Summary of
2010 Draft Discipline Report Findings

SR 302 Elgin Clifton Road to SR 16 Corridor Study

January 2010

Washington State
Department of Transportation

Table of Contents

List of Exhibits

List of Appendices

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Acronyms and Abbreviations

APE	area of potential effects
BMP	best management practices
CFR	Code of Federal Regulations
CMMP	Contained Media Management Plan
DR	Discipline Report
ECAP	Environmental Compliance Assurance Procedure
EPM	*Environmental Procedures Manual*
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GPS	global positioning system
GSP	General Special Provision
HAC	high accident corridor
HAL	high accident location
LOS	Level of Service
MTCA	Model Toxics Control Act
NHS	National Highway System
NOAA Fisheries	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places

OHWM	ordinary high water mark
PM	post meridian (after noon)
SP	Special Provision
SPCC	Spill Prevention Control and Countermeasures (Plan)
SR	State Route
TESC	Temporary Erosion and Sediment Control (Plan)
TMP	Transportation Management Plan
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WHR	Washington Heritage Register
WSDOT	Washington State Department of Transportation

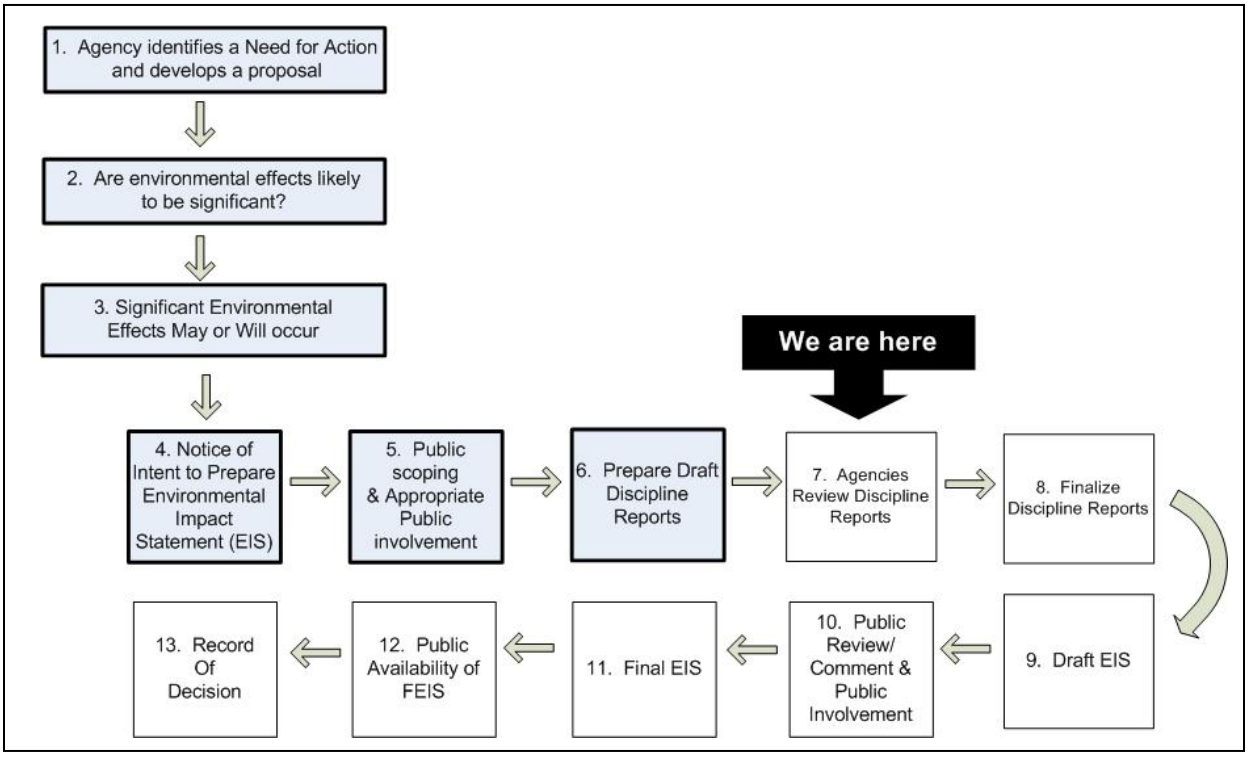
Introduction

What have we accomplished?

Two years ago WSDOT began a federal environmental review process to look into making improvements on SR 302. Exhibit 1 shown below highlights the EIS process. The shaded boxes indicate those steps that are complete. In the first step, the "Need for an Action" was necessary to address congestion and safety concerns along SR 302. Initial data collected determined that significant environmental impacts in the area could occur. This resulted in WSDOT's decision to begin the official study by publishing in the Federal Register the "Notice of Intent to Prepare an Environmental Impact Statement (EIS).

Following significant public and stakeholder activities to develop feasible alternative options, in 2009 WSDOT conducted agency and public scoping meetings to review and comment on the alternatives being considered. The project team made up of WSDOT and consultants has spent the last year working on a number of studies of environmental resources that will become a part of the Draft EIS document. This paper summarizes detailed information found in the environmental studies or discipline reports.

Exhibit 1, EIS Process Flowchart



What are the next steps?

Funded Work

The next focus in the environmental review process is to complete additional environmental studies or discipline reports. Work is beginning on four additional studies, Air Quality, Energy, Noise and Visual Impacts, and will be complete in 2011. Some Engineering work will also be completed to refine design components at some locations.

Unfunded Work

Some additional work on the environmental study remains and is currently unfunded. A Cultural Resources investigation and field-based study is needed to determine the impacts to cultural sites and historical resources that may be affected by project alternatives. A Section 4f study, which investigates impacts to public parks and recreation areas, will also need to be completed. The last steps in the EIS process (see Exhibit 1, white boxes) are resource agencies review of the discipline reports prior to finalizing them, followed by development of the Draft EIS and gathering public comments. Once the final EIS and the decision on a preferred alternative has been reviewed and commented on, a record of decision will be issued so this work can be moved into the design and construction of a project.

What is the purpose of the action?

The purposes of the State Route (SR) 302/Elgin Clifton Road to SR 16 Corridor Improvements project is (1) to provide an efficient and functional transportation route through this corridor that will improve roadway capacity, mobility, and safety; and (2) to address regional connection issues along the route.

What is the need for the action?

System Linkage

SR 302 is an east–west Principal Arterial located in eastern Mason County and northwestern Pierce County. SR 302 provides a link for Key Peninsula communities between Gig Harbor, SR 16, and I-5 to the east and Mason County and SR 3 to the west. The roadway directly connects the communities of Belfair, Allyn, and Victor in Mason County with Purdy and Gig Harbor in Pierce County.

Peak-hour traffic congestion on SR 302 is the result of the traffic signal at Purdy, the interchange configuration of the ramp at SR 16 and SR 302, and other un-signalized intersections along the SR 302 corridor. The proposed improvements to SR 302 will address the congestion by expanding the SR 302 corridor from a two-lane facility to a four-lane facility between Elgin Clifton Road and SR 16. Improvements along SR 302, west of Elgin Clifton Road/Key Peninsula Highway, are not warranted at this time due to the substantial decrease in volumes west of Elgin Clifton Road.

Transportation Demand and Capacity

Planners and engineers use a Level of Service (LOS) measurement to identify how a transportation facility like the SR 302 corridor performs given the number of vehicles currently using the roadway and the number projected to use the roadway in the future. The measurement is expressed as LOS A through F; LOS A indicates the best performance conditions and LOS E indicates a roadway at full capacity.

In 2003, the Puget Sound Regional Council (PSRC) adopted LOS standards for non-National Highway System (NHS), regionally significant state highways. As a result of these standards, the PSRC and the Washington State Department of Transportation (WSDOT) established a requirement of LOS C (mostly free-flow with periods of minor congestion) or better for the SR 302 corridor.

Legislation

In 2005, the State Legislature included the SR 302 Corridor Study in the Transportation Partnership Funding Package and directed WSDOT to study the issues and identify improvements that would address congestion and safety issues on SR 302. In 2008, based on the decrease in traffic volumes from Key Peninsula Highway to SR 3, WSDOT and the Federal Highway Administration (FHWA) identified the intersection of Key Peninsula Highway/SR 302 and the interchange at SR 16 as logical project termini.

