



Transportation Needs Report 2008

A Component of the Transportation Element of
the King County Comprehensive Plan

Transportation Needs Report 2008

Public Review Draft
September, 2007

Introduction

The Transportation Needs Report (TNR) is a long-term, comprehensive list of recommended improvements to serve unincorporated King County's transportation needs. It includes transportation needs in unincorporated King County and significant projects in cities, adjacent counties, and on state highways. The transportation needs are those currently known (existing) as well as those that are forecast due to regionally-adopted targets for growth and development.

The TNR is a functional plan of the King County Comprehensive Plan. Together with the Roads Six-Year CIP and the Roads annual budget, it fulfills the requirement of growth management legislation (RCW 36.70A.070) for a transportation capital facilities plan element of the King County comprehensive plan. The TNR was prepared consistent with all requirements of growth management legislation including:

1. It is based on the land use element of the comprehensive plan.
2. Its list of transportation needs and recommended improvements was developed using travel demand forecasts that are based on the regionally-adopted growth targets.
3. It includes a financial analysis that reflects the most recent land use changes, project amendments, costs, and financial revenue assumptions.

The TNR horizon year is 2022, which is consistent with regionally-adopted targets for population and employment growth.

The schedule for updating the TNR has been changed to coordinate with major updates to the Comprehensive Plan. Starting with TNR 2004, the update cycle will coincide with the four-year, comprehensive plan major amendment cycles. Beginning with this document, the TNR will be transmitted to Council for adoption with the comprehensive plan amendments instead of following later as has been the custom. If circumstances warrant, interim updates will be developed and transmitted with the annual comprehensive plan technical amendments.

PURPOSE

The TNR serves the following purposes:

Relationship to King County Comprehensive Plan 2004: A primary purpose of the TNR is to fulfill certain requirements of state growth management legislation for comprehensive planning. These requirements as outlined in state legislation (RCW 36.70A.070 (6)) are:

1. Specific actions and requirements for bringing into compliance locally-owned transportation facilities or services that are below an established level of service standard;
2. Forecasts of traffic for at least ten years based on the adopted growth targets and land use plan to provide information on the location, timing, and capacity needs of future growth;

3. Identification of state and local system needs to meet current and future demands;
4. An analysis of funding capability to judge needs against probable funding resources;
5. A multiyear financing plan based on the needs identified;

The TNR needs list and financial analysis fulfill these requirements. The needs list was developed using forecasts of traffic for the 2022 horizon year based on regionally-adopted growth targets and the land use element of the King County Comprehensive Plan 2004.

Transportation Planning and Funding: The TNR helps King County make decisions on planning and funding of transportation improvements. It provides guidance based on policies, strategies, and actions set forth in the comprehensive plan and the Roads Strategic Plan. It follows established processes linking land use planning with transportation needs.

The TNR plays a significant role in evaluating the difference between identified transportation needs and future expected revenues for King County. This analysis assesses the County's ability to keep pace with the demands of growth and assists in developing financial strategies to deal with unmet needs.

Coordination: The TNR helps to coordinate transportation improvements connecting King County with other jurisdictions including the Washington State Department of Transportation (WSDOT), adjacent cities, and counties. It also helps coordination between different divisions of the King County Department of Transportation. By clearly showing the location and scope of intended transportation improvements as well as the priority of these improvements, the TNR provides other jurisdictions with information to use in appropriately coordinating project implementation. Additionally, the private sector development community can use the TNR to identify areas where future growth could be accommodated by improved facilities.

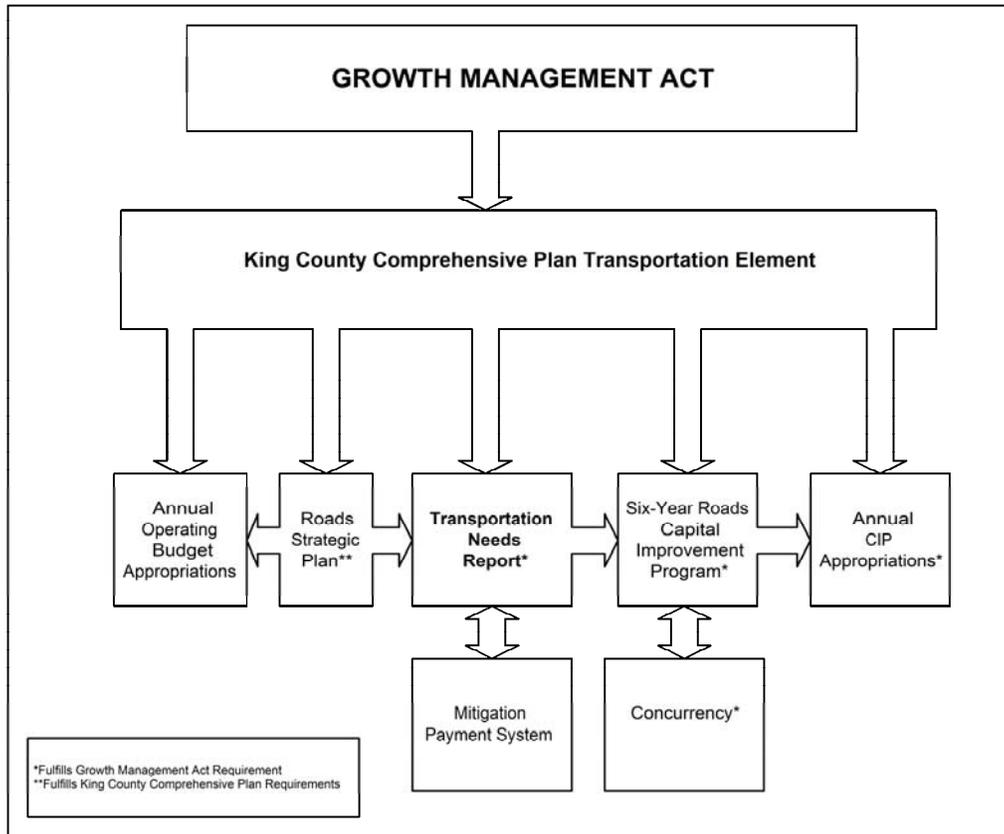
Development Review: The TNR serves as a major source of information in the review of proposed land developments and in determining appropriate mitigation measures required as a condition of new development approval. The County's Mitigation Payment System (MPS) uses the TNR to identify growth projects that will be part of the impact fee system.

Road Vacation: Property owners can petition King County to have portions of the County's unused road rights-of-way sold to them if the property is not needed for current or future transportation purposes. The TNR is used to indicate the location of future projects on the road system in this road vacation process.

PROCESS

The development of the TNR is part of a comprehensive planning process that is guided by state growth management legislation. This process, as depicted in the flow diagram, links the guidance of the King County comprehensive plan and the Roads Strategic Plan with the development of the TNR, the six-year Roads capital improvement program, and the Roads annual budget. The mitigation payment system, which is authorized by growth management legislation and required by King County ordinance, is used to collect impact fees to help build road capacity projects needed to support growth. Projects receiving MPS funding are included in the TNR. The concurrency program, which is required by growth management legislation, tests proposed development to make sure road capacity needed to support future growth will be

available when needed. If a project needed to support the travel needs of a proposed development is included in the Roads six-year capital needs program and if other requirements are met, the proposed development may be granted a concurrency certificate to proceed with permit application.



Development of the TNR 2008 Change Report and Public Review Draft

As the Comprehensive Plan undergoes a major update each four years, a major TNR effort will accompany this work. In the two year mid period, the TNR will be limited to technical updates.

For this update to the TNR, the following major changes were incorporated and itemized into the TNR 2008 Change Report.

Vulnerable Road Segments

The Roads Services Division instituted the Vulnerable Roadway Segments (VRS) study in 2005 to identify and address specific roadway funding needs throughout the County. A vulnerable road segment was defined as a road segment that requires abnormally expensive and/or frequent repairs. This includes roads with failing retaining walls, seawalls, roads with chronic settlement problems, or roadways close to rivers with repetitive erosion problems. Most VRS projects were added to the TNR in 2006, but the last part of the analysis was completed after the TNR went to print. The TNR 2008 includes 18 additional VRS needs. The VRS priority description has also been changed since 2006 and is attached.

Countywide Guardrail Program

Following a technical analysis, several dozen guardrail corridors were eliminated from the TNR as no longer meeting guardrail warrants. Other locations were merged into existing corridors. The individual Guardrail project changes are identified in the Change Report.

TNR Advanced Scoping

The Division undertook a field review of unfunded projects which had previously only undergone planning-level environmental review. The objective was to verify environmental constraints and estimate project costs before projects became candidates for CIP funding. Road Division engineers checked for required environmental permits, identified project scope elements and estimated construction costs for approximately four dozen TNR projects. Projects with a significant change in construction costs from the previous estimate (\$1million or more) were identified in this Change Report.

Capital Project completions

Several dozen projects were completed since the adoption of the Transportation Needs Report 2006, and these completed projects are proposed for deletion from the needs list.

Annexations

Cities continue to annex portions of unincorporated King County and when the annexed properties include TNR project locations, they are removed from the County's long-term plan.

Prioritization Processes

A revised priority process for Vulnerable Road Segments will be added to the TNR 2008 Appendix C.

Financial Analysis and Shortfall

A financial analysis was developed to balance projected needs with anticipated revenue. Revenues were projected to the horizon year for the Road Fund, Federal, State, and MPS revenues. Revenues were adjusted to take into account the annexation of the 10 major potential annexation areas (PAA). These major PAAs are anticipated to be annexed by 2010.

