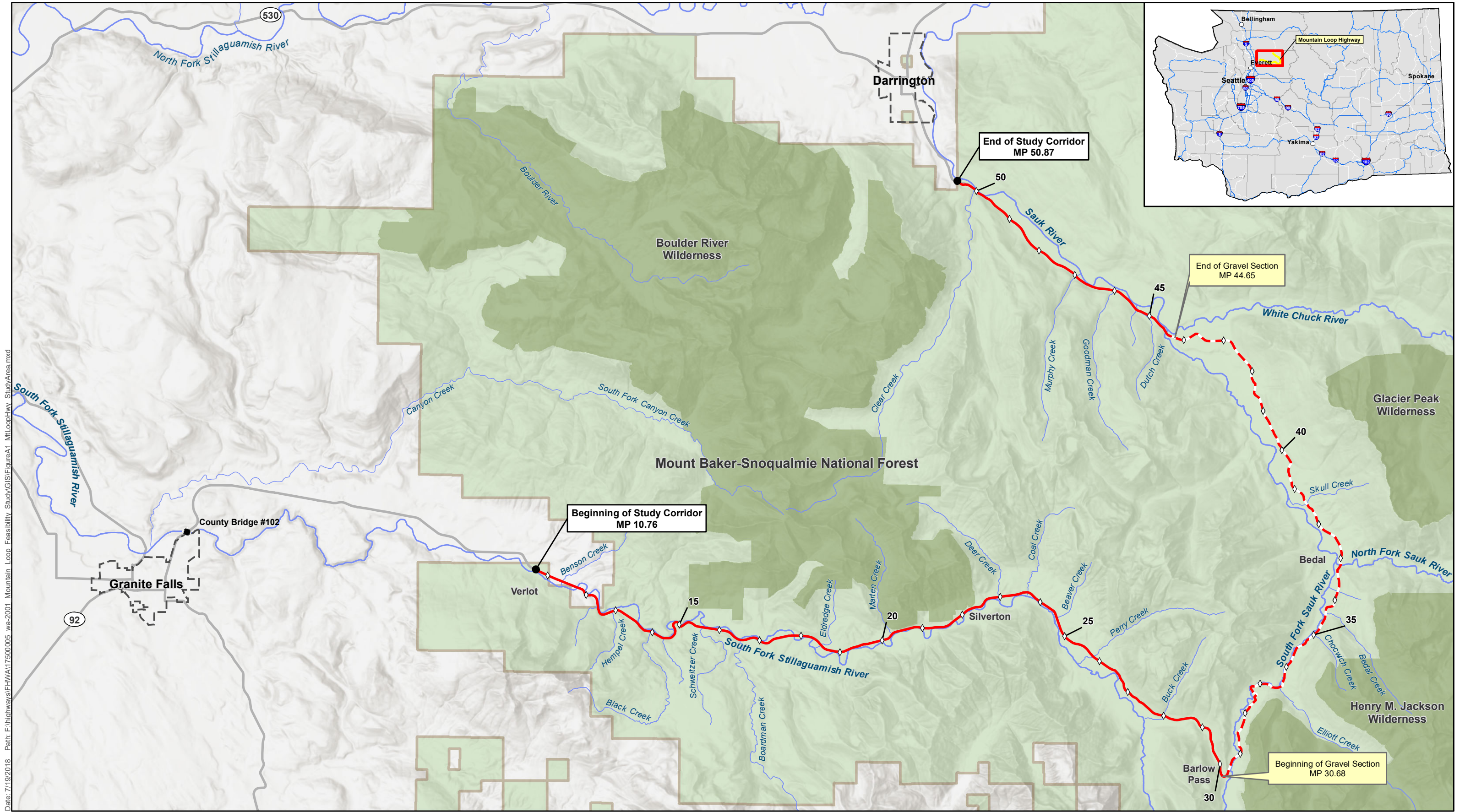


Appendix A:

Figures



Date: 7/19/2018 Path: F:\highways\FHWA\17500005_wa-2001 Mountain Loop Feasibility Study\GIS\FigureA1 MtlLoopHwy StudyArea.mxd