The proposed action for improving the SR 302 corridor complies with the Legislature's mandate to plan for and implement necessary improvements to transportation facilities of statewide significance and to coordinate this planning with local governments and other stakeholders.

Safety

WSDOT reviewed collision data for a five-year period (2002 to 2006) along the SR 302 corridor. During this time, 762 collisions were reported. The team also reviewed the high accident locations (HALs) and high accident corridors (HACs) identified by the WSDOT program for the 2007–2009 biennium. The following locations were identified as HALs and HACs within the SR 302 corridor study area:

High Accident Locations (HALs)

- Intersection of SR 302 and Key Peninsula Highway

High Accident Corridors (HACs)

- Intersection of SR 302 and Key Peninsula Highway
- Key Peninsula Highway to 144th Street

- 94th Avenue to the SR 302 Spur
- SR 16 including interchange with SR 302

The proposed improvements along the SR 302 corridor will address HALs and HACs identified by WSDOT, as well as other safety concerns identified by WSDOT and through public involvement. These concerns include vehicle queuing on the freeway at the SR 16/SR 302 interchange, narrow lanes and lack of shoulders across the Purdy Bridge and throughout the corridor, sight distances, and clear zones.

What are the project alternatives?

After conducting preliminary studies, WSDOT narrowed the number of potential alternatives to four build alternatives (Alternatives 4, 6, 7, and 10) (see Exhibit 1) and a no build alternative.

For all the proposed build alternatives, it is assumed that the existing Purdy Bridge would be abandoned to vehicle traffic and a new SR 302 route would be established either over or around the Burley Lagoon. All proposed build alternatives would provide two general-purpose lanes in each direction, standard shoulders, median barrier, and turn lanes at major intersections along the new route.

In addition to these common elements, specific information on each alternative is included below.

Alternative 4: North Bridge

Alternative 4 would rebuild the existing SR 302 alignment from Elgin Clifton Road to approximately 90th Avenue NW. At approximately 90th Avenue East, the new alignment of SR 302 would extend to the east generally following the 144th Street NW corridor to Burley Lagoon. A new bridge would then be constructed over Burley Lagoon to connect with and follow the 144th Street NW corridor to a new SR 302 (144th Street NW)/SR 16 Interchange.

Alternative 6: Pine Diagonal – Existing SR 302 Alignment/New Alignment/Pine Road/Improved SR 302 Spur to Modified SR 302 Spur/SR 16 Interchange

Alternative 6 would begin at the SR 302 (Elgin Clifton Road)/Key Peninsula Highway intersection and continue east along the existing SR 302 corridor to its junction with 144th Street NW west of 104th Avenue NW and the beginning of the new SR 302 corridor. The new SR 302 corridor would continue in a northeast diagonal direction crossing 94th Avenue NW toward 82nd Avenue NW. The new alignment would turn north just west of 82nd Avenue NW and continue in a northerly direction to align with Madrona Road SW. The alignment would then curve to the east just south of the Madrona Road SW/SW Spruce Road intersection to merge with SW Pine Road approximately one-third of a mile east of the Madrona Road SW/SW Pine Road

intersection. The alignment would then continue east along the SW Pine Road corridor toward the SW Pine Road/Bethel-Burley Road SE intersection. The roadway would then curve to the south just west of the SW Pine Road/Bethel-Burley Road SE intersection to merge with Bethel-Burley Road SE then continue southeasterly along Bethel-Burley Road SE to SR 302 Spur and new/reconstructed SR 302/SR 16 interchange.

Alternative 7: 118th Avenue to Pine Road to SR 16 Interchange

Alternative 7 would begin at the SR 302 (Elgin Clifton Road)/Key Peninsula Highway intersection and continue east on the existing SR 302 corridor to approximately 118th Avenue NW. The new route would then curve to the north following the existing 118th Avenue NW corridor to SW Pine Road. The alignment would then continue east along SW Pine Road to the SW Pine Road/Bethel-Burley Road intersection and then curve around the north end of Burley Lagoon along the Bethel-Burley Road SE alignment to SR 302 Spur and new/reconstructed SR 302/SR 16 interchange.

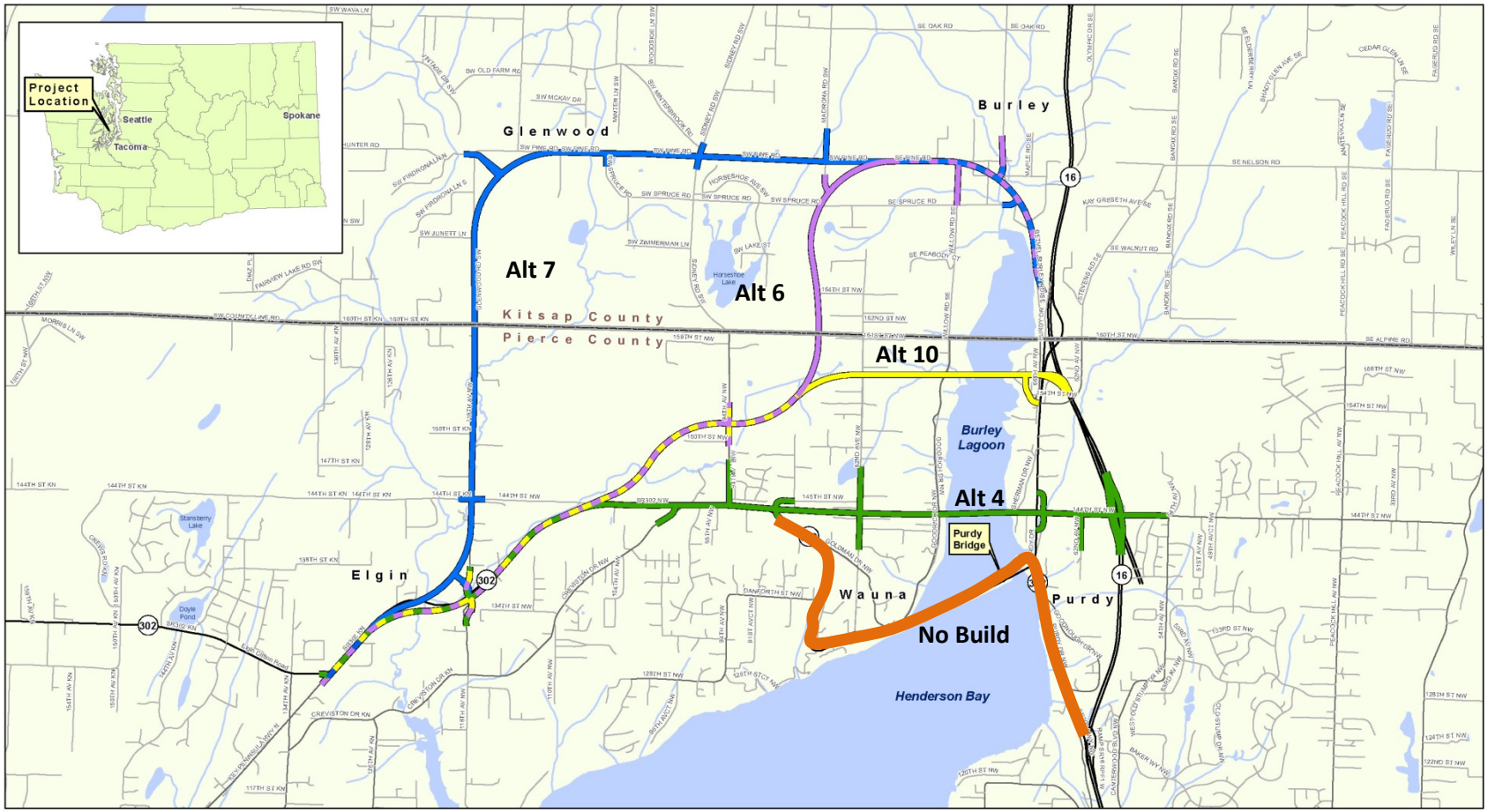


Exhibit 2 **Project Vicinity**

SR 302 Elgin Clifton Road to SR 16 Corridor Study

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Alternative 10: 154th Avenue – Existing SR 302/154th Avenue/New Alignment/154th Avenue to new SR 16 Interchange

Alternative 10 would begin at the SR 302 (Elgin Clifton Road)/Key Peninsula Highway intersection and continue east along the existing SR 302 corridor to its junction with 144th Street NW west of 104th Avenue NW and the beginning of the new SR 302 corridor. The new SR 302 corridor would continue in a northeast diagonal direction crossing 94th Avenue NW to 156th Street NW. The alignment would then follow 156th Street NW to the east and cross 82nd Avenue NW and Goodrich Drive NW to Burley Lagoon. A new bridge would be constructed across Burley Lagoon to connect with the SR 302 Spur north of the SR 302 Spur/154th Street NW intersection and new/reconstructed SR 302/SR 16 interchange.