After the final annexation in 2011, property taxes were assumed to grow at 2% per year (1% statutory growth rate plus 1% new construction). Gas taxes were assumed to decline each year by about \$50,000 annually to represent the effect of annexations.

Projected needs were expressed in constant 2008 dollars and were totaled for the TNR program through the year 2022.

Comparing projected revenues with projected needs reveals a shortfall of \$658,000,000. Summary cost and revenue estimates are included in this document.

The shortfall is calculated by subtracting the total projected needs by total projected revenues for the TNR time period. Recent TNRs show a trend of increasing growth of the financial shortfall:

<u>TNR</u>	<u>Amount of Shortfall</u>
1998	\$254 million
1999	\$227 million
2000	\$292 million
2001	\$388 million
2004	\$525 million
2006	\$572 million
2008	\$658 million

The financial shortfall is an indication of King County's ability (or lack of ability) to serve the unincorporated area. This shortfall must be addressed by delaying improvements or by finding new sources of revenue or by some combination of the two strategies.

There are several methods available to address this shortfall. Additional revenue sources could be pursued. Implementation of needed improvements could be phased or delayed. Future development could be delayed, phased, or scaled back to assure the timely availability of needed infrastructure. These and perhaps other strategies will be employed and incorporated into future TNRs, CIPs, and budgets to balance needs with available revenues.

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Financial Forecast in Constant 2008 Dollars

	Road Fund	BRAC	Federal	State	MPS	Other Local
2009	\$35,734,953	\$2,000,000	\$2,750,000	\$2,000,000	\$2,600,000	\$100,000
2010	\$34,062,554	\$1,500,000	\$2,250,000	\$1,250,000	\$2,500,000	\$100,000
2011	\$34,458,034	\$1,500,000	\$2,250,000	\$1,250,000	\$2,000,000	\$100,000
2012	\$37,819,788	\$1,500,000	\$2,250,000	\$1,250,000	\$1,900,000	\$100,000
2013	\$35,512,389	\$1,500,000	\$2,250,000	\$1,250,000	\$1,800,000	\$100,000
2014	\$35,515,896	\$1,500,000	\$2,250,000	\$1,250,000	\$1,700,000	\$100,000
2015	\$41,579,357	\$1,500,000	\$2,250,000	\$1,250,000	\$1,600,000	\$100,000
2016	\$36,663,145	\$1,500,000	\$2,250,000	\$1,250,000	\$1,500,000	\$100,000
2017	\$36,670,375	\$1,500,000	\$2,250,000	\$1,250,000	\$1,400,000	\$100,000
2018	\$36,678,911	\$1,500,000	\$2,250,000	\$1,250,000	\$1,400,000	\$100,000
2019	\$36,688,802	\$1,500,000	\$2,250,000	\$1,250,000	\$1,300,000	\$100,000
2020	\$36,700,093	\$1,500,000	\$2,250,000	\$1,250,000	\$1,200,000	\$100,000
2021	\$36,712,828	\$1,500,000	\$2,250,000	\$1,250,000	\$1,100,000	\$100,000
2022	\$36,727,049	\$1,500,000	\$2,250,000	\$1,250,000	\$1,000,000	\$100,000
	\$511,524,173	\$21,500,000	\$32,000,000	\$18,250,000	\$23,000,000	\$1,400,000
						\$607,674,173

	2008-2022 Needs	2008-2022 Allocation	
Bridge	\$58,208	\$91,551	
Capacity Major	\$265,661	\$93,601	
Capacity Minor	\$208,073	\$38,643	
ITS	\$96,603	\$12,022	
Nonmotorized	\$176,108	\$18,374	
Operations	\$76,108	\$34,349	
Preservation	\$65,701	\$24,903	
Reconstruction	\$3,835	\$2,233	
Rehabilitation	\$2,437	\$1,460	
Safety	\$80,784	\$58,393	
Total	\$1,033,854	\$375,529	\$658,325 Shortfall

Other CIP Needs	
Drainage/Fish Passage	\$16,972
Environmental	\$5,423
Overlay	\$84,429
Misc	\$28,743
Debt Service	\$96,578
Total	\$232,145

TNR CHANGES since TNR 2006

This report will only report on the individual project changes since the TNR 2006. Project changes are aggregated by geographical areas of King County.

The entire TNR as adopted in 2006 can be found on-line at the following address:

<http://www.metrokc.gov/kcdot/roads/planning/tnr/default.aspx>

Free internet access to view the TNR 2006 is available at any King County Library System branch location.

The TNR maps following the Change Report show all proposed projects for 2008 and not just the changes from 2006. Projects proposed for deletion will not appear on these maps.