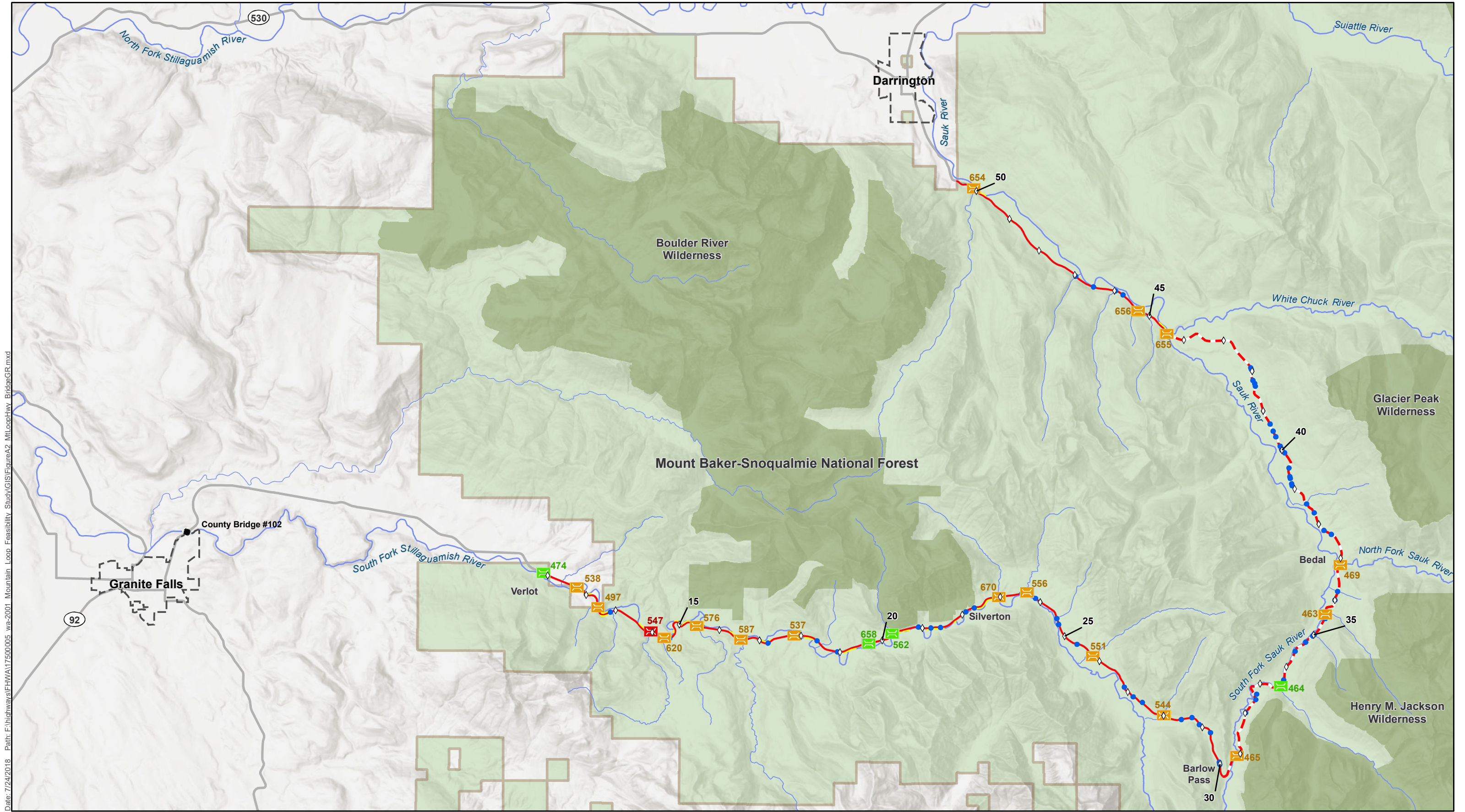
WSDOT, Snohomish County, US Department of Agriculture, US Department of Forestry, US Geological Society, Washington Department of Natural Resources



- ◇ Milepost
- City Limit
- River/Stream
- Roads
- National Forest
- Wilderness Area
- Mountain Loop Hwy (Paved)
- Mountain Loop Hwy (Unpaved)

Figure A.1
Study Area

Mountain Loop Highway
Feasibility Study
Snohomish County, Washington



Date: 7/24/2018 Path: F:\highways\FHWA\17500005_wa-2001 Mountain Loop Feasibility Study\GIS\FigureA2_MtLoopHwy_BridgesGR.mxd

WSDOT, Snohomish County, US Department of Agriculture, US Department of Forestry, US Geological Society, Washington Department of Natural Resources





Miles
0 0.5 1 2

 Milepost

 City Limit

 River/Stream

 Roads

 National Forest

 Wilderness Area

 Mountain Loop Hwy (Paved)

 Mountain Loop Hwy (Unpaved)

 Culvert

 Guardrail

Bridge Condition (ID)