No Build Alternative

Under the No Build Alternative, the project would not be built. Only routine maintenance, repair, and minor safety improvements would take place on SR 302 in the study area over the next 20 years. The No Build Alternative would not improve travel times on SR 302. It is anticipated that the Purdy Bridge will qualify for replacement sometime during the next 20 years. The bridge is listed in the Bridge Preservation Program's 2011-13 biennium priority array. Bridge replacement will likely be accompanied by localized improvements to the intersection at Purdy to accommodate the new location and approach.

A funded safety project is currently in design that is considering spot improvements at specific locations, including the intersection at 118th Avenue, and the Purdy Drive intersection. The final list and configuration of improvements to the existing route will be finalized in 2011.

WSDOT is evaluating the No Build Alternative to provide a reference point for comparing the effects, both positive and negative, associated with the proposed build alternatives.

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Methodology

What environmental resources were reviewed as part of this study?

The environmental resources listed below were evaluated by project analysts and discipline specialists[1].

- Land Use, Farmland, and Recreation
- Social, Economic, and Environmental Justice
- Water Resources
- Wetlands
- Fish and Aquatic Resources
- Vegetation and Wildlife
- Hazardous Materials and Waste
- Geology and Soils
- Transportation

How did the project team collect and compile information about environmental resources?

Information was collected and analyzed using procedures published by WSDOT. The scope of work for each study discipline was developed by a consultant and WSDOT staff. Each report was further reviewed by WSDOT's subject area experts. The direct, indirect, and cumulative impacts, and the potential significance of these impacts, were all considered as part of these analyses. Once evaluations of environmental resources were completed, the detailed findings from these evaluations were documented in draft Discipline Reports (or DRs) (WSDOT 2010a–h). The project team reviewed the DRs and compiled information pertaining to the project's potential direct effects and to mitigation strategies that could be implemented. The findings for each DR are summarized in Appendix A.

[1] Note that a Section 4(f) resources evaluation and a cultural and historical resources evaluation were not yet completed at the time this report was prepared.

What specific methods were used in the studies?

Land Use/Agriculture

The purpose of this report was to consider and describe potential impacts to land use practices related to construction of each build alternative. Local, state, federal, and field survey data were used in the analysis, in particular information about local zoning and land use planning. The agricultural setting was examined and defined in terms of prime, unique, and state important categories. The type of agricultural activities, size of farm, and production rates were also interpreted for purposes of impact assessment. Methods used included planning and mapping data analysis and field surveys.

Social/Environmental Justice/Economics

The purpose of this report was to consider and describe potential impacts to communities and individuals resulting from construction of each of the build alternatives. Principles guiding the impact analysis include equitable distribution of transportation benefits, civil rights, community cohesion, individual relocations and right of way requirements, effect on public facilities and access, and adverse effects on business and employment.

Water Resources

The purpose of this report was to consider and describe potential impacts to floodplains, surface water, and groundwater quality associated with each build alternative. An evaluation of changes in stormwater runoff, and location and scale of potential stormwater facilities associated with each build alternative, was also conducted. Potential impacts to drinking water supplies were also considered.

Wetlands

The purpose of this report was to consider and describe potential impacts to wetlands associated with each build alternative. Existing wetlands data, including Pierce and Kitsap counties, U.S. Army Corps of Engineers, and National Wetlands Inventory data were compiled where available, and a field inventory of wetlands was also performed to support this analysis. Field delineations of wetlands using hand-held global positioning system (GPS) equipment were made for those locations identified within a 300-foot corridor on each build alternative. Resources associated with the Rapanos wetland designations were also delineated and documented. Existing information from county and state databases about noxious weeds affecting wetlands was also compiled. The analysis also included vegetation type and habitat interpretation associated with each identified wetland.

Fish and Aquatic Resources

The purpose of this report was to consider and describe potential impacts to fish and aquatic resources associated with each build alternative. Existing data on fish populations and habitat from local, state, and federal sources was compiled. Data about species utilization and timing were obtained from WDFW biologists familiar with the area. A field inventory of stream habitat and ordinary high water using handheld GPS equipment was also conducted to consider potential impacts of build alternatives to threatened or endangered species.

Wildlife and Vegetation

The purpose of this report was to consider and describe potential impacts to wildlife, vegetation, habitat, and terrestrial threatened and endangered species associated with each build alternative. Existing data on was compiled from local, state, and federal sources, field surveys, and direct contact with Washington State Department of Fish and Wildlife (WDFW) biologists. Field surveys for threatened and endangered species were conducted on 600-foot-wide corridors surrounding each build alternative. The locations of habitat and vegetation types were compiled based on information from field and electronic databases.

Hazardous Materials and Waste

The purpose of this report was to consider and describe potential issues regarding the location and disposition of hazardous materials associated with the location of each build alternative. Existing regulatory and aerial photo data were compiled, followed by a field reconnaissance of potential sites. Sites within 0.5 mile of each build alternative were evaluated.

Geology and Soils

The purpose of this report was to describe and provide input on potential impacts of the geology and soils conditions that exist along the proposed alternative alignments. Potential impacts to geology and soils include the potential to increase erosion, possible effects to nearby shallow water wells, and the partial depletion of local aggregate resources. Additional potential impacts to the project alternatives includes geologic hazards of erosion, landsliding, earthquakes, frost action, settlement, and the presence of areas with localized high groundwater and low soil permeability.

Transportation

The purpose of this report was to consider and describe potential issues and impacts to transportation and related infrastructure associated with the operation of each build alternative. Analysis was based on the results of travel demand modeling and traffic counts developed for this purpose. Analysis focused on current, opening, and forecast year conditions. Analysis areas included public transit, bicycle, pedestrian, water, rail, and air transport modes. System features related to access for disabled travelers were considered.

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Appendix A –
Discipline Report Summaries by Resource Area

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Summary of Potential Direct Effects

What are the anticipated direct effects of project implementation for each proposed alternative?

Direct effects are defined in the Federal Register as those effects that "are caused by the action and occur at the same time and place" (40 CFR § 1508.8a). This definition includes both short-term (temporary) effects and permanent effects resulting from the project. Exhibit A-1 summarizes potential direct effects for each alternative, organized by topic area.