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Bear Creek	100206	Avondale Road NE / Novelty Hill Rd - ITS From SR-520 to 208 Ave NE	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	
Bear Creek	100211	Woodinville-Duvall Rd From City of Woodinville to City of Duvall	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.			Study added to determine operational and capacity improvements
Bear Creek	100408	Avondale Road ITS Phase 1 From Novelty Hill Rd to NE 132nd St	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.			Avondale Rd ITS project split into Phase 1 & 2
Bear Creek	100409	Bear Creek Bridge #1056B On Woodinville-Duvall Rd Crossing Bear Creek	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - bridge found to not be deficient	
Bear Creek	100992	Novelty Hill Rd From Redmond C/L to 244 Ave NE	The EIS preferred alternative comprises three roads: Novelty Hill Road to 196th Avenue NE, at which point, the corridor continues southward to NE Union Hill Road. At the intersection of 196th Avenue NE and NE Union Hill Road, the project corridor extends to its western terminus of 192nd Avenue NE and NE Union Hill Road. See the CIP website for detailed project description.		Limits changed based on EIS analysis	
Bear Creek	B-36.12	Woodinville-Duvall Rd From Avondale Rd To SR-203	Provide Nonmotorized Facility		Project cost estimate changed after field survey	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Bear Creek	CP-18	196th Ave NE From Union Hill Road to Novelty Hill Road	Widen Road - Construct new road			Added from Novelty Hill Road EIS
Bear Creek	CP-19	Union Hill Road From 196 Ave NE to City of Redmond city limits	Widen road			Added from Novelty Hill Road EIS
Bear Creek	GR-24	Avondale Road NE From NE 137th St To NE 143RD St	Construct Guardrail	x	Delete - planned construction in 2007-08	
Bear Creek	GR-30	Old Woodinville- Duvall Rd From Woodinville- Duvall Rd To Woodinville- Duvall Rd	Construct Guardrail	x	Delete - planned construction in 2007-08	
Bear Creek	GR-59	238th Ave NE From NE Union Hill Rd To NE 80th St	Construct Guardrail	x	Delete - analysis shows no longer needed	
Bear Creek	GR-61	195th Ave NE From NE 95th St To 196th Ave NE	Construct Guardrail	x	Delete - analysis shows no longer needed	
Bear Creek	ITS-3	Avondale Road ITS Phase 2 From NE 132nd St to Woodinville- Duvall Road	Provide Intelligent Transportation System improvements which could include synchronized signals; cameras; vehicle detection; fiber connection		Limits changed due to phase 1 CIP	
Bear Creek	M72116	Welcome Lake Bridge #63 On 218 Ave NE at Welcome Lake	Seismic Retrofit	x	Delete - construction in 2007	
Bear Creek	OP-INT- 71	Bear Creek Rd & Mink Rd	Improve Sight Distance- Realign Intersection		Project cost estimate changed after field survey	
Bear Creek	OP-RD-8	Avondale Road Phase III From NE 133rd St To NE 155th St	Widen To Three Lanes- Construct Bridge		Project cost estimate changed after field survey	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Bear Creek	Recon-43	NE Woodinville-Duvall Rd From Old Woodinville-Duvall Rd to W. Snoqualmie Valley Rd	Walls both sides 10ft tall			Added from analysis in Vulnerable Road Segment Study
Bear Creek	Recon-44	Union Hill Rd From 196 Ave NE to 206 PI NE	10ft tall wall			Added from analysis in Vulnerable Road Segment Study
Bear Creek	Recon-51	Union Hill Rd From 229 Ave NE to 238 Ave NE	20ft wall			Added from analysis in Vulnerable Road Segment Study
East Sammamish	GR-27	Issaquah-Fall City Rd From 332nd Ave SE To Klahanie Dr SE	Construct Guardrail	x	Delete - planned construction in 2007-08	
East Sammamish	OP-INT-32	Issaquah-Pine Lake Rd & SE 47/23	Evaluate for turn lanes	x	Delete - analysis shows no longer needed	
East Sammamish	SW-32	Issaquah-Pine Lake Rd & SE 47/23	Traffic Signal	x	Delete - analysis shows no longer needed	
Enumclaw	EN-59	212th Ave SE From SE 384 St To SE 358 St	Provide Nonmotorized Facility		Project cost estimate changed after field survey	
Enumclaw	EN-62	244th Ave SE From SR-164 To SE 400 St	Provide Nonmotorized Facility		Project cost estimate changed after field survey	
Enumclaw	GR-77	309th Ave SE From SE Green River Gorge Rd To SE 352ND St	Construct Guardrail	x	Delete - analysis shows no longer needed	
Enumclaw	GR-84	SE 384th St From 160th PI SE To 212th Ave SE	Construct Guardrail	x	Delete - analysis shows no longer needed	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Enumclaw	GR-90	SE 368th St From SE 368th Way To 236th Ave SE	Construct Guardrail	x	Delete - analysis shows no longer needed	
Enumclaw	M72443	Veazie Bridge #3038 On Veazie- Cumberland Crossing Coal Creek	Seismic Retrofit	x	Delete - construction in 2007	
Enumclaw	Recon-53	Mud Mountain Rd at 29000 block	30' High Wall Needed			Added from analysis in Vulnerable Road Segment Study
Federal Way	300311	51st Ave S & S 288th St.	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.			Added from update of Signal Warrant Priority List
Federal Way	300407	S 272nd Way & 55th Ave S.	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.			Added from update of Signal Warrant Priority List
Federal Way	300411	51st Ave S & S 316th St.	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.			Added from update of Signal Warrant Priority List
Federal Way	300604	Military Rd S. & S 272nd St	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	
Federal Way	301204	51st Ave S & S 296th St	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Federal Way	CP-5	Military Rd S From I-5 to S 272 St	Widen to Four/Five lanes--Construct Curb, Gutter, Sidewalk--Construct Bike Lane		Limits changed - Federal Way - costs changed	
Federal Way	F-116.20	65th Ave S/S 296 St From SR 181 To 61 Ave S	Provide Nonmotorized Facility		Project cost estimate changed after field survey	
Federal Way	F-66.30	Military Rd S From Peasley Canyon Way S To SR-161	Provide Nonmotorized Facility		Project cost estimate changed after field survey	
Federal Way	GR-107	S 364th St From Military Rd To 55th Ave S	Construct Guardrail	x	Delete - analysis shows no longer needed	
Federal Way	OP-INT-116	Military Rd & S 320th St	Add eastbound right turn lane			Added from update of Signal Warrant Priority List
Federal Way	OP-INT-120	40th Ave S & S 272nd St	Add turn lanes on S 272nd St			Added from update of Signal Warrant Priority List
Federal Way	OP-INT-6	42nd Ave S & S 272nd St	Evaluate for turn lanes	x	Delete - analysis shows no longer needed	
Federal Way	OP-INT-66	Military Rd S & S Star Lake Rd	Evaluate to extend turn lanes			Added from update of Signal Warrant Priority List
Federal Way	OP-RD-48	S 360th St From SR-161 to 28th Ave S	Operational road improvements		Project cost estimate changed after field survey	
Federal Way	Recon-42	Peasley Canyon Way S From S. Peasley Canyon Rd to Military Rd. S	Retaining wall 10' high			Added from analysis in Vulnerable Road Segment Study
Federal Way	Recon-49	58th Place S./56th Place S. From West Valley Rd to West Valley Rd	Major Roadwork Needed, Possible Re-alignment			Added from analysis in Vulnerable Road Segment Study
Federal Way	SW-6	42nd Ave S & S 272nd St	Traffic Signal	x	Delete - analysis shows no longer needed	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Federal Way	SW-66	Military Rd S & S Star Lake Rd	Traffic Signal			Added from update of Signal Warrant Priority List
Highline	300505	S 132nd St / S 133 St From 76 Ave S to SR-900	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	
Highline	300605	16th Ave SW - Sidewalks From SW Roxbury Blvd to SW 100th St	An engineering study will be conducted to determine likely costs associated with the reconstruction of sidewalks along 16th Avenue SW. Subsequent reconstruction and rehabilitation of the existing sidewalk will be considered in conjunction with the ongoing study currently being developed by the White Center Community	x	Delete - Completed	
Highline	300607	SW 98th Street From 11 Ave SW to 16 Ave SW	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.			Added based on analysis of pedestrian needs
Highline	GR-105	S 104th St From Des Moines Way S To End of route	Construct Guardrail	x	Delete - analysis shows no longer needed	
Highline	GR-23	S 116th Way From Des Moines Way S To SR 99	Construct Guardrail	x	Delete - analysis shows no longer needed	
Highline	GR-34	SW 107th Way From 26th Ave SW To 22nd Ave SW	Construct Guardrail	x	Delete - analysis shows no longer needed	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Highline	GR-37	S 100th St From 1st Ave S To 2nd Ave S	Construct Guardrail	x	Delete - analysis shows no longer needed	
Highline	GR-55	1st Ave S From S 120th St To S 128th St	Construct Guardrail	x	Delete - analysis shows no longer needed	
Highline	H-251	8th Ave SW From SW 108 St To SW Roxbury St	Provide Nonmotorized Facility		Project cost estimate changed after field survey	
Highline	HARS-46	1st Ave S From S 110th St to S 112th St	CIP project for 1 Ave S had funding reduced	x	Delete - Completed	
Highline	OP-INT-19	8th Ave SW & SW 108th St	Evaluate for turn lanes	x	delete - analysis shows no longer needed	
Highline	OP-INT-24	1st Ave S & S 108th St	Evaluate for turn lanes	x	delete - analysis shows no longer needed	
Highline	OP-INT-33	Myers Way S & S 108th St	Evaluate for turn lanes	x	Delete - analysis shows no longer needed	
Highline	OP-INT-35	Myers Way S & 6th Ave S	Evaluate for turn lanes	x	Delete - analysis shows no longer needed	
Highline	OP-RD-12	8th Ave S From S Seattle City Limit To Glendale Way S/S 112 St	Widen Roadway		Project cost estimate changed after field survey	
Highline	OP-RD-14	6th Ave S From Glendale Way/S112 St To Myers Way (1 Ave S)	Widen Roadway		Project cost estimate changed after field survey	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Highline	SW-19	8th Ave SW & SW 108th St	Traffic Signal	x	Delete - analysis shows no longer needed	
Highline	SW-24	1st Ave S & S 108th St	Traffic Signal	x	delete - analysis shows no longer needed	
Highline	SW-33	Myers Way S & S 108th St	Traffic Signal	x	Delete - analysis shows no longer needed	
Highline	SW-35	Myers Way S & 6th Ave S	Traffic Signal	x	Delete - analysis shows no longer needed	
Newcastle	200110	Newport Way From SE Allen Rd to 153 Ave SE	Improve pathway (South Side)	x	Delete - combined with SPP-4009	
Newcastle	200799	Ripley Lane From Renton C/L to Bellevue C/L	Install wall along east shoulder and adjacent to the railroad tracks	x	Delete - completed	
Newcastle	200804	Newport Way From Newport Way Library to Bellevue C/L	Add a sidewalk on Newport Way	x	Delete - included within OP-RD-20	
Newcastle	201896	150th Ave SE From SE 36 St to Newport Way	Widen 150th Ave SE to seven lanes, add sidewalk, turn channels, new traffic signal. City of Bellevue lead agency.	x	Delete - completed	
Newcastle	400105	144th Ave SE From SE 141 St to # 13430	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Newcastle	401104	SE 128th St & 196th Ave SE	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	delete - analysis shows no longer needed	
Newcastle	GR-19	154th PI SE From SE Jones Rd To SE 142nd PL	Construct Guardrail	x	Delete - analysis shows no longer needed	
Newcastle	HAL-16	160th Ave SE & SE 128th St	Preliminary suggested scope - Add left-turn lane in the WB/EB directions.		Project cost estimate changed after field survey	
Newcastle	OP-INT-119	168th Ave SE & SE 128th St	Add turn lanes on SE 128th St			Added from update of Signal Warrant Priority List
Newcastle	OP-INT-28	196th Ave SE & SE 128th St/Way	Evaluate for turn lanes	x	Delete - analysis shows no longer needed	
Newcastle	SW-28	196th Ave SE & SE 128th St/Way	Traffic Signal	x	delete - analysis shows no longer needed	
Northshore	100105	148th Ave NE From Hollywood Hill Elem. to NE 173 St	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Completed	
Northshore	100207	Simonds Rd NE at 100 Ave NE	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	
Northshore	100306	84th Ave NE From NE 124th St to NE 132 St	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Northshore	GR-100	160th PI NE From 156th PI NE To NE 143rd St	Construct Guardrail	x	Delete - analysis shows no longer needed	
Northshore	GR-46	156th PI NE From NE 146th PI To 160th PI NE	Construct Guardrail	x	Delete - analysis shows no longer needed	
Northshore	GR-74	112th Ave NE From 112th PI NE To Juanita Woodinville Way	Construct Guardrail	x	Delete - analysis shows no longer needed	
Northshore	GR-81	NE 143RD St From 160th PI NE To 168th Ave NE	Construct Guardrail	x	Delete - analysis shows no longer needed	
Northshore	GR-85	108th Ave NE From NE 132ND St To Juanita Woodinville Way	Construct Guardrail	x	Delete - analysis shows no longer needed	
Northshore	GR-89	NE 140th St From 124th Ave NE To 132ND Ave NE	Construct Guardrail	x	Delete - analysis shows no longer needed	
Northshore	N-128	170th Ave NE From NE 195 St To COUNTY LINE	Construct Neighborhood Pathway	x	Delete - In Woodinville	
Northshore	N-150	Holmes Point Rd From Denny Park To NE 135 PL	Provide Nonmotorized Facility	x	Delete - Duplicate with 3P-9906	
Northshore	OP-RD- 17	90th Ave NE From NE 134 St To NE 138 PL	Widen Travel Lanes		Project cost estimate changed after field survey	
Northshore	Recon-46	Holmes Point Drive NE at 144 Ave NE	Wall on downhill side 10ft tall			Added from analysis in Vulnerable Road Segment Study
Northshore	Recon-48	146th PI NE From SR-202 to 155 Ave NE	15ft tall wall			Added from analysis in Vulnerable Road Segment Study