 655 Good

 655 Fair

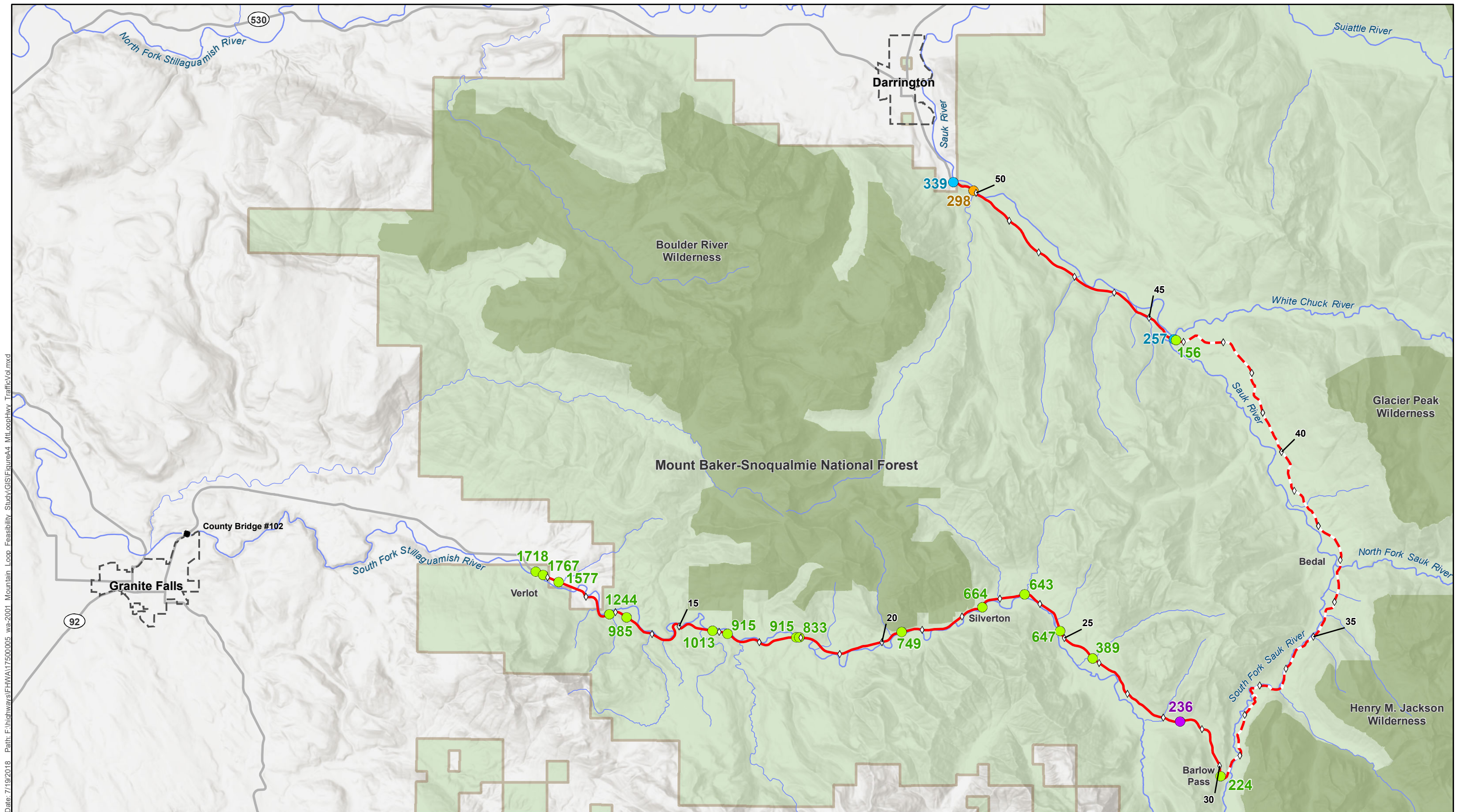
 655 Poor

Figure A.2

Bridge, Culvert, and Guardrail Locations

Mountain Loop Highway
Feasibility Study
Snohomish County, Washington

Date: 7/19/2018 Path: F:\highways\FHWA\17500005_wa-2001 Mountain Loop Feasibility Study\GIS\FigureA4_MtlLoopHwy_TrafficVol.mxd