Exhibit A-1. Comparative Summary of Direct Effects for Each Project Alternative by Topic Area

Topic Area	Alternatives				
	4	6	7	10	No Build
Land Use	Estimated amount of land use type that would be converted to a transportation use (in acres): • Agricultural: 9.5. • Commercial/industrial: 17.7. • Parks and/or open space: 0.2. • Public: 2.1. • Real property: none. • Residential: 69.9. • Resort: none. • Undeveloped: none. Total estimated amount of land use conversion required: 99.4 acres in Pierce County. Project implementation would result in additional roadway capacity to manage projected demand. The ability of jurisdictions to accommodate the planned growth identified in their respective comprehensive plans would increase.	Estimated amount of land use type that would be converted to a transportation use (in acres): • Agricultural: 15.1. • Commercial/industrial: 6.8. • Parks and/or open space: 1.7. • Public: none. • Real property: 9.3. • Residential: 67.4. • Resort: 2.2. • Undeveloped: 16.9. Total estimated amount of land use conversion required: 72.7 acres in Pierce County and 46.7 acres in Kitsap County. Project implementation would result in additional roadway capacity to manage projected demand. The ability of jurisdictions to accommodate the planned growth identified in their respective comprehensive plans would increase.	Estimated amount of land use type that would be converted to a transportation use (in acres): • Agricultural: 11.3. • Commercial/industrial: 4.6. • Parks and/or open space: 2.3. • Public: none. • Real property: 15.7. • Residential: 76.5. • Resort: 4.3. • Undeveloped: 10. Total estimated amount of land use conversion required: 46.2 acres in Pierce County and 77.7 acres in Kitsap County. Project implementation would result in additional roadway capacity to manage projected demand. The ability of jurisdictions to accommodate the planned growth identified in their respective comprehensive plans would increase.	Estimated amount of land use type that would be converted to a transportation use (in acres): • Agricultural: 15.1. • Commercial/industrial: 5.7. • Parks and/or open space: 1. • Public: none. • Real property: none. • Residential: 88.4. • Resort: none. • Undeveloped: none. Total estimated amount of land use conversion required: 110.2 acres in Pierce County. Project implementation would result in additional roadway capacity to manage projected demand. The ability of jurisdictions to accommodate the planned growth identified in their respective comprehensive plans would increase.	There would be no direct effects to land use, including conversions. Future routine maintenance, repair, and minor safety improvements to the existing roadway would not affect land use. Additional roadway capacity to manage projected demand would not be realized. The ability of jurisdictions to accommodate the planned growth identified in their respective comprehensive plans would decrease.
Farmland	Estimated amount of Prime Farmland affected within right of way limits: 14 acres. Estimated amount of Farmland of	Estimated amount of Prime Farmland affected within right of way limits: 33 acres.	Estimated amount of Prime Farmland affected within right of way limits: 59 acres.	Estimated amount of Prime Farmland affected within right of way limits: 37 acres.	There would be no direct effects to agricultural land or soils, including land designated as Prime Farmland or Farmland of Statewide Significance.

Topic Area	Alternatives				
	4	6	7	10	No Build
Farmland (Continued)	Statewide Significance affected within right of way limits: 77 acres.	Estimated amount of Farmland of Statewide Significance affected within right of way limits: 86 acres.	Estimated amount of Farmland of Statewide Significance affected within right of way limits: 58 acres.	Estimated amount of Farmland of Statewide Significance affected within right of way limits: 59 acres.	Future routine maintenance, repair, and minor safety improvements to the existing roadway would not affect this resource.
Recreation	Estimated acquisitions include 0.2 acre of public land zoned for recreational use in Pierce County. This small amount of land would run parallel to the roadway improvements in the vicinity of 360 Park along 144th Street NW, which is managed by Key Pen Parks. The 360 Park is 360 acres and its current use is primarily walking trails. The potentially-affected area comprises a very small percentage of the total park area and is located in the passive use area of the park. A change in the visual landscape and a potential increase in noise would occur because traffic along the SR 302 corridor would move closer to recreational uses.	Estimated acquisitions include 1.0 acre of public land zoned for recreational use in Pierce County, and 0.7 acre of public land zoned for parks/open space use in Kitsap County. The conversions could affect a small strip of land parallel to the 360 Park along 144th Street NW, which is managed by Key Pen Parks. The 360 Park is 360 acres and its current use is primarily walking trails. The potentially-affected area comprises a very small percentage of the total park area and is located in the passive use area of the park. A change in the visual landscape and a potential increase in noise would occur because traffic along the SR 302 corridor would move closer to recreational uses.	Estimated acquisitions include 2.3 acres of public land zoned for general open space use in Kitsap County. By definition, open space uses can consist of critical area or resource land protection in addition to outdoor active and recreational uses. No public land zoned for parks or formally designated parkland would be acquired in Kitsap or Pierce counties. A change in the visual landscape and a potential increase in noise would occur because traffic along the SR 302 corridor would move closer to recreational uses.	Estimated acquisitions include 1 acre of public land zoned for recreational use in Pierce County. The conversions could affect a small strip of land parallel to the 360 Park along 144th Street NW, which is managed by Key Pen Parks. The 360 Park is 360 acres and its current use is primarily walking trails. The potentially-affected area comprises a very small percentage of the total park area and is located in the passive use area of the park. A change in the visual landscape and a potential increase in noise would occur because traffic along the SR 302 corridor would move closer to recreational uses.	There would be no direct effects to recreation resources. Future routine maintenance, repair, and minor safety improvements to the existing roadway would not affect recreation.
Social/Environmental Justice/Economics	It is anticipated that response and travel times for fire, emergency medical, police, and other public services would improve. Estimated acquisitions include 17.7 acres of commercial/industrial land uses in Pierce County that could affect businesses and/or economic development. Estimated direct and indirect jobs that would be created: 646.	It is not anticipated that response and travel times for fire, emergency medical, police, and other public services would improve. Estimated acquisitions include 6.4 acres of commercial/industrial land uses in Pierce and Kitsap counties that could affect businesses and/or economic development. Estimated direct and indirect jobs that would be created: 286.	It is not anticipated that response and travel times for fire, emergency medical, police, and other public services would improve. Estimated acquisitions include 4.6 acres of commercial/industrial land uses in Pierce and Kitsap counties that could affect businesses and/or economic development. Estimated direct and indirect jobs that would be created: 340.	It is anticipated that response and travel times for fire, emergency medical, police, and other public services would improve. Estimated acquisitions include 5.7 acres of commercial/industrial land uses in Pierce County that could affect businesses and/or economic development. Estimated direct and indirect jobs that would be created: 571.	There would be no direct effects to environmental justice or social and economic resources. It is anticipated that as population and thus congestion increased, response and travel times for fire, emergency medical, police, and other public services would increase. Jobs would not be created as a result of the project. Traffic congestion, noise, and access for businesses and residents would not be affected by project

Topic Area	Alternatives				
	4	6	7	10	No Build
Social/Environmental Justice/Economics (Continued)	Project construction would temporarily increase congestion and noise and would affect access for businesses and residents. Low-income and minority populations would not experience disproportionately high and adverse effects as a result of construction or project operation.	Project construction would temporarily increase congestion and noise and would affect access for businesses and residents. Low-income and minority populations would not experience disproportionately high and adverse effects as a result of construction or project operation.	Project construction would temporarily increase congestion and noise and would affect access for businesses and residents. Low-income and minority populations would not experience disproportionately high and adverse effects as a result of construction or project operation.	Project construction would temporarily increase congestion and noise and would affect access for businesses and residents. Low-income and minority populations would not experience disproportionately high and adverse effects as a result of construction or project operation.	construction, but temporary effects could occur as a result of future routine maintenance, repair, and minor safety improvements to the existing roadway. Low-income and minority populations would not experience disproportionately high and adverse effects as a result of the project.
Water	In-water work associated with 5 major water body crossings would occur. Construction of a new bridge across Burley Lagoon would be required. As a result, work within floodplains could occur. As a result of constructing new impervious surfaces, runoff volumes and contaminant concentrations would increase. A net decrease would occur for total suspended solids, total copper, and total zinc loading in receiving waters.	In-water work associated with 10 major water body crossings would occur. No bridge construction or work within floodplains would occur. As a result of constructing new impervious surfaces, runoff volumes and contaminant concentrations would increase. A net decrease would occur for total suspended solids and total copper in receiving waters, but total zinc loading would increase.	In-water work associated with 12 major water body crossings would occur. No bridge construction or work within floodplains would occur. As a result of constructing new impervious surfaces, runoff volumes and contaminant concentrations would increase. A net decrease would occur for total suspended solids and total copper in receiving waters, but total zinc loading would increase.	In-water work associated with 8 major water body crossings would occur. Construction of a new bridge across Burley Lagoon would be required. As a result, work within floodplains could occur. As a result of constructing new impervious surfaces, runoff volumes and contaminant concentrations would increase. A net decrease would occur for total suspended solids and total copper in receiving waters, but total zinc loading would increase.	There would be no direct effects to water resources; however, some temporary effects linked to future routine maintenance, repair, and minor safety improvements to the existing roadway could occur (e.g., contaminants such as petroleum products from maintenance equipment could be discharged into water bodies). Contaminant concentrations for the currently untreated road surface would increase with increased traffic levels, resulting in a potential for decreased water quality.
Wetlands	Estimated permanent effects to wetlands (by category in acres): Category I = none; Category II = 1.63; Category III =1.35; Category IV = 0.23. Total estimated permanent effects to wetlands (all categories): 3.21 acres. Estimated permanent effects to wetland buffers (by category in acres): Category I = none; Category II = 2.92; Category III = 2.79; Category IV = 0.94.	Estimated permanent effects to wetlands (by category in acres): Category I = 9.75; Category II = 2.59; Category III = 2.16; Category IV = 4.09. Total estimated permanent effects to wetlands (all categories): 18.59 acres. Estimated permanent effects to wetland buffers (by category in acres): Category I = 11.24; Category II = 3.46; Category III = 2.43; Category IV = 2.79.	Estimated permanent effects to wetlands (by category in acres): Category I = 0.56; Category II = 6.75; Category III = 5.20; Category IV = 3.05. Total estimated permanent effects to wetlands (all categories): 15.55 acres. Estimated permanent effects to wetland buffers (by category in acres): Category I = 0.41; Category II = 9.82; Category III = 9.47; Category IV = 2.04.	Estimated permanent effects to wetlands (by category in acres): Category I = 7.52; Category II = 1.59; Category III = 2.41; Category IV = 0.48. Total estimated permanent effects to wetlands (all categories): 12 acres. Estimated permanent effects to wetland buffers (by category in acres): Category I = 10.87; Category II = 2.91; Category III = 5.82; Category IV = 0.88.	No direct effects to wetlands; however, temporary effects linked to future routine maintenance, repair, and minor safety improvements could occur (e.g., contaminants such as petroleum products from maintenance equipment could be discharged into wetland source waters). Sediment and pollutant loading rates for the currently untreated road surface would increase with increased traffic levels, resulting in a potential for decreased water quality for water bodies associated with wetlands.