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Northshore	Recon-52	Holmes Point Drive NE From NE 118 St to NE 116 St	Walls both sides 10ft tall			Added from analysis in Vulnerable Road Segment Study
Snoqualmie	GR-109	Upper Preston Road	Construct Guardrail			Added from guardrail program analysis
Snoqualmie	GR-111	NE Fay Road	Construct Guardrail			Added from guardrail program analysis
Snoqualmie	OP-INT-65	Preston-Fall City / High Pt Way & SE 82nd St	Evaluate for turn lanes, widening or realignment			Added from update of Signal Warrant Priority List
Snoqualmie	Recon-45	SE Lake Dorothy Rd At SE Middle Fork Rd	Walls both sides 10ft tall			Added from analysis in Vulnerable Road Segment Study
Snoqualmie	Recon-55	NE Money Creek Rd at Money Creek	20ft tall wall			Added from analysis in Vulnerable Road Segment Study
Snoqualmie	Recon-57	Old Cascade Highway at Miller River	Overflow is working as designed			Added from analysis in Vulnerable Road Segment Study
Snoqualmie	SW-65	Preston-Fall City / High Pt Way & SE 82nd St	Traffic Signal			Added from update of Signal Warrant Priority List
Snoqualmie Valley	200107	Rutherford Slough Bridge #920A On SE 39th PI Crossing Rutherford Slough	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	
Snoqualmie Valley	200202	Middle Fork Snoqualmie River Rd	Reconstruct the road with improved alignment, grade, width. Project lead is FHWA.	x	Delete - Cancelled	
Snoqualmie Valley	200301	Novelty Hill Rd & West Snoqualmie Valley Rd	Construct traffic signal and add south bound right turn pocket	x	Delete - Completed	
Snoqualmie Valley	200394	Tolt Bridge #1834A	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Snoqualmie Valley	200604	Wagners Bridge #364B On North Fork Rd Crossing Snoqualmie River	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	
Snoqualmie Valley	200994	Mount Si Bridge #2550A On MT SI Rd Crossing Middle Fork Snoqualmie River	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	
Snoqualmie Valley	B-41	Ames Lake-Carnation Rd From Union Hill Rd To NE 80 St	Provide Nonmotorized Facility		Project cost estimate changed after field survey	
Snoqualmie Valley	GR-13	316th PI SE From SE 86th St To End of route	Construct Guardrail	x	Delete - analysis shows no longer needed	
Snoqualmie Valley	GR-18	309th Ave SE From 308th Ave SE To SE 24th St	Construct Guardrail	x	Delete - construction in 2007	
Snoqualmie Valley	GR-21	Lake Alice Rd From SE 47th St To SE 55th St	Construct Guardrail	x	Delete - planned construction in 2007-08	
Snoqualmie Valley	GR-28	David Powell Rd From Preston-Fall City Rd SE To End of route	Construct Guardrail		Priority changed (down)	
Snoqualmie Valley	GR-29	Ames Lake-Carnation Farm Rd From NE 80th St To Carnation Farm Rd	Construct Guardrail	x	Delete - planned construction in 2007-08	
Snoqualmie Valley	GR-72	SE 53rd Way From TOKUL Rd SE To 396th DR SE	Construct Guardrail	x	Delete - analysis shows no longer needed	
Snoqualmie Valley	GR-78	Middle Fork Rd From 468th Ave SE To 496th Ave SE	Construct Guardrail	x	Delete - analysis shows no longer needed	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Snoqualmie Valley	GR-94	NE 124th St From SR 203 To ENDRTE	Construct Guardrail	x	Delete - analysis shows no longer needed	
Snoqualmie Valley	M72216	Miller River Bridge #999W On Miller River Rd Crossing Miller River	Seismic Retrofit	x	Delete - construction in 2007	
Snoqualmie Valley	Recon-18	W. Snoqualmie River Rd From NE Tolt Hill Rd To SE 24th St	Armor Shoulders		Project cost estimate changed after field survey	
Snoqualmie Valley	Recon-36	NE 80 St From West Snoqualmie Valley Rd to Ames Lake-Carnation Rd	Armor Shoulders @\$100/cyd		Project cost estimate changed after field survey	
Snoqualmie Valley	SQ-12.10	Preston-Fall City Rd From SR-202 To I-90	Provide Nonmotorized Facility		Project cost estimate changed after field survey	
Snoqualmie Valley	SQ-162	W Snoqualmie Valley Rd From Woodinville-Duvall Rd To NE 165th St	Reconstruct Roadway	x	Delete - project completed	
Snoqualmie Valley	SQ-26	Carnation Farm Rd From NE 80 St To SR-203	Provide Nonmotorized Facility		Project cost estimate changed after field survey	
Snoqualmie Valley	SQ-27	West Snoqualmie Valley Rd From Woodinville-Duvall Rd To Carnation Rd	Provide Nonmotorized Facility		Project cost estimate changed after field survey	
Soos Creek	300104	Green River Bridge #3216 On 83 Ave S Crossing Green River	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Completed	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Soos Creek	300205	SE 304th St & 124th Ave SE	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	
Soos Creek	301304	320th St & 124th Ave SE	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	
Soos Creek	400106	140 Ave/Way SE - ITS From SE 192nd St to SR-169	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Completed	
Soos Creek	400206	124th Ave SE From SE 202 PI to SE 208 St	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - planned construction in 2007-08	
Soos Creek	400301	208th St & 105th PI SE	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - dropped from CIP	
Soos Creek	401595	SE 192nd St From 140th Ave SE to Benson Rd	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Construction in 2007	
Soos Creek	G-16	Green River Rd SE From S 258 St To SE 277 St	Provide Nonmotorized Facility		Project cost estimate changed after field survey	
Soos Creek	GR-101	100th Ave SE From SE 216th St To SE 208th St	Construct Guardrail	x	Delete - analysis shows no longer needed	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Soos Creek	GR-17	Carr Road From 96th Ave S To 108th Ave SE	Construct Guardrail	x	Delete - analysis shows no longer needed	
Soos Creek	GR-20	Petrovitsky Rd From 108th Ave SE To SE 184th St	Construct Guardrail	x	Delete - construction in 2007	
Soos Creek	GR-22	Petrovitsky Rd From SE 184th St To SE 232ND St	Construct Guardrail	x	Delete - construction in 2007	
Soos Creek	GR-25	94th PI S From Kent City Limit To Green River Rd	Construct Guardrail	x	Delete - planned construction in 2007-08	
Soos Creek	GR-64	SE 168th St From 108th Ave SE To 116th Ave SE	Construct Guardrail	x	Delete - analysis shows no longer needed	
Soos Creek	GR-99	148th Ave SE From SE 296th St To SE 311th St	Construct Guardrail	x	Delete - analysis shows no longer needed	
Soos Creek	HARS-17	140th Ave SE From SE 188 WY To SE 190th St	Preliminary suggested scope - Widen road for TWLTL.	x	Delete - completed	
Soos Creek	HARS-21	140th Ave SE From SE 177th St To SE 180th St	Preliminary suggested scope - Widen road for TWLTL.	x	Delete - completed	
Soos Creek	HARS-5	SE 240th St From 180th Ave SE To 183RD Ave SE	Preliminary suggested scope - Widen road for TWLTL.	x	Delete - in City of Covington	
Soos Creek	OP-INT-117	116th Ave SE & SE 192nd St	Add turn lanes on SE 192nd St			Added from update of Signal Warrant Priority List
Soos Creek	OP-INT-118	116th Ave SE & SE Petrovitsky Rd	Add southbound right turn lane			Added from update of Signal Warrant Priority List
Soos Creek	OP-INT-30	129th PI SE & SE 192nd St	Evaluate for turn lanes	x	Delete - analysis shows no longer needed	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Soos Creek	OP-INT-64	SE Petrovitsky & 162nd PI SE	Evaluate for turn lanes or center turn lane			Added from update of Signal Warrant Priority List
Soos Creek	OP-RD-28	132 Ave SE From SE 288 St To SE 304 St	Widen Roadway-- Provide Left Turn Lane		Project cost estimate changed after field survey	
Soos Creek	OP-RD-32	124th Ave SE From SE 288 St To SE 304 St	Widen Roadway		Project cost estimate changed after field survey	
Soos Creek	OP-RD-35	116th Ave SE From SE 176 St To SE 192 St	Provide Left Turn Lane- Pave Shoulders		Project cost estimate changed after field survey	
Soos Creek	OP-RD-36	132 Ave SE Phase IV From SE 224th St To SE 242nd St	Widen Roadway		Project cost estimate changed after field survey	
Soos Creek	OP-RD-43	132 Ave SE Phase III From SE 208 St To SE 224 St	Widen Roadway		Project cost estimate changed after field survey	
Soos Creek	Recon-47	104th Ave SE From Lea Hill Road SE to 304 Way SE	River dike is armoured, add filter fabric and more armoure			Added from analysis in Vulnerable Road Segment Study
Soos Creek	Recon-50	196th Ave SE From SE 161 St to SE 170 St	Retaining wall 10' high			Added from analysis in Vulnerable Road Segment Study
Soos Creek	SC-15	SE 240th St From 196 Ave SE To SR-18	Provide Nonmotorized Facility		Limits reduced due to Covington annexation	
Soos Creek	SC-210	Talbot Rd (Eest Side) From S 176 St To S 177 St	Provide Nonmotorized Facility	x	Delete - project completed	
Soos Creek	SC-28	SE 240th St From 148 Ave SE (south side) To 180 Ave SE	Provide Nonmotorized Facility		Limits changed due to Kent annexation	
Soos Creek	SC-55.22	140 / 132 Ave SE Phase II From SE 196 St To SE 208 St	Provide Nonmotorized Facility	x	Delete - project completed	