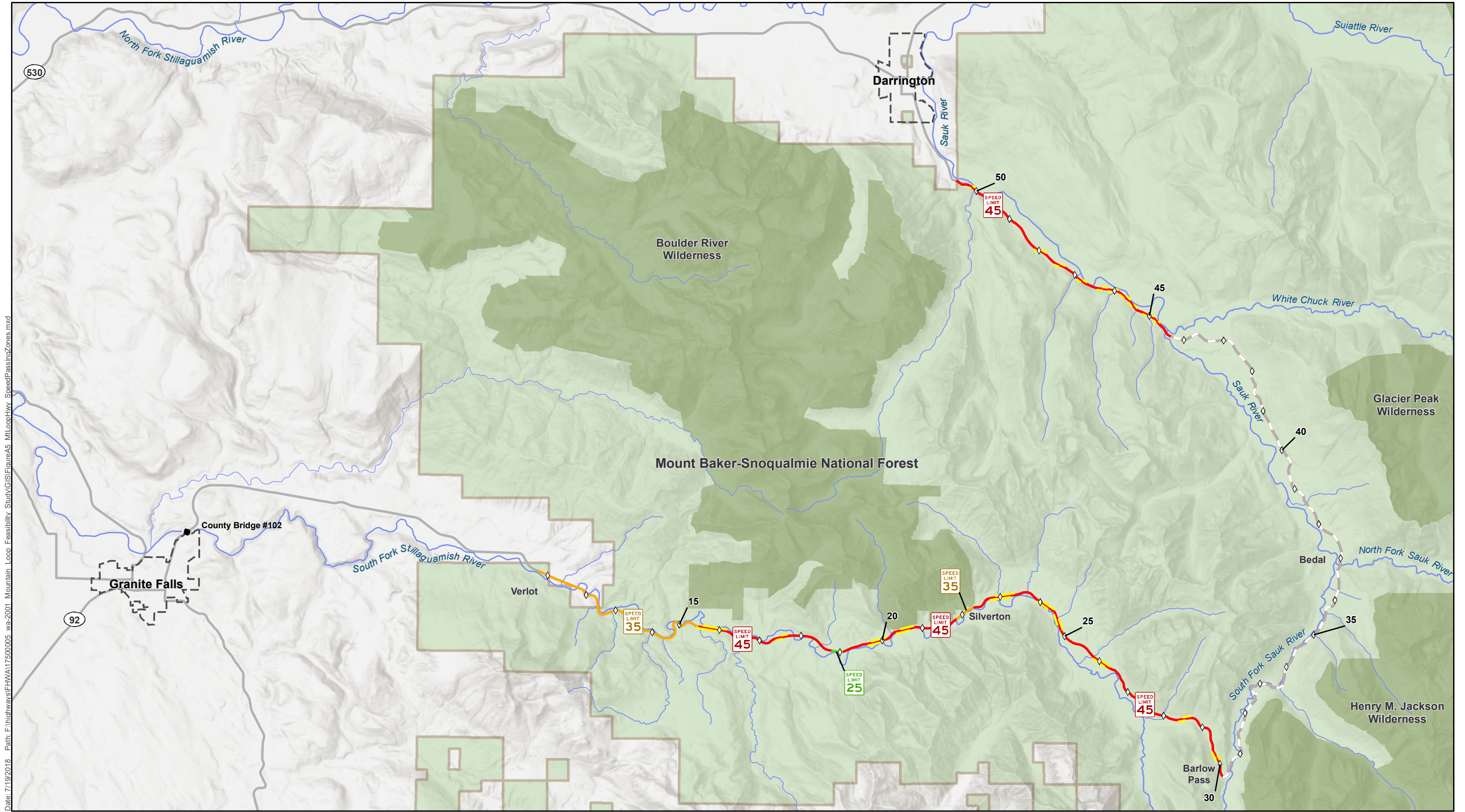
WSDOT, Snohomish County, US Department of Agriculture, US Department of Forestry, US Geological Society, Washington Department of Natural Resources



- ◇ Milepost
- City Limit
- River/Stream
- Roads
- National Forest
- Wilderness Area
- Mountain Loop Hwy (Paved)
- Mountain Loop Hwy (Unpaved)

Existing Traffic Volumes
(Year of Counts)
2011
2013
2015
2017

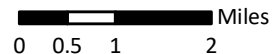
Figure A.3
Existing Traffic Volumes
Mountain Loop Highway
Feasibility Study
Snohomish County, Washington



Date: 7/19/2018 Path: F:\highways\FHWA\17500005_wa-2001_Mountain_Loop_Feasibility_Study\GIS\FigureA5_MtlLoopHwy_SpeedPassingZones.mxd

WSDOT, Snohomish County, US Department of Agriculture, US Department of Forestry, US Geological Society, Washington Department of Natural Resources