Topic Area	Alternatives				
	4	6	7	10	No Build
Wetlands (Continued)	Total estimated permanent effects to wetland buffers (all categories): 6.65 acres.	Total estimated permanent effects to wetland buffers (all categories): 19.92 acres.	Total estimated permanent effects to wetland buffers (all categories): 21.74 acres.	Total estimated permanent effects to wetland buffers (all categories): 20.49 acres.	
Fish and Aquatic	Stream habitat could be affected at Purdy Creek, Minter Creek, and Little Minter Creek due to the construction of water body crossings. This could affect two Endangered Species Act (ESA) threatened fish species (Puget Sound evolutionarily significant units of Chinook salmon and steelhead trout) and two federal species of concern (Coho salmon and coastal cutthroat trout). Construction of the bridge across Burley Lagoon would affect the marine/estuarine environment that supports shellfish aquaculture and that contains nearshore critical habitat for Chinook salmon and essential fish habitat for Pacific salmon, ground fish, and, potentially, coastal pelagic species. Temporary construction effects could include increased sedimentation and turbidity, migratory delays, fish salvage effects, loss of riparian vegetation, acoustic effects, and hazardous materials releases. Permanent operation effects could include loss of upland, wetland, and riparian habitat; modifications to stream morphology; improvements in fish passage conditions; and increased over-water shading.	Stream habitat could be affected at Minter Creek, Little Minter Creek, Burley Creek, Little Bear Creek, and an unnamed tributary to Burley Creek due to the construction of water body crossings. This could affect two ESA threatened fish species (Puget Sound evolutionarily significant units of Chinook salmon and steelhead trout) and two federal species of concern (Coho salmon and coastal cutthroat trout). Temporary construction effects could include increased sedimentation and turbidity, migratory delays, fish salvage effects, loss of riparian vegetation, acoustic effects, and hazardous materials releases. Permanent operation effects could include loss of upland, wetland, and riparian habitat; modifications to stream morphology; improvements in fish passage conditions; and increased over-water shading.	Stream habitat could be affected at Minter Creek, Burley Creek, Little Bear Creek, and Huge Creek due to the construction of water body crossings. This could affect two ESA threatened fish species (Puget Sound evolutionarily significant units of Chinook salmon and steelhead trout) and two federal species of concern (Coho salmon and coastal cutthroat trout). Temporary construction effects could include increased sedimentation and turbidity, migratory delays, fish salvage effects, loss of riparian vegetation, acoustic effects, and hazardous materials releases. Permanent operation effects could include loss of upland, wetland, and riparian habitat; modifications to stream morphology; improvements in fish passage conditions; and increased over-water shading.	Stream habitat could be affected at Minter Creek, Little Minter Creek, and at an unnamed tributary to Burley Lagoon due to the construction of water body crossings. This could affect two ESA threatened fish species (Puget Sound evolutionarily significant units of Chinook salmon and steelhead trout) and two federal species of concern (Coho salmon and coastal cutthroat trout). Construction of the bridge across Burley Lagoon would affect the marine/estuarine environment that supports shellfish aquaculture and that contains nearshore critical habitat for Chinook salmon and essential fish habitat for Pacific salmon, ground fish, and, potentially, coastal pelagic species. Temporary construction effects could include increased sedimentation and turbidity, migratory delays, fish salvage effects, loss of riparian vegetation, acoustic effects, and hazardous materials releases. Permanent operation effects could include loss of upland, wetland, and riparian habitat; modifications to stream morphology; improvements in fish passage conditions; and increased over-water shading.	There would be no direct effects to fish and aquatic resources; however, some temporary effects linked to maintaining and repairing the existing roadway could occur (e.g., contaminants such as petroleum products or concrete wash water could be discharged into water bodies). Sediment and pollutant loading rates for the currently untreated road surface would increase with increased traffic levels, resulting in a potential for decreased water quality. Improvements to fish passage culverts would not be implemented; therefore, improvements in fish passage conditions would not occur.