TNR 2008 Change Report

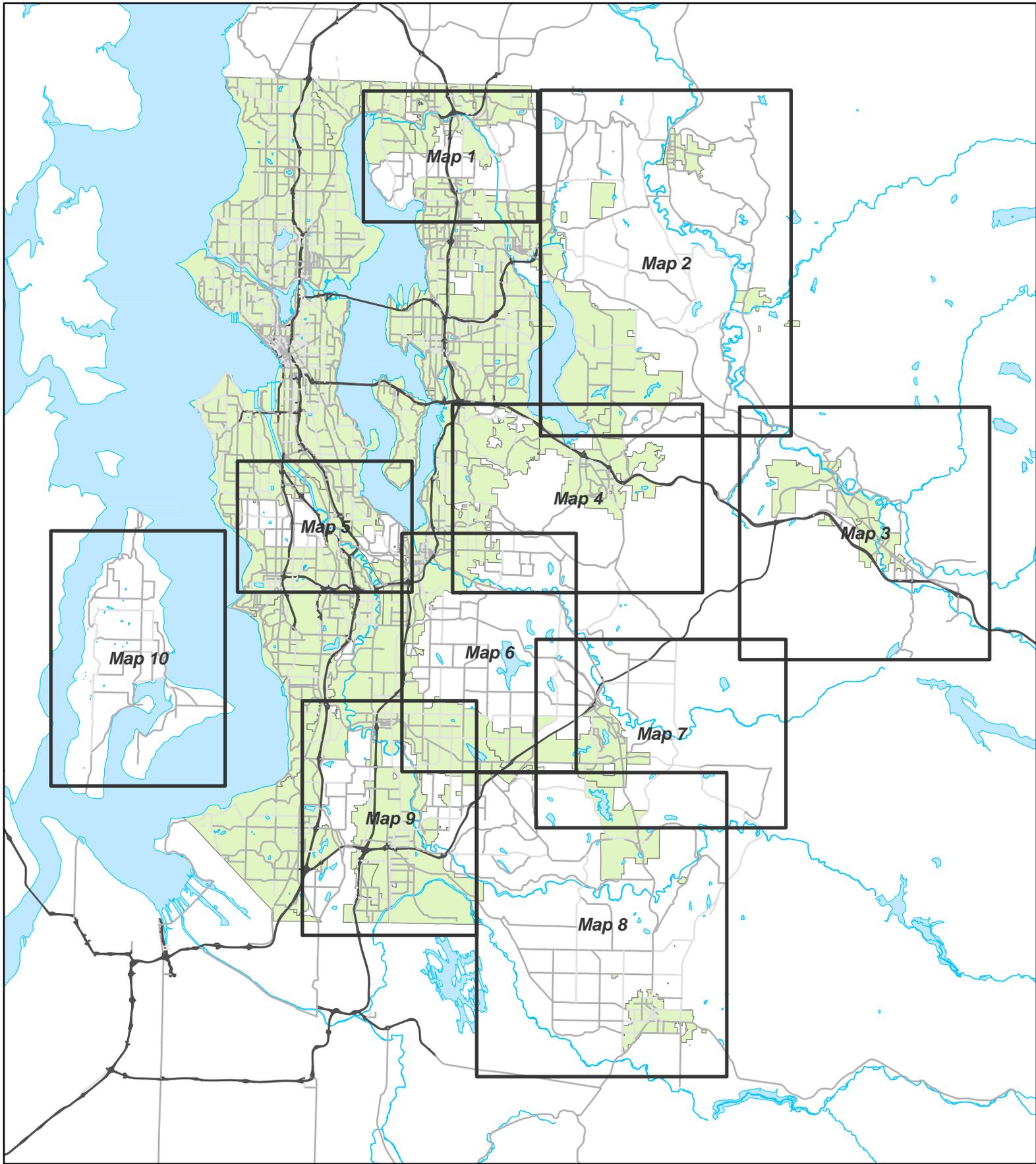
Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Soos Creek	SW-30	129th PI SE & SE 192nd St	Traffic Signal	x	delete - analysis shows no longer needed	
Soos Creek	SW-64	SE Petrovitsky & 162nd PI SE	Traffic Signal			Added from update of Signal Warrant Priority List
Tahoma/Raven Heights	400907	SE 216th Way & SR-169	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.			Added from update of Signal Warrant Priority List
Tahoma/Raven Heights	GR-11	SE 309th St From Cumberland-Kanaskat To End of route	Construct Guardrail	x	Delete - analysis shows no longer needed	
Tahoma/Raven Heights	GR-110	SE 248th Street	Construct Guardrail			Added from guardrail program analysis
Tahoma/Raven Heights	GR-12	Dorre Don Way From SE 216th Way To End of route	Construct Guardrail	x	Delete - construction in 2007	
Tahoma/Raven Heights	GR-32	Green Valley Rd From 218th Ave SE To SR-169	Construct Guardrail	x	Delete - planned construction in 2007-08	
Tahoma/Raven Heights	GR-40	SE 235th PI From 244th Ave SE To ENDRTE	Construct Guardrail	x	Delete - analysis shows no longer needed	
Tahoma/Raven Heights	GR-43	Green River Gorge Rd From 293RD Ave SE To 309th Ave SE	Construct Guardrail	x	Delete - construction in 2007	
Tahoma/Raven Heights	GR-56	293rd Ave SE From SE Green River Gorge Rd To SE Green River Gorge Rd	Construct Guardrail	x	Delete - analysis shows no longer needed	
Tahoma/Raven Heights	GR-57	SE 208th St From 276th Ave SE To ENDTRE	Construct Guardrail	x	Delete - analysis shows no longer needed	

TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Tahoma/Raven Heights	GR-95	Courtney Rd From Kanaskat-Kangley Rd To End of route	Construct Guardrail	x	Delete - analysis shows no longer needed	
Tahoma/Raven Heights	M72424	Green River Gorge Bridge #3032 On SE Green River Gorge Rd Crossing Green River	Seismic Retrofit	x	2008 construction	
Tahoma/Raven Heights	OP-INT-23	Kent-Black Diamond Rd & Auburn-Black Diamond Rd	Evaluate for turn lanes	x	Delete - analysis shows no longer needed	
Tahoma/Raven Heights	OP-INT-9	216th Ave SE & SE Covington-Sawyer Rd	Evaluate for turn lanes	x	Delete - analysis shows no longer needed	
Tahoma/Raven Heights	SW-23	Kent-Black Diamond Rd & Auburn-Black Diamond Rd	Traffic Signal	x	delete - analysis shows no longer needed	
Tahoma/Raven Heights	SW-9	216th Ave SE & SE Covington-Sawyer Rd	Traffic Signal	x	Delete - analysis shows no longer needed	
Vashon	300111	Dockton Rd (north portion) From Tramp Harbor Dock To SW Ellisport Rd	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - combined with # 300208 - Dockton Seawall	
Vashon	300211	Vashon Highway SW & SW Cemetery Rd	See King County Capital Improvement Program (CIP) document or website for detailed project description including scope.	x	Delete - Project cancelled	
Vashon	GR-1	Dockton Rd SW From SW Ellisport Rd To SW 222nd St	Construct Guardrail	x	Delete - seawall project will include	

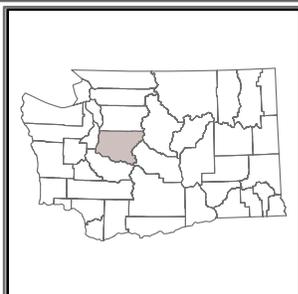
TNR 2008 Change Report

Plan Area	Project	FullProject	Scope	Delete	Delete or Change Comment	Add-comment
Vashon	GR-39	Quartermaster Drive From Vashon Highway SW To Dockton Rd SW	Construct Guardrail	x	Delete - seawall construction will include	
Vashon	GR-6	Vashon Highway SW From SW 240th St To SW Talequah Rd	Construct Guardrail	x	Delete - seawall construction will include	
Vashon	GR-76	Westside Highway SW From SW 220th St To SW 196th St	Construct Guardrail	x	Delete - analysis shows no longer needed	
Vashon	Recon-54	Govenor's Lane From 99 Ave SW to 96 Ave SW	Replace seawall @\$2500/ft			Added from analysis in Vulnerable Road Segment Study
Vashon	Recon-56	West Side Hwy From Cresent Dr SW to Cresent Dr SW	Rebuild Roadway with New Base			Added from analysis in Vulnerable Road Segment Study
Vashon	Recon-58	Cresent Dr SW From West Side Highway to SW Cove Road	Rebuild Roadway with New Base			Added from analysis in Vulnerable Road Segment Study
Vashon	Recon-59	Kingsbury Beach Rd From SW 234 St to 80 Ave SW	Rebuild Roadway with New Base			Added from analysis in Vulnerable Road Segment Study