- ◇ Milepost
- City Limit
- River/Stream
- Roads

- National Forest
- Wilderness Area
- Mountain Loop Hwy (Unpaved)
- Passing Zones

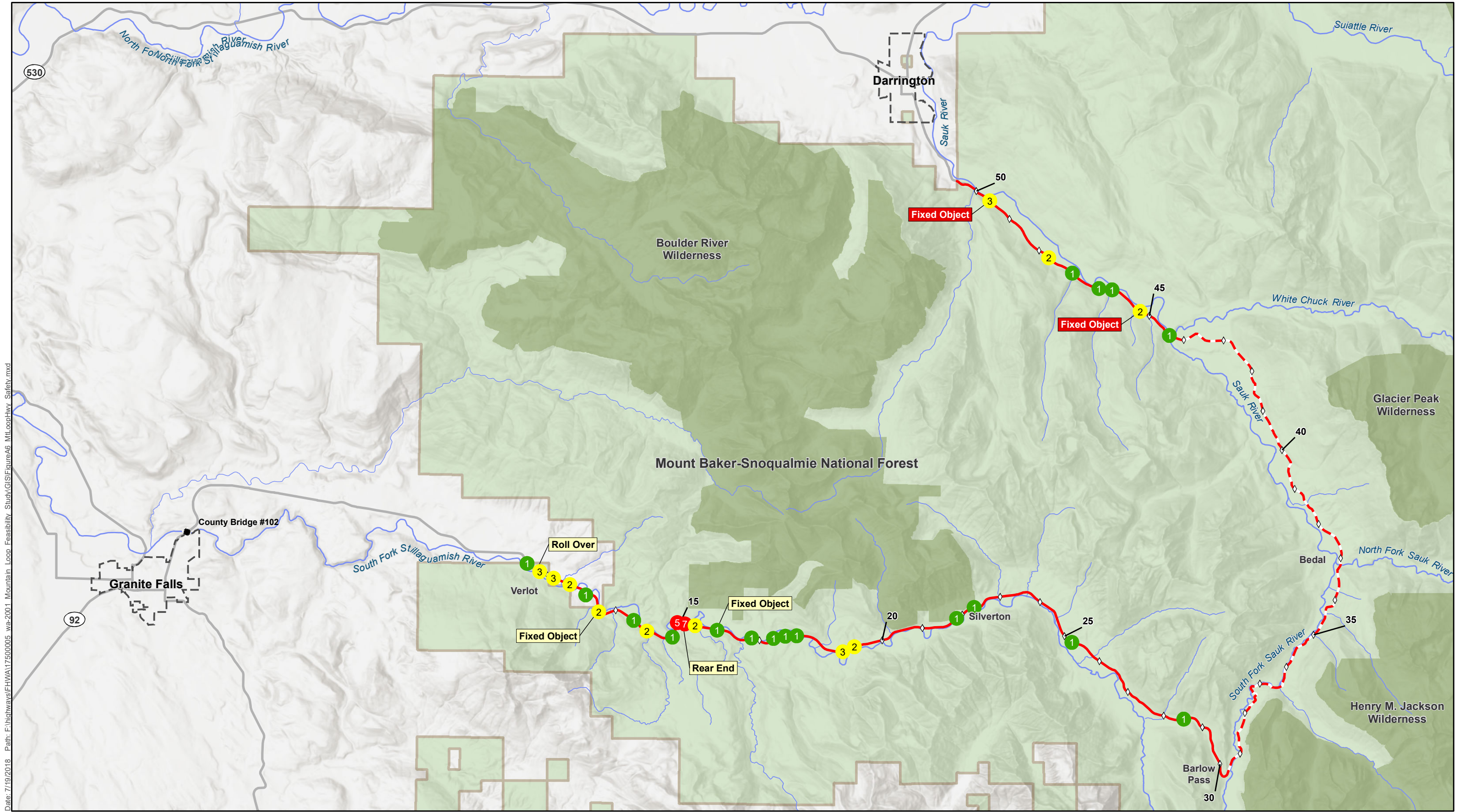
Speed

- 25 mph
- 35 mph
- 45 mph
- Unknown/Not Posted

Figure A.4

Speed and Passing Zone Locations

Mountain Loop Highway
Feasibility Study
Snohomish County, Washington



WSDOT, Snohomish County, US Department of Agriculture, US Department of Forestry, US Geological Society, Washington Department of Natural Resources

Miles

00.512

◇ Milepost

City Limit

River/Stream

Roads

National Forest

Wilderness Area

Mountain Loop Hwy (Paved)

Mountain Loop Hwy (Unpaved)