Topic Area	Alternatives				
	4	6	7	10	No Build
Wildlife and Vegetation	Temporary effects to wildlife and vegetation associated with project construction could include effects related to sediment disturbance caused by pile driving and in-water work; poisoning or injuring of waterfowl, beavers, and other aquatic wildlife through spills of oil, gasoline, concrete, or other toxic substances; lighting and noise effects; wildlife displacement; reduction in availability of potential roosting, nesting, and foraging habitat for federally-listed species and federal species of concern; and vegetation removal. Total temporary vegetation removal due to construction: 14.9 acres. Construction of the proposed bridge at Burley Lagoon would bisect a currently unobstructed portion of the lagoon. The new bridge could affect the flight paths of waterfowl and other aquatic birds. Permanent disturbance from road operation would be within 800 feet of an active bald eagle (a federal species of concern) nest. Eagle foraging areas along Burley Lagoon would be obstructed by the new bridge. Estimated permanent vegetation removal and shading effects once the project was operational: 123.1 acres. Direct long-term disturbance to wildlife and vegetation could include increased degradation of habitat quality, habitat fragmentation, water quality effects from changes in stormwater, vegetation removal and shading, increased animal-vehicle collisions, light and glare effects,	Temporary effects to wildlife and vegetation associated with project construction could include effects related to sediment disturbance caused by pile driving and in-water work; poisoning or injuring of waterfowl, beavers, and other aquatic wildlife through spills of oil, gasoline, concrete, or other toxic substances; lighting and noise effects; wildlife displacement; reduction in availability of potential roosting, nesting, and foraging habitat for federally-listed species and federal species of concern; and vegetation removal. Total temporary vegetation removal due to construction: 19.1 acres. The alignment from SR 302 to 94th Avenue NW would create a new road barrier that would reduce connectivity between a riparian corridor associated with Minter Creek and several hundred acres of undeveloped land to the north-northwest. The proposed alignment from 94th Avenue NW to SW Spruce Road would create 1.5 miles of new road, fragmenting several hundred acres of undeveloped forest, wetland, and riparian habitat. Estimated permanent vegetation removal and shading effects once the project was operational: 160.3 acres. Direct long-term disturbance to wildlife and vegetation could include increased degradation of habitat quality, habitat fragmentation, water quality effects from changes in stormwater, vegetation removal and shading, increased animal-vehicle collisions, light and glare effects, disruption of species' social	Temporary effects to wildlife and vegetation associated with project construction could include effects related to sediment disturbance caused by pile driving and in-water work; poisoning or injuring of waterfowl, beavers, and other aquatic wildlife through spills of oil, gasoline, concrete, or other toxic substances; lighting and noise effects; wildlife displacement; reduction in availability of potential roosting, nesting, and foraging habitat for federally-listed species and federal species of concern; and vegetation removal. Total temporary vegetation removal due to construction: 21.4 acres. Construction of the proposed bridge at Burley Lagoon would bisect a currently unobstructed portion of the lagoon. The new bridge could affect the flight paths of waterfowl and other aquatic birds. The alignment would permanently alter habitat where mountain quail (a state priority species) have been documented. Estimated permanent vegetation removal and shading effects once the project was operational: 188.3 acres. Direct long-term disturbance to wildlife and vegetation could include increased degradation of habitat quality, habitat fragmentation, water quality effects from changes in stormwater, vegetation removal and shading, increased animal-vehicle collisions, light and glare effects, disruption of species' social structures, avoidance of areas	Temporary effects to wildlife and vegetation associated with project construction could include effects related to sediment disturbance caused by pile driving and in-water work; poisoning or injuring of waterfowl, beavers, and other aquatic wildlife through spills of oil, gasoline, concrete, or other toxic substances; lighting and noise effects; wildlife displacement; reduction in availability of potential roosting, nesting, and foraging habitat for federally-listed species and federal species of concern; and vegetation removal. Total temporary vegetation removal due to construction: 15.1 acres. The alignment from SR 302 to 94th Avenue NW would create a new road barrier that would reduce connectivity between a riparian corridor associated with Minter Creek and several hundred acres of undeveloped land to the north-northwest. The proposed alignment from 94th Avenue NW to 82nd Avenue NW would create a new barrier through several hundred acres of unfragmented forest, wetland, and riparian habitat. In addition, the alignment would create a new barrier through the riparian corridor of a small tributary to Burley Lagoon. Alignment construction would remove active bald eagle (a federal species of concern) nest sites and permanently alter foraging areas. Permanent disturbance from road operation would potentially affect perch and alternate nest trees. Eagle foraging areas on Burley Lagoon would be permanently obstructed by the new bridge.	No direct effects to wildlife, habitat, or vegetation would occur; however, some temporary effects linked to future routine maintenance, repair, and minor safety improvements to the existing roadway could occur (e.g., light and noise caused by maintenance equipment may influence wildlife movement patterns, vegetation removal, etc.).

Topic Area	Alternatives				
	4	6	7	10	No Build
Wildlife and Vegetation (Continued)	disruption of species' social structures, avoidance of areas adjacent to roads due to noise and human activity, increase in noxious weed species proliferation, and increased barriers to movement.	structures, avoidance of areas adjacent to roads due to noise and human activity, increase in noxious weed species proliferation, and increased barriers to movement.	adjacent to roads due to noise and human activity, increase in noxious weed species proliferation, and increased barriers to movement.	Habitat within 200 feet of documented mountain quail (a state priority species) occurrence would be altered. Estimated permanent vegetation removal and shading effects once the project was operational: 132.63 acres. Direct long-term disturbance to wildlife and vegetation could include increased degradation of habitat quality, habitat fragmentation, water quality effects from changes in stormwater, vegetation removal and shading, increased animal-vehicle collisions, light and glare effects, disruption of species' social structures, avoidance of areas adjacent to roads due to noise and human activity, increase in noxious weed species proliferation, and increased barriers to movement.	
Hazardous Materials and Waste	Nine sites pose a low, moderate, or high risk of cleanup liability for WSDOT. These include 5 sites of low concern, 2 sites of moderate concern, and 2 sites of high concern.	Three sites pose a low or moderate risk cleanup liability for WSDOT. These include 2 sites of low concern and 1 site of moderate concern.	Three sites pose a low risk cleanup liability for WSDOT. They are of low concern.	Two sites pose a low or moderate risk cleanup liability for WSDOT. One is of low concern; the other is of moderate concern.	There would be no direct effects to hazardous materials and waste. Future routine maintenance, repair, and minor safety improvements to the existing roadway would not affect hazardous materials and waste.
Geology and Soils	Erosion of surface soils may occur during construction. The risk of wind and surface water runoff erosion would be relatively low to moderate. Potential risks associated with land sliding appear to be primarily located on slopes approaching Burley Lagoon and could impact bridge approaches. Bridge crossings could have potential seismic hazards that would require mitigation.	Erosion of surface soils may occur during construction. The risk of wind and surface water runoff erosion would be relatively low to moderate. Potential flooding could occur in portions of the proposed alternatives that traverse FEMA 100-year flood areas.	Erosion of surface soils may occur during construction. The risk of wind and surface water runoff erosion would be relatively low to moderate. Potential flooding could occur in portions of the proposed alternatives that traverse FEMA 100-year flood areas.	Erosion of surface soils may occur during construction. The risk of wind and surface water runoff erosion would be relatively low to moderate. Potential risks associated with land sliding appear to be primarily located on slopes approaching Burley Lagoon and could impact bridge approaches. Bridge crossings could have potential seismic hazards that would require mitigation.	There would be no potential impacts to the geology and soils along the project corridor because existing conditions and processes would remain the same.

Topic Area	Alternatives				
	4	6	7	10	No Build
Transportation	This alignment would include much of the existing SR 302 route; therefore, construction activities would affect motorists due to roadway widening along the existing route. Construction could influence the safety and efficiency of access for businesses and residences along the selected route. In the year 2035: • It is anticipated that this road configuration would serve between 22,000 and 34,000 vehicles per day and operate at Level of Service (LOS) A, B, and C conditions. • PM peak-hour round trip travel time is estimated to be 30.3 minutes (measured on the traffic model between a point near the Borgen Boulevard/SR 16 interchange and a point at the west terminus [Key Peninsula Highway] of the SR 302 corridor). • PM peak-hour vehicle miles traveled are estimated to be 56,277. • PM peak-hour congested vehicle hours traveled are estimated to be 1,687. • PM peak-hour total delay is estimated to be 368 hours. • PM peak average congested speed is estimated to be 33.4 miles per hour. Transit route alterations could be required.	This alignment would alter the existing SR 302 route and include some sections of new roadway; therefore, construction activities would result in disruption to traffic along the existing route and create new breaks in access that would need to be maintained during construction. Construction could influence the safety and efficiency of access for businesses and residences along the selected route. In the year 2035: • It is anticipated that this road configuration would serve between 20,000 and 36,000 vehicles per day and operate at LOS A and B conditions. • PM peak-hour round trip travel time is estimated to be: 39.1 minutes (measured on the traffic model between a point near the Borgen Boulevard/SR 16 interchange and a point at the west terminus [Key Peninsula Highway] of the SR 302 corridor). • PM peak-hour vehicle miles traveled are estimated to be 62,886. • PM peak-hour congested vehicle hours traveled are estimated to be 1,879. • PM peak-hour total delay is estimated to be 421 hours. • PM peak average congested speed is estimated to be: 33.4 miles per hour. Transit route alterations could be required.	This alignment would follow existing county roads; therefore, construction activities would affect motorists due to roadway alterations along the existing county roadways. Construction could influence the safety and efficiency of access for businesses and residences along the selected route. In the year 2035: • It is anticipated that this road configuration would serve between 19,000 and 28,000 vehicles per day and operate at LOS A, B, and C conditions. • PM peak-hour round trip travel time is estimated to be 39.5 minutes (measured on the traffic model between a point near the Borgen Boulevard/SR 16 interchange and a point at the west terminus [Key Peninsula Highway] of the SR 302 corridor). • PM peak-hour vehicle miles traveled are estimated to be 62,886. • PM peak-hour congested vehicle hours traveled are estimated to be 1,868. • PM peak-hour total delay is estimated to be 393 hours. • PM peak average congested speed is estimated to be 33.7 miles per hour. Transit route alterations could be required.	This alignment would alter the existing SR 302 route and include some sections of new roadway; therefore, construction activities would result in disruption to traffic along the existing route and create new breaks in access that would need to be maintained during construction. Construction could influence the safety and efficiency of access for businesses and residences along the selected route. In the year 2035: • It is anticipated that this road configuration would serve between 22,000 and 33,000 vehicles per day and operate at LOS A, B, and C conditions. • PM peak-hour round trip travel time is estimated to be 30.3 minutes (measured on the traffic model between a point near the Borgen Boulevard/SR 16 interchange and a point at the west terminus [Key Peninsula Highway] of the SR 302 corridor). • PM peak-hour vehicle miles traveled are estimated to be 57,607. • PM peak-hour congested vehicle hours traveled are estimated to be 1,717. • P.M. peak-hour total delay is estimated to be: 380 hours. • PM peak average congested speed is estimated to be 33.6 miles per hour. Transit route alterations could be required.	There would be no direct effects to transportation resources. Future routine maintenance, repair, and minor safety improvements to the existing roadway could temporarily affect transportation resources (e.g., traffic congestion, detours, blocked access to business and residences). In the year 2035: • It is anticipated that PM peak-hour round trip travel time would be 36.5 minutes (measured on the traffic model between a point near the Borgen Boulevard/SR 16 interchange and a point at the west terminus [Key Peninsula Highway] of the SR 302 corridor). • PM peak-hour vehicle miles traveled are estimated to be 55,756. • PM peak-hour congested vehicle hours traveled are estimated to be 1,828. • PM peak-hour total delay is estimated to be 546 hours. • PM peak average congested speed is estimated to be 30.5 miles per hour.