Index Map

TNR 2008
Public Review Draft

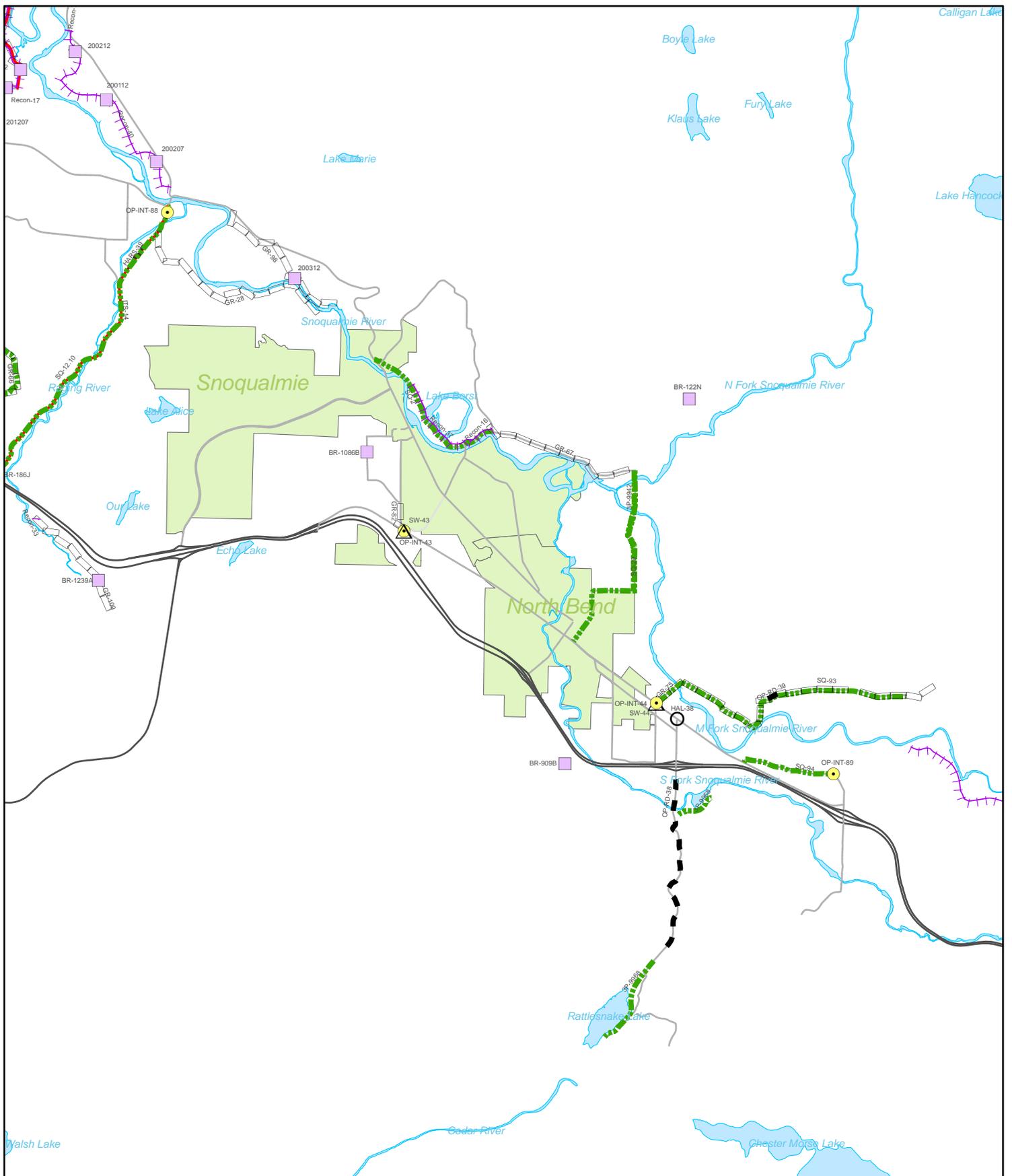


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Legend

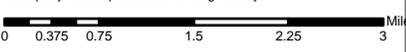
- | | |
|--------------------------------------|----------------------------------|
| Northshore - Map 1 | North Soos Creek - Map 6 |
| Bear Creek - Map 2 | Tahoma/
Raven Heights - Map 7 |
| Snoqualmie Valley - Map 3 | Enumclaw - Map 8 |
| Newcastle - Map 4 | Federal Way - Map 9 |
| North Highline/
West Hill - Map 5 | Vashon - Map 10 |
| Cities | |



Snoqualmie Valley
 TNR 2008
 Public Review Draft - Map 3



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Legend	
	Capacity
	Bridge
	Capacity
	HAL
	Operational
	Signal Warrants
	Cities
	Guardrail
	ITS
	Operational
	Pedestrian
	Reconstruction
	HARS