Number of Crashes

● 1

● 2 - 4

● 5 - 7

Crash Type

Severe Crash

Fatal Crash

Figure A.5

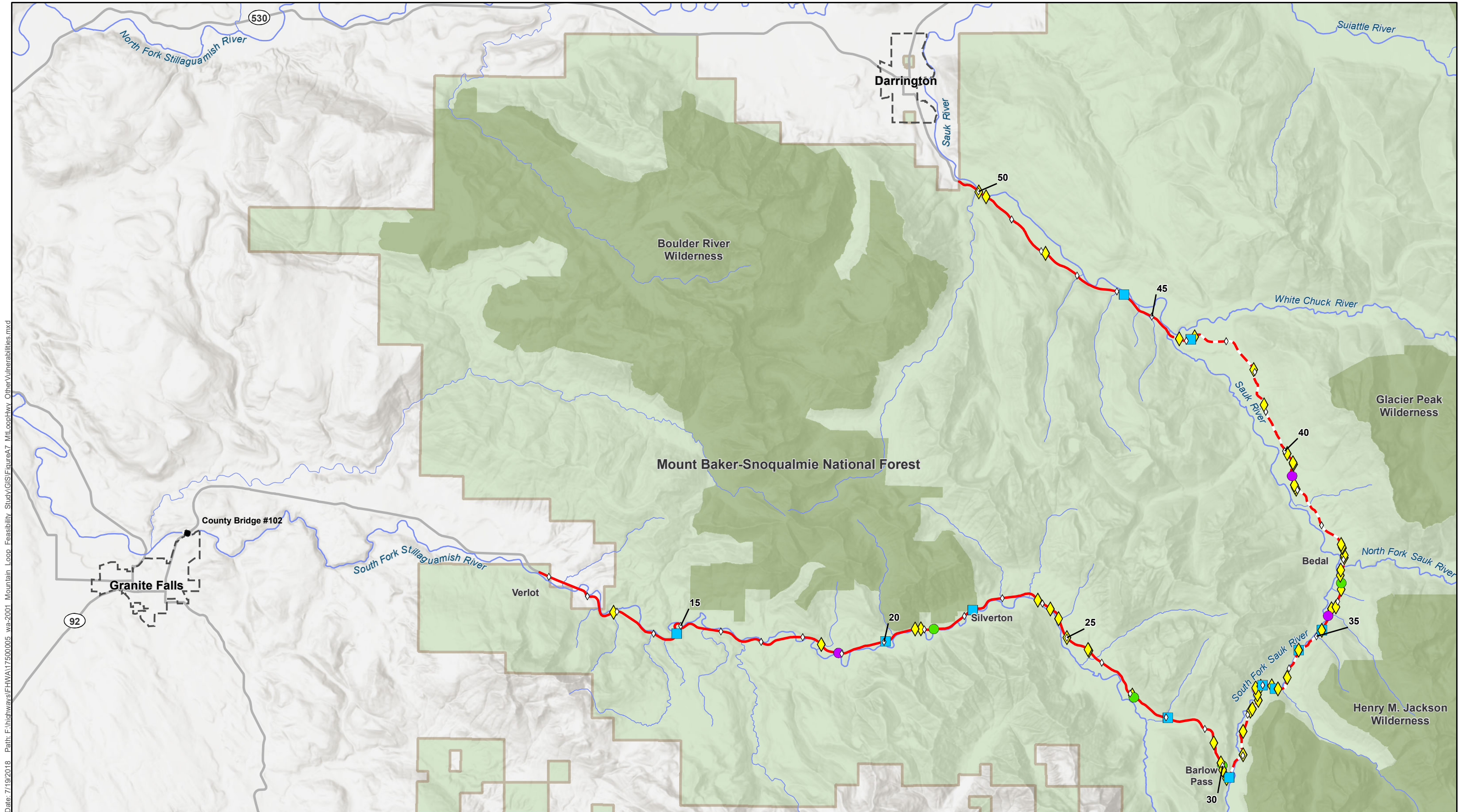
Crash Trends

Mountain Loop Highway

Feasibility Study

Snohomish County, Washington

Date: 7/19/2018 Path: F:\highways\FHWA\17500005_wa-2001 Mountain Loop Feasibility Study\GIS\FigureA7_Mtl_cophwy_OtherVulnerabilities.mxd