Topic Area	Alternatives				
	4	6	7	10	No Build
Transportation (Continued)	Overall, congestion along the SR 302 corridor would decrease, roadway safety would increase, and standards for intersection and highway LOS during the average weekday peak-hour would be either met or exceeded.	Overall, congestion along the SR 302 corridor would decrease, roadway safety would increase, and standards for intersection and highway LOS during the average weekday peak-hour would be either met or exceeded.	Overall, congestion along the SR 302 corridor would decrease, roadway safety would increase, and standards for intersection and highway LOS during the average weekday peak-hour would be either met or exceeded.	Overall, congestion along the SR 302 corridor would decrease, roadway safety would increase, and standards for intersection and highway LOS during the average weekday peak-hour would be either met or exceeded.	Overall, congestion along the SR 302 corridor would increase, roadway safety would decrease, and improving or exceeding the standards for intersection and highway LOS during the average weekday peak-hour would not occur as a result of the project.

Note: Refer to the DRs (WSDOT 2010a–h) for descriptions of the technical terms used in this exhibit.

Mitigation

What measures could be taken to avoid or minimize adverse effects?

Mitigation refers to measures that are implemented to avoid or minimize project effects. Exhibit A-2 lists specific aspects of the project design or implementation that could be incorporated into the project to mitigate effects.

Exhibit A-2. Summary of Potential Mitigation Strategies by Topic Area

Topic Area	Mitigation Strategies
Land Use	• Following the requirements of the applicable federal, state, and local land use statutes, including zoning and critical area regulations, to protect land uses, resource lands, and critical areas. • Complying with all permit conditions of approval and/or mitigation measures. • Providing residents, tenants, and property owners in the study area with advance notice of potential access or utility disruptions as a result of construction activities.
Farmland	• Minimizing the conversion of Prime Farmland to non-agricultural uses. • Coordinating with local jurisdictions, such as Pierce and Kitsap counties, to address potential conversion of soils classified as Farmland of Statewide Significance. • Completing the Natural Resources Conservation Service (NRCS) form entitled “NRCS-CPA-106” as part of the Final Environmental Impact Statement to address potential conversion of soils classified as Prime Farmland.
Recreation	• Temporarily routing trails and bicycle routes around construction sites to minimize trail closures while keeping trails open as often as safely possible. • Providing signs for detour routes for pedestrian and bicyclist pathways. • Returning portions of any recreation facilities used during construction to pre-construction conditions. • Coordinating with each jurisdiction in which parklands are affected to identify appropriate mitigation measures that are consistent with all local, state, and federal plans and policies.

Topic Area	Mitigation Strategies
Social	• Conducting all right-of-way acquisitions and residential and commercial relocations in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970[1], as amended, as well as the Washington Relocation Assistance – Real Property Acquisition Policy. Compensating all affected property owners at fair market value for property rights acquired and providing relocation assistance. *Community Cohesion* • Continuing to use the project Web site and sending out newsletters providing information about the project. Sending out newsletters in the appropriate languages to ensure effective communication with study area residents. • Scheduling neighborhood meetings, as often as needed, to keep residents informed of any construction activities before and during construction. • Working with local jurisdictions to obtain their input on design and landscape treatments. *Community Services* • Coordinating with public service providers before construction to establish detour routes and alternative detour routes, if necessary. • Coordinating with school officials during construction. • Notifying residents of any disruptions or changes to services well in advance. • Preparing a consolidated utility plan that lists existing locations of utilities, potential temporary locations, potential permanent locations, schedule for utility work, and detailed information on any service disruptions. *Recreational Facilities* • Identifying detour routes and installing signs for temporary closures. • Restoring the landscape of those park properties that would be temporarily affected during construction. *Pedestrian, Bicycle, and Transit* • Identifying detour routes and installing signs on bicycle/pedestrian pathways. • If temporary transit stops are required, clearly marking the stops and providing additional signs indicating location. • If alternative routes and/or temporary transit stops are required, ensuring that stops are accessible for those with disabilities.
Environmental Justice	• Working with business owners to reconfigure or provide for alternative access during construction, making special efforts to ensure that the access needs of minority and low-income businesses were met. • Continuing to provide adequate public notice of construction activities, land closures, alternate routes, and detour routes and proactively working to reach low-income or minority populations through the use of print and electronic publications that serve low-income or minority people. • Continuing to conduct briefings on project construction to social service agencies that work with low-income or minority people in neighborhoods along the corridor to ensure that information reached all residents and roadway users.
Economics	• Working with business owners to provide signed detours and maintain access for customers. • Maintaining uninterrupted access to all businesses during construction.

Topic Area	Mitigation Strategies
Water	• Working “in the dry” where construction must occur within stream channels; stream flow would be temporarily diverted around the work site, where practicable, to prevent turbidity. • Isolating concrete piers for a period of 7 days to allow concrete to cure and to avoid toxicity to aquatic life. Uncured or wet concrete would not be allowed to come into contact with the water. Water that contacted wet concrete and had a pH greater than 9 would be pumped out and disposed of outside the stream channel. • Conducting in-water and over-water work according to the conditions stipulated by the Washington State Department of Fish and Wildlife (WDFW) through the Hydraulic Project Approval. • Keeping to a minimum the amount of vegetation removed or disturbed. • Containing turbid water generated during construction until sediment has settled out. Contaminated water would not be allowed back into surface waters. • Aligning new or replacement culverts and stream reaches adjacent to the existing structures so they could be constructed in dry conditions where practicable, thereby minimizing the amount of in-water work and associated water quality effects. • Limiting construction disturbances to the minimum area needed, the shortest duration, and an appropriate distance away from water bodies, as practicable. • Prohibiting the use of manure as fertilizer for roadside plantings or seeding. • Identifying and developing staging areas for equipment repair and maintenance away from all drainage courses except in areas that were already paved and where no excavation would occur within the staging area. Prohibiting dumping of washout from concrete trucks into storm drains or onto soil or pavement that carried stormwater runoff. Prohibiting the use of thinners and solvents during work on the site to wash oil, grease, or similar substances from heavy machinery or machine parts within the construction areas. Designating a washdown area for equipment and concrete trucks. • Obtaining a National Pollutant Discharge Elimination System (NPDES) construction permit and ensuring that water met the standards specified in the NPDES permit prior to discharge from the construction site. • Developing and implementing a Temporary Erosion and Sediment Control (TESC) Plan to address erosion control during and after construction (including directing runoff away from unstabilized soils, slowing runoff with structures, and installing erosion control features to catch particulates). • Developing and implementing a Spill Control and Countermeasures (SPCC) Plan to manage hazardous materials associated with construction activities, such as the materials from equipment leaks, disposal of oily wastes, clean up of spills, and storing of petroleum products. • Implementing standard BMPs.
Wetlands	• Avoiding and minimizing effects to wetlands during the alternative selection and design of the project. • Using retaining walls instead of standard fill slopes to reduce the footprint of the at-grade roadway sections and reduce the amount and extent of wetland fill. • Including stormwater treatment facilities in the design to treat roadway runoff before discharging to wetlands and streams, thereby improving water quality. • Implementing BMPs during construction to avoid or minimize effects to wetland resources. Examples of BMPs include implementing TESC and SPCC plans; prohibiting servicing and refueling of vehicles within 100 feet of wetlands to reduce the potential of petroleum and hydraulic fluid spills in sensitive areas, as practicable, and restoring cleared areas by replanting the areas with appropriate native species.
Fish	*In-Water Work* • Adhering to in-water work timing restrictions. • Requiring that all in-water work below the ordinary high water mark (OHWM) associated with construction of culverts occur in the summer low-flow period. • Conducting in-water work associated with bridge construction, such as pile-driving, during periods of low tide to reduce the effects of sound and of sediment plumes. *Fish Exclusion, Handling, and Removal* • Prior to any in-water work, screening-off the diversion location with upstream and downstream block nets, and removing all fish within the work area.