Newcastle

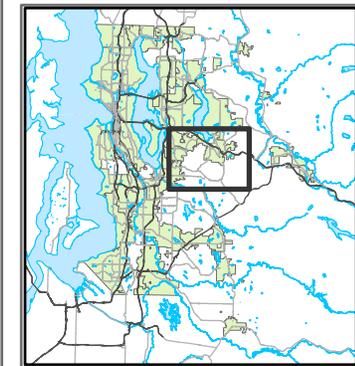


TNR 2008
Public Review Draft - Map 4

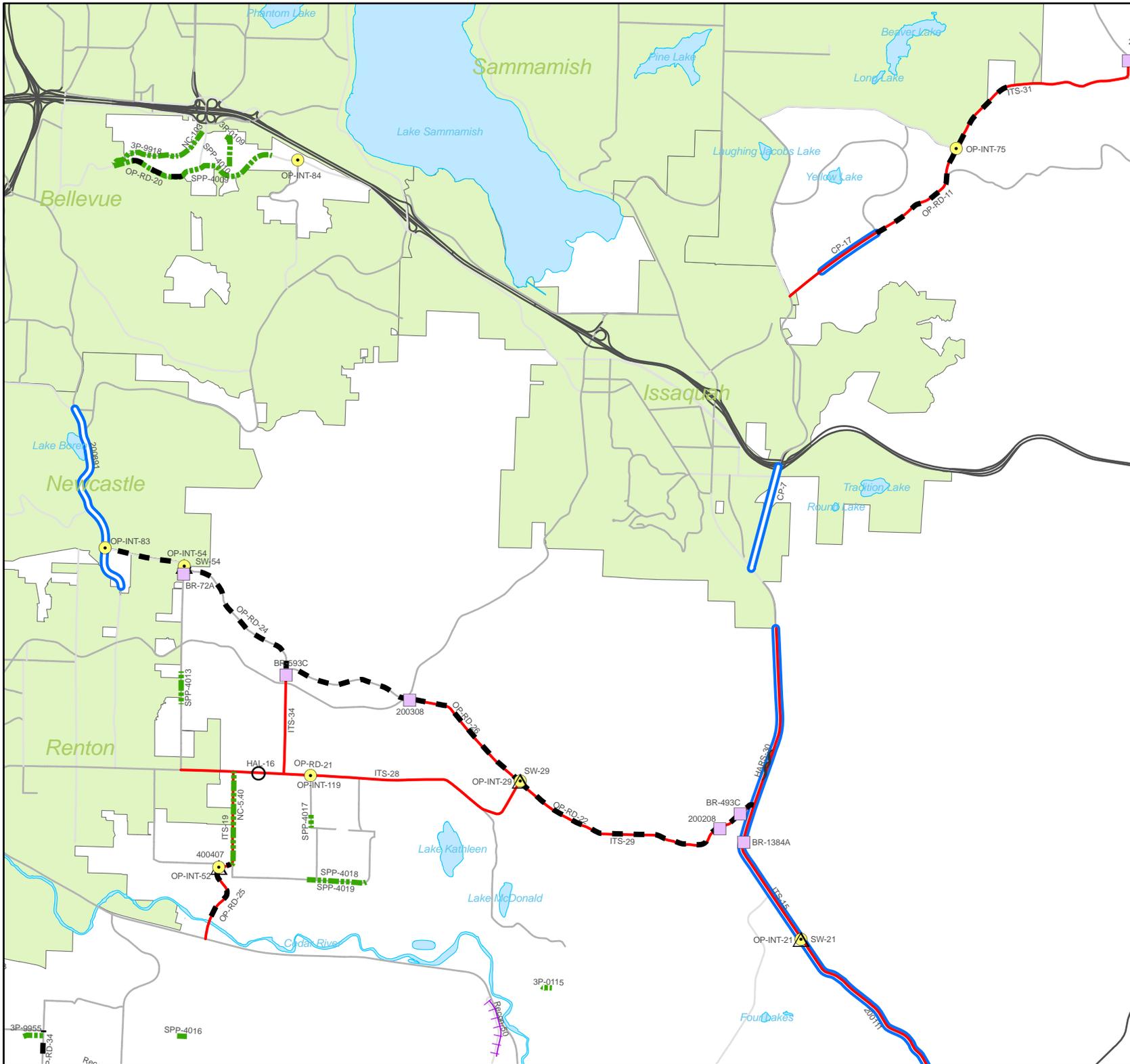


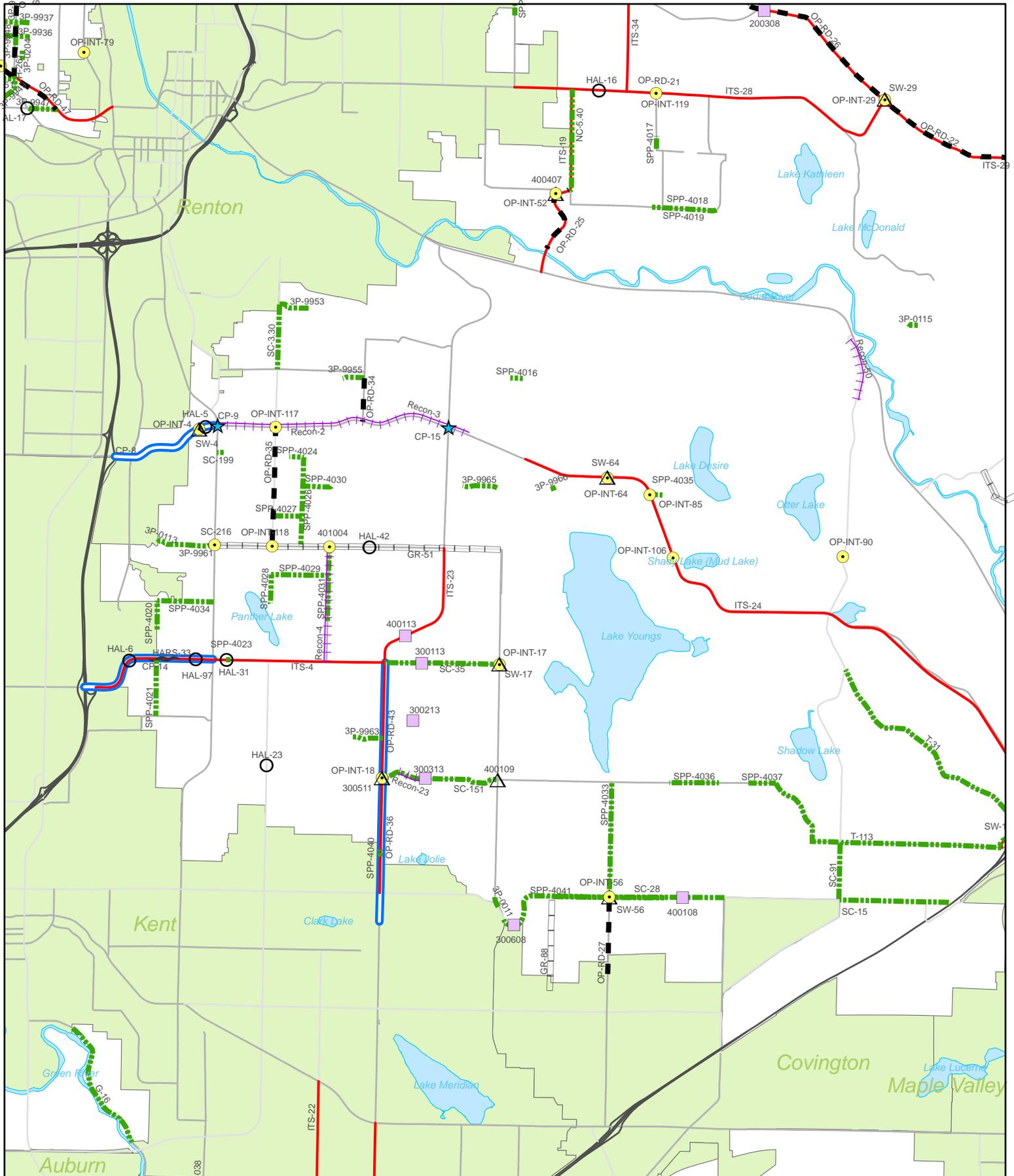
Legend

- Bridge
- Capacity
- HAL
- Operational
- Signal Warrants
- Capacity
- Guardrail
- ITS
- Operational
- Pedestrian
- Reconstruction
- HARS
- Cities



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North Soos Creek

TNR 2008

Public Review Draft - Map 6



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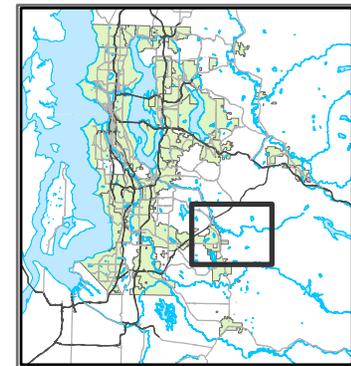


Legend	
	Capacity
	Bridge
	Capacity
	HAL
	Operational
	Signal Warrants
	Cities
	Guardrail
	ITS
	Operational
	Pedestrian
	Reconstruction
	HARS

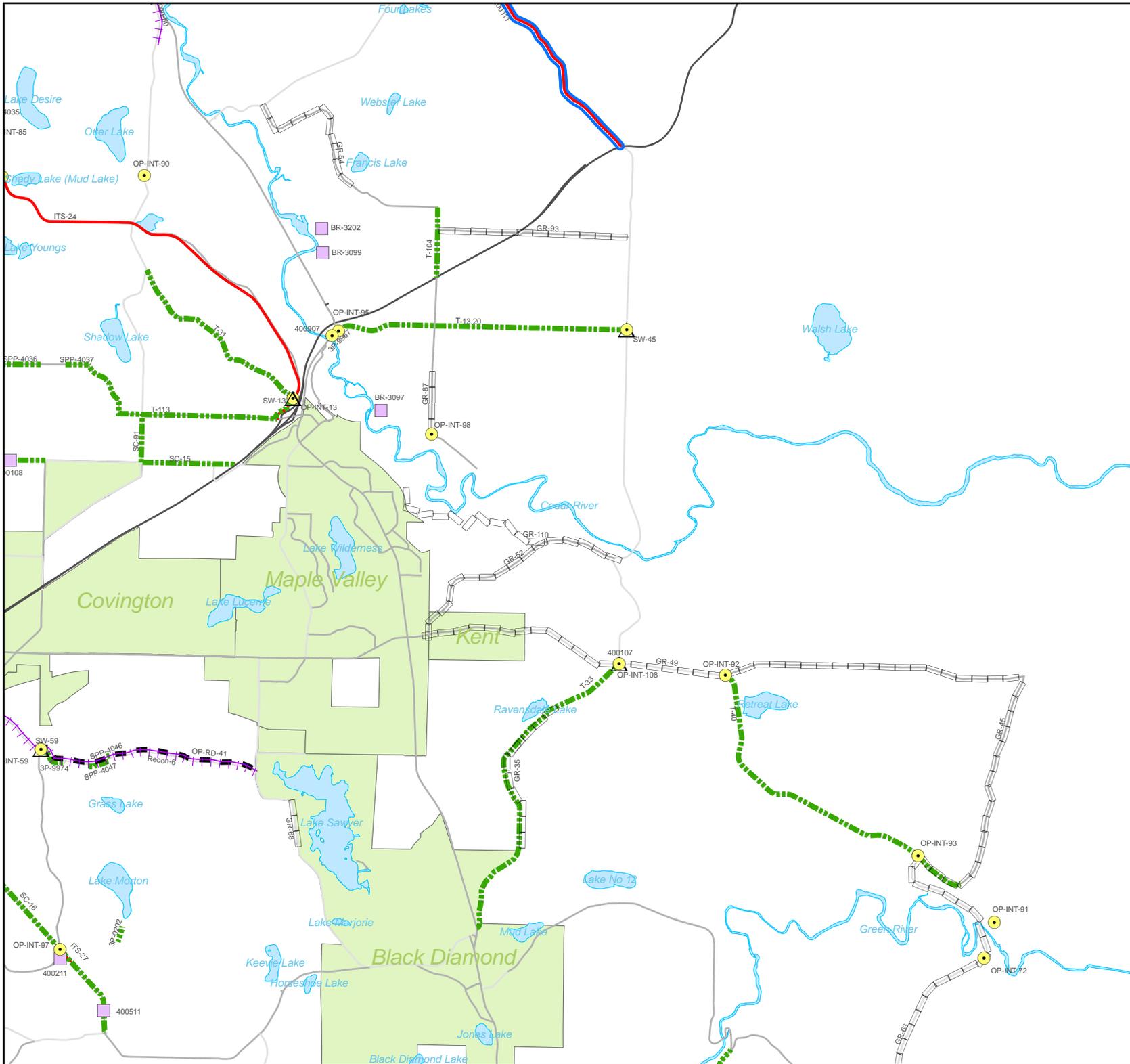


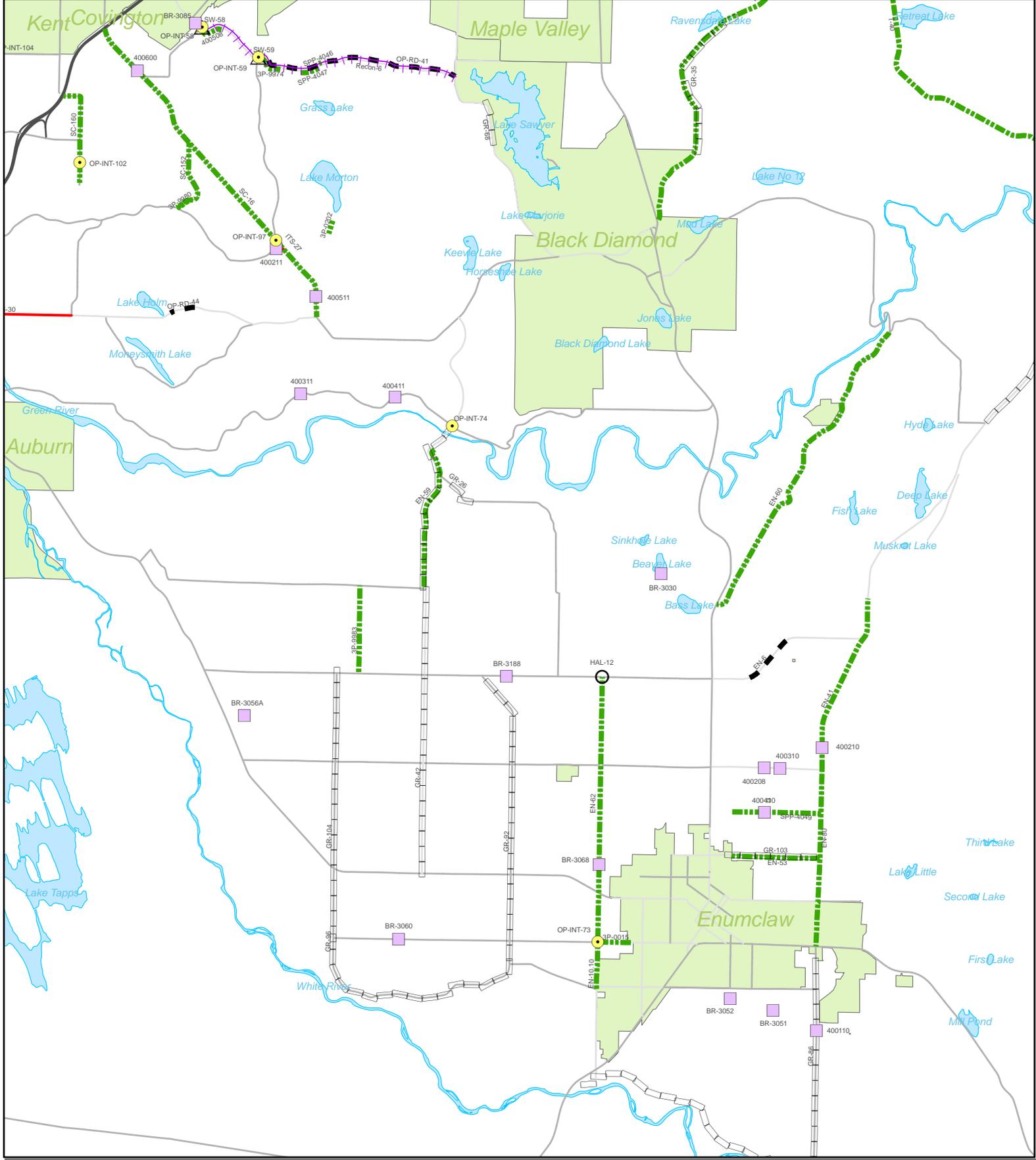
Legend

- Bridge
- Capacity
- HAL
- Operational
- Signal Warrants
- Capacity
- Guardrail
- ITS
- Operational
- Pedestrian
- Reconstruction
- HARS
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Enumclaw