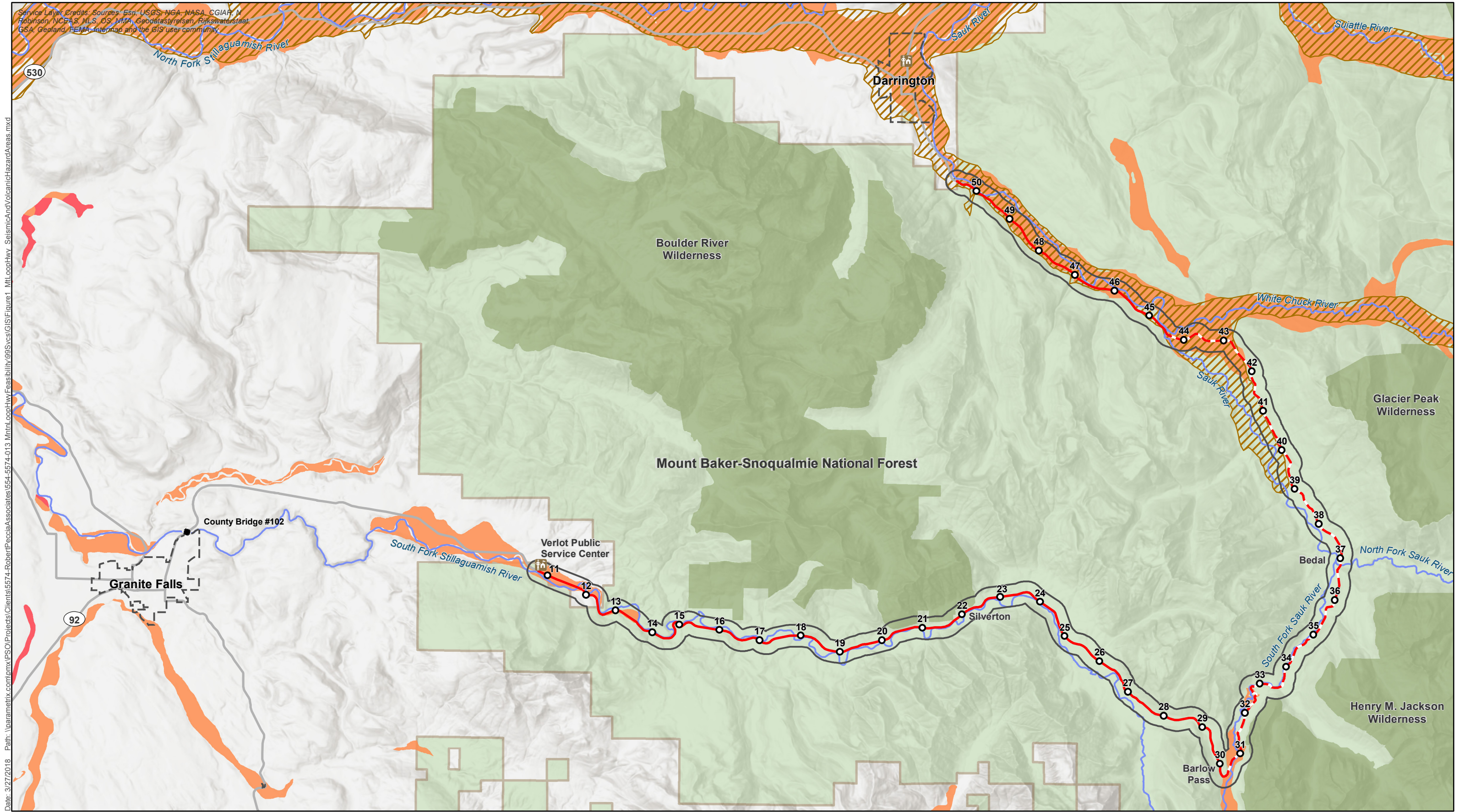


WSDOT, Snohomish County, US Department of Agriculture, US Department of Forestry, US Geological Society, Washington Department of Natural Resources



- | | | |
|----------------|-------------------------------|--------------------------|
| ◇ Milepost | ▭ National Forest | ● Drainage/Erosion Issue |
| ▭ City Limit | ▭ Wilderness Area | ■ Slide Area |
| — River/Stream | — Mountain Loop Hwy (Paved) | ◇ Steep Slope(s) |
| — Roads | — Mountain Loop Hwy (Unpaved) | ● Washout Area |

Figure A.6
Other Vulnerabilities
Mountain Loop Highway
Feasibility Study
Snohomish County, Washington



Service Layer Credits: Sources: Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, MLS, OS, NMA, Geodatasireisen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community.