Topic Area	Mitigation Strategies
Fish (Continued)	• Adhering to the conditions of the Hydraulic Project Approval and use WSDOT Fish Exclusion Protocols and Standards. • Collecting any captured fish in buckets containing clean stream water and releasing them downstream of the project site. • Requiring that a qualified specialist be on-site during the diversion process to relocate any stranded fish downstream. • Gradually reintroducing water flow into the new channel and culvert once the new culvert and associated realigned channel were fully constructed to prevent fish stranding and to allow any resident fish that might be present to escape. *Stormwater* • Designing the project in accordance with the 2008 *Highway Runoff Manual* (WSDOT 2008), or as revised. *Stream and Stream Bank Stabilization* • Stabilizing stream banks using riprap at the inlets and outlets of culverts to protect the banks from scour and erosion due to inlet and outlet hydraulics. • Stabilizing reconstructed stream banks with coir fabric and live willow stakes to help mitigate existing vertical scour, downcutting, and horizontal bank erosion. • Providing stability within culverts with bands of coarse gravel that would be periodically spaced between the stream gravel. *General* • Using sediment barriers such as fences, weed-free straw matting/bales, or fiber wattles in all work areas sloping toward the stream to intercept any surface flow that might transport sediments. • Prohibiting construction equipment from entering below the OHWM of streams, except where permitted, and prohibiting the disposal of waste and excess materials below the OHWM. • Staging construction equipment and materials at least 50 feet away from streams. • Requiring that fuel storage and refueling occurred no closer than 100 feet from the stream. Ensuring that these areas were operated using BMPs and were equipped with an appropriate spill containment system. • Washing heavy equipment before it was delivered to the job site and inspecting equipment before use to remove vegetation and dirt clods that might contain noxious weed seeds. • Inspecting machinery daily for fuel or lubricant leaks. • Prior to commencing any over-water construction in Burley Lagoon, preparing and submitting an SPCC Plan that would meet state and federal agency requirements. Requiring the contractor to prepare an SPCC Plan prior to beginning construction. • Requiring that all machinery operation and driving activities associated with excavation and concrete placement took place within the proposed footprint to avoid streambed compaction in adjacent areas. • Replanting all disturbed riparian vegetation with species native to the project vicinity and planting trees when consistent with highway safety standards. • Clearly marking streams and riparian buffers on construction plans and in the field. • Demarcating clearing limits with orange barrier fencing wherever clearing is proposed in or near critical areas. • Designing the project in accordance with Washington's surface water quality standards (Chapter 173-201A WAC), which specify a mixing zone beyond which water quality standards cannot be exceeded. • Monitoring water quality during construction to ensure compliance with the Washington State Department of Ecology's standards. • Curing concrete before contact with surface water, as required by Washington Administrative Code (WAC) 110-220-070(1)(g) to avoid higher pH levels that can occur when fresh concrete contacts water.

Topic Area	Mitigation Strategies
Wildlife and Vegetation	• Where applicable, surveying proposed work areas prior to construction for federal, state, and local sensitive-status plant and animal species and protected habitat. If protected species or habitat is found, consulting with the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries), the U.S. Fish and Wildlife Service (USFWS), WDFW, and/or Kitsap County and Pierce County about the best methods to avoid, minimize, and/or relocate the species or habitat. • Scheduling construction to minimize disturbance to protected species during windows of sensitive activity such as breeding or wintering. • Limiting construction to a relatively small area immediately adjacent to the existing roadways to minimize vegetation clearing. • Following BMPs and other safety measures to minimize erosion and sedimentation and to minimize the risk of spilling contaminants. • Improving culverts relative to existing conditions to increase the likelihood that terrestrial animals would be able to pass under the highway at creek crossings. • Minimizing the road footprint through riparian corridors for wildlife movement. • Creating new wetlands or rehabilitating degraded wetlands to provide wildlife habitat.
Hazardous Materials and Waste	• Conducting hazardous materials investigations early in the project development phase to identify known and potentially contaminated sites within the project corridor. • Considering design changes that would minimize the need to manage contaminated media. • Implementing practical cleanup alternatives for contaminated soil and groundwater. • Incorporating General Special Provisions (GSPs) and project-specific Special Provisions (SPs) that make the contractor responsible for being prepared to appropriately handle contaminated material with minimal delays. • Developing a Contaminated Media Management Plan (CMMP) when significant amounts of known contaminated soil, groundwater, and sediment require excavation or dewatering. • Decommissioning underground storage tanks (USTs) as outlined in the *Environmental Procedures Manual* (EPM) Chapter 620.08 (WSDOT 2010i) if a UST was encountered during excavation activities. • Contacting a WSDOT Hazardous Materials Specialist and following internal notification procedures prescribed in the *Construction Manual* (WSDOT 2010j) Section 1-2.2K(1) for the Environmental Compliance Assurance Procedure (ECAP) if unexpected UST encounters occur or to report a hazardous materials spill. • Ensuring compliance with UST regulations and the appropriate follow-up work in accordance with Model Toxics Control Act (MTCA) regulations. • Developing an SPCC Plan per Standard Specifications Section 1-07.15 of the ECAP.
Geology and Soils	• Developing erosion control strategies to promote vegetation, armoring ditches to reduce erosive energy of concentrated surface water runoff, extending culverts to control culvert overflow, applying WSDOT processes according to Hydraulics and Highway Runoff Manuals, placing erosion control structures in highway median areas, and installing brow ditches at the tops of cut slopes in erodible soils to intercept and direct surface water runoff away from cut faces. • Identifying and mitigating for potential landslide hazards that are present using internal design guidelines and manuals for soil cuts and embankments, highway runoff, and temporary erosion and sediment control. • Using seismic engineering design guidelines to reduce the likelihood and extent of structural failure, differential settlement, and/or highway surface damage from a moderate to strong earthquake in the project area. • Potential flooding in areas that lie within FEMA 100-year flood limits requires application of guidelines within the Highway Runoff Manual, the Design Manual, and other internal design guidelines for design of roadways.

Topic Area	Mitigation Strategies
Transportation	• Developing strategies to reduce overall peak period traffic levels on SR 302. • Developing a Transportation Management Plan (TMP) prior to construction to avoid or minimize construction effects on traffic. The TMP may contain strategies for managing traffic operation and public information for the project. • Planning the timing of necessary lane closures outside of the peak commute times to minimize the effects to traffic. • Restricting nighttime lane and ramp closures to designated hours. • Employing full closures of the roadway, if necessary, over the weekend to minimize effects during peak commute periods. • Minimizing temporary road and lane closures. • Clearly marking detour routes with signs.

[1] The Uniform Act provides protection and assistance for people affected by the acquisition, rehabilitation, or demolition of real property for federal or federally-funded projects. This law was enacted by Congress to ensure that people whose real property is acquired, or who move as a direct result of projects receiving federal funds, are treated fairly and equitably and receive assistance in moving from the property they occupy.

Note: Refer to the DRs (WSDOT 2010a–h) for descriptions of the technical terms used in this exhibit.