TNR 2008
Public Review Draft - Map 8



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Legend

- Bridge
- Capacity
- HAL
- Operational
- Signal Warrants
- Cities
- Capacity
- Guardrail
- ITS
- Operational
- Pedestrian
- Reconstruction
- HARS



Vulnerable Road Segments

King County Road Services Division

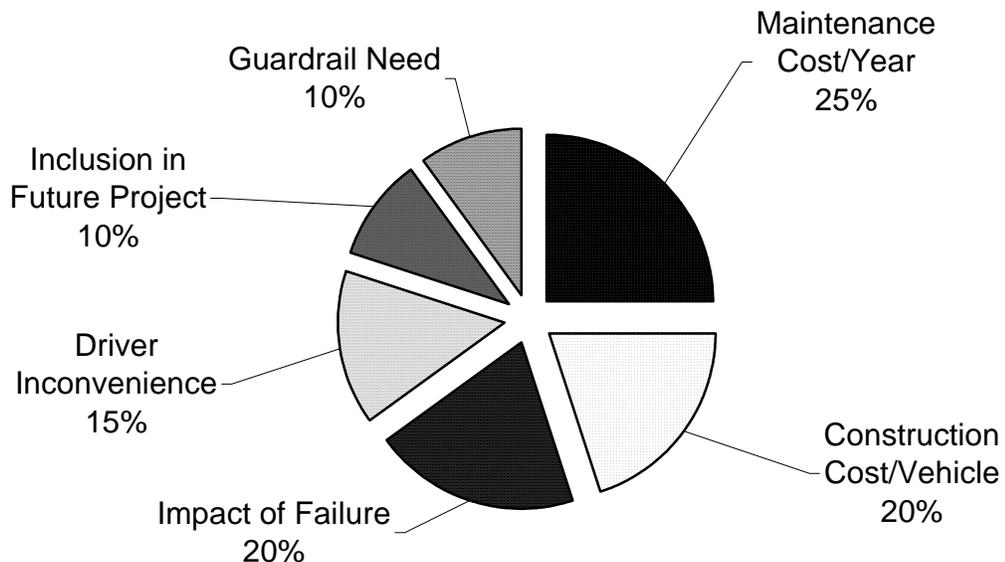
Vulnerable Road Segments (VRS) Priority Ranking Methodology

Priority Ranking – what factors determined the final priority of the segment ranking?

The factors shown in the pie chart below were used in developing the priority rank formula for vulnerable roadway segments. The value assigned to each of the factors was either calculated or collected from various data sources. The percentage of influence each category has in producing the priority rank is shown in the pie chart below.

The factors were chosen by the project team and refined through an iterative process. After each iteration, the values and percentages of the factors, as well as the segment rankings were studied for reasonableness. The overall goal was achieved when the full numerical range of each factor was well distributed among the segments and the weighting percentage of each factor seemed to result in a logical ranking of segments.

Priority Ranking Factors



The Maintenance Cost / Year is the average estimated amount of money spent each year *repairing* the road segment to correct the identified problem in the short term. Projects with higher annual maintenance costs are given more priority.



Vulnerable Road Segments

$$\text{Factor} = \frac{M \times f}{20,000} \times 25$$

where M = estimated maintenance cost/year (in thousands of dollars)

f = the frequency of the maintenance each year

20,000 = the maximum maintenance cost/year

25 = the maximum number of points possible for this factor

The Construction Cost / Vehicle factor divides the cost of the *permanent* construction fix (i.e., not a maintenance repair) by the average daily number of vehicles that travel the road. Projects with a lower cost benefiting a higher number of vehicles are given a higher priority.

$$\text{Factor} = 20 - \frac{C / ADT}{1500} \times 20 \quad (\text{Factor} = 0 \text{ if formula results in negative value})$$

where C = cost of permanent construction fix

ADT = average daily traffic count on segment

1500 = highest C/ADT ratio, except for a few outliers (1500 chosen to keep this factor well distributed among segments)

20 = maximum number of points possible for this factor

The Impact of Failure factor accounts for the importance in correcting a vulnerable roadway segment. The project team made many field visits evaluating the majority of the vulnerable roadway segments, classifying the roadway problem, and performing a preliminary engineering assessment to score the roadway vulnerabilities. Each of the road segments was scored 1 to 5 addressing the predicted consequences if no action were taken to correct the problem. The scoring is as follows:

Score = 1 If problem is left uncorrected, total failure would likely occur, resulting in closure of the entire road.

Score = 2 If problem is left uncorrected, partial (or possibly total) failure of the road could occur, closing half (or all) of the road.

Score = 3 If problem is left uncorrected, partial failure of road could occur, closing a shoulder and/or possibly a lane of the road.

Score = 4 If problem is left uncorrected, minor loss of road function could occur in near future.

Score = 5 If problem is left uncorrected, maintenance would be necessary with no foreseeable loss of road function.

If Score = 1, Factor = 20

If Score = 2, Factor = 11



Vulnerable Road Segments

If Score = 3, Factor = 6

If Score = 4, Factor = 3

If Score = 5, Factor = 0

Values of factors determined by an exponential function (as opposed to a linear function), to weigh full or partial road closures much more heavily than a minor loss of road function.

The Driver Inconvenience factor of each road segment measures the overall level of driver inconvenience if a vulnerable road segment is closed. The detour length and the traffic volume on the segment is considered in this factor. Segments involving longer detours with higher traffic volumes are given more priority.

$$Factor = \frac{l \times ADT}{95,000} \times 15$$

where l = length of detour caused by closed road segment

ADT = average daily traffic on segment

95,000 = maximum l/ADT ratio (except for one outlier)

15 = maximum number of points possible for this factor

If a segment is part of a planned project in the CIP or TNR, the Inclusion in Future Project factor gives priority to such segments to account for the opportunity to complete two needs with one project.

Factor = 10 if segment included in other project

Factor = 0 if segment not included in other project

The Guardrail Need factor is a yes or no toggle identifying the need for guardrail on the vulnerable segment. Road segments slated for future guardrail projects are given more priority to account for the opportunity to fulfill two needs with one project.

Factor = 10 if guardrail is needed on segment

Factor = 0 if guardrail is not needed on segment

All of the priority ranking factors are then weighted to the percentages shown in the pie chart above and summed to produce a score between 0 and 100, ranking the different road segments and identifying the best project candidates. The road segments with the lower scores are the best candidates for road projects.

Sample calculation



Vulnerable Road Segments

The following sample calculation for vulnerable segment of NE Woodinville Duvall Road (steep slopes above and below roadway) will help illustrate how the final rating scores were calculated:

Maintenance Cost / Year (25 points max.)

$$\text{Factor} = \frac{M \times f}{20,000} \times 25 = (\$10,000 \times 0.5 \text{ times/year}) / 20,000 \times 25 = \mathbf{6}$$

Score is only 6 out of 25 due to relatively inexpensive repairs at infrequent frequency - once every two years.

Construction Cost / Vehicle (20 points max.)

$$\text{Factor} = 20 - \frac{C / \text{ADT}}{1500} \times 20 = 20 - (\$420,000 / 11,100 \text{ vehicles / day}) / 1500 \times 20 = \mathbf{19}$$

Score is a high 19 out of 20 due to relatively inexpensive permanent fix for large volume of vehicles.

Impact of Failure (20 points max.)

If Score = 3, Factor = **6**

Score is only 6 out of 20 due to lower impact of problem, which would close a shoulder of the segment, or one lane at worst. Traffic would not need to be detoured.

Driver Inconvenience (15 points max.)

$$\text{Factor} = \frac{l \times \text{ADT}}{95,000} \times 15 = (8.5 \text{ mile detour} \times 11,100 \text{ vehicles / day}) / 95,000 \times 15 = \mathbf{15}$$

Score is a full 15 out of 15 due to lengthy detour affecting a large volume of vehicles.

Inclusion in Future Project (10 points max.)

Factor = **10** (segment included in operational project identified in TNR)

Score is a full 10 points because it has also been identified as a need in another study.

Guardrail Need (10 points max.)

Factor = **0** (guardrail is not needed on segment)

Factor is zero since there is no need for guardrail on this segment, meaning two projects cannot be completed due to action on this segment.

Total Score

$$6 + 19 + 6 + 15 + 10 + 0 = 56$$

Total Rating (lower score is better candidate for action)

$$100 - 56 = \mathbf{44} \text{ (actually 43 due to rounding in spreadsheet)}$$