Date: 3/27/2018 Path: \\paramatrix.com\pmx\PSOI\Projects\Clients\5574-013 MntLnLoopHwyFeasibility\99Svcs\GIS\Figure1 MntLnLoopHwy SeismicAndVolcanicHazardAreas.mxd

Parametrix

WSDOT, Snohomish County, US Department of Agriculture, US Department of Forestry, US Geological Society, Washington Department of Natural Resources,

Miles

0 0.5 1 2

Mountain Loop Hwy (Paved)

Mountain Loop Hwy (Unpaved)

Study Area (1/4 Mile Buffer)

Milepost

City Limit

River/Stream

National Forest

Wilderness Area

Glacier Peak Lahar Hazard Area

Soil Liquefaction Susceptibility

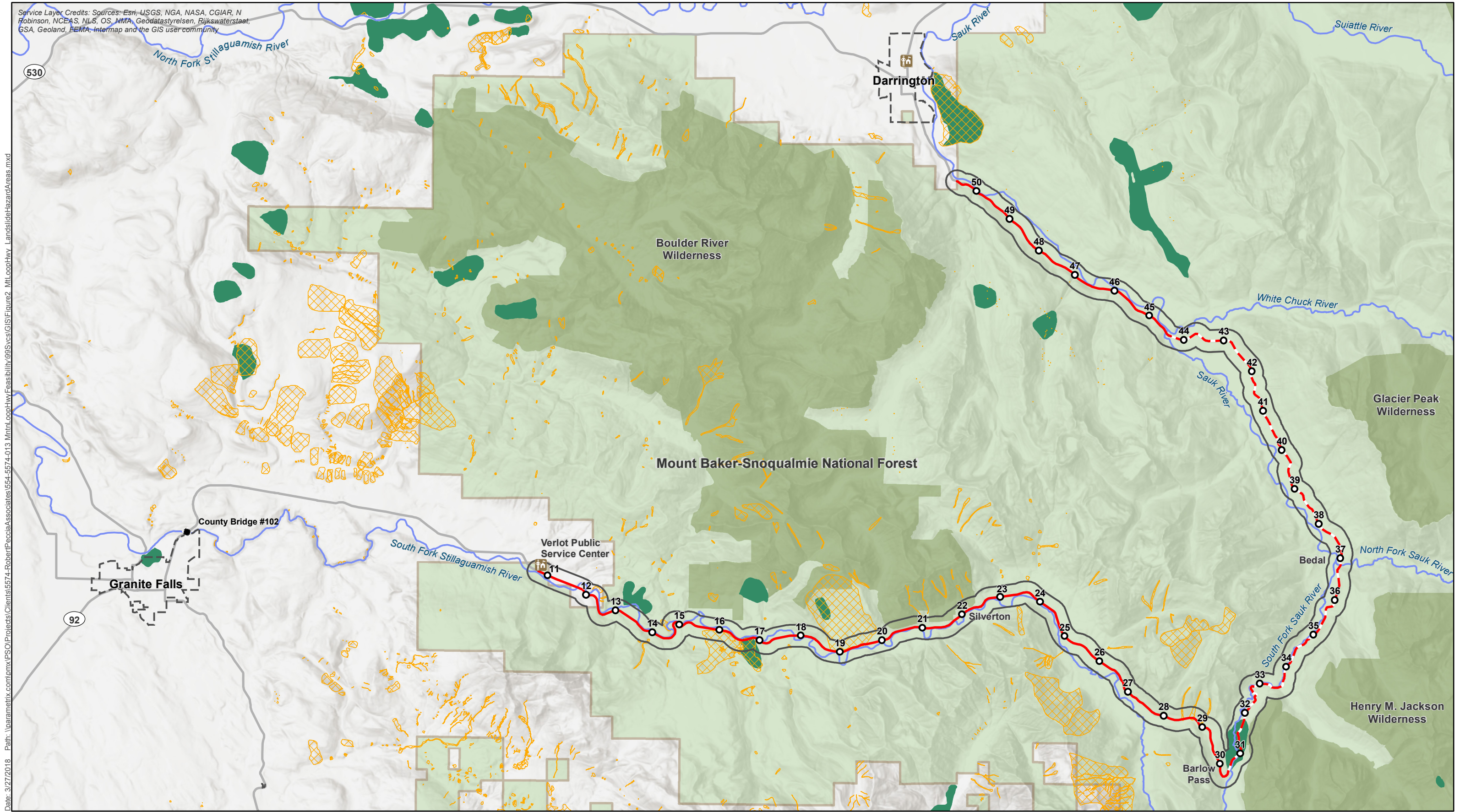
High

Moderate to high

Figure A.7

Seismic and Volcanic Hazard Areas

