reports:**

State Route 522 Corridor Study.

**Required Studies**

None identified.

**Start/Completion Date of Study:**

None identified.

**Expected Results**

None identified.

**Funded Projects within Corridor Limits**

<b>Project No</b>	<b>Title</b>
152201D	SR 522/I-5 to NE 147th Street - Paving
152201C	SR 522/I-5 to I-405 Multi-modal Project
152209H	SR 522/NE 145th St. Vic to NE 155th St.
152210B	SR 522/NE 147th St. to Swamp Cr. Br. Paving
152212K	SR 522/Swamp Creek Bridge - Scour Repair
152214A	SR 522/83rd Place NE - Signal
152217B	SR 522/City Street to Hall Road - Paving
152219A	SR 522/University of Washington Bothell/Cascadia CC Campus South Access
152221C	SR 522/North Creek Vicinity to Bear Creek Vicinity
152221B	SR 522/I-405 I/C East to North Ramp
152223A	SR 522/NE 195th Street - Signal
152234B	SR 522/Paradise Lake Rd. to Snohomish River-Widen to Four Lanes
152234B	SR 522/Paradise Lake Rd. to Snohomish River-Widen to Four Lanes
152236A	SR 522/Snohomish River Bridge - Seismic
152236B	SR 522/Snohomish River Bridge 522/138
152236D	SR 522/Snohomish River Bridge - Scour
152234E	SR 522/Snohomish River Bridge to US 2 - Widening and safety
152234E	SR 522/Snohomish River Bridge to US 2 - Widening and safety

**Additional Comments:**

None identified.

**Data Sources and Contacts used:**

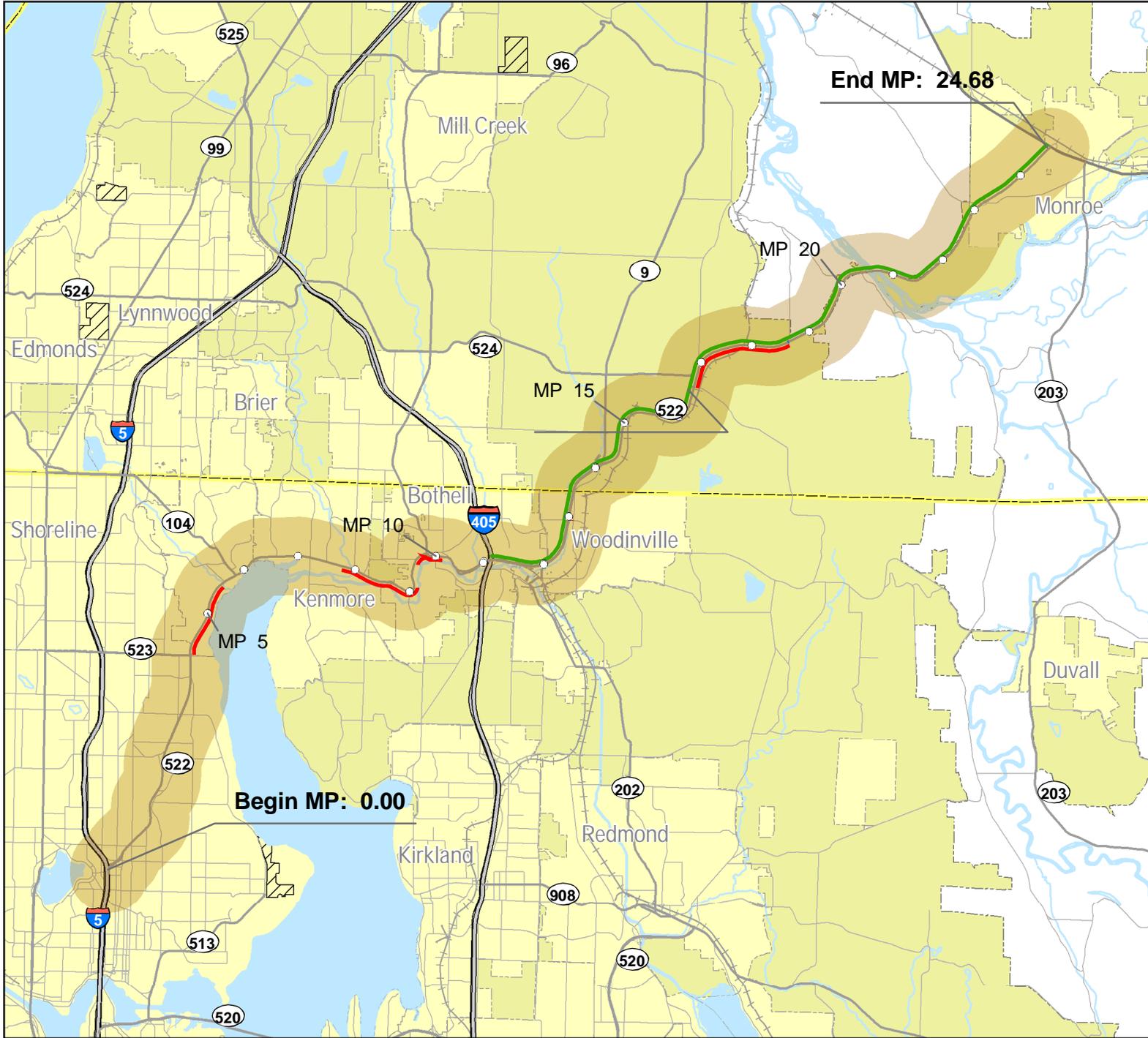
Washington State Highway System Plan: 2003-2022, dated February 2002

GIS Environmental and Transportation Workbench

Capital Improvement and Preservation Program

Studies from WSDOT NW Region Planning Library (internal)

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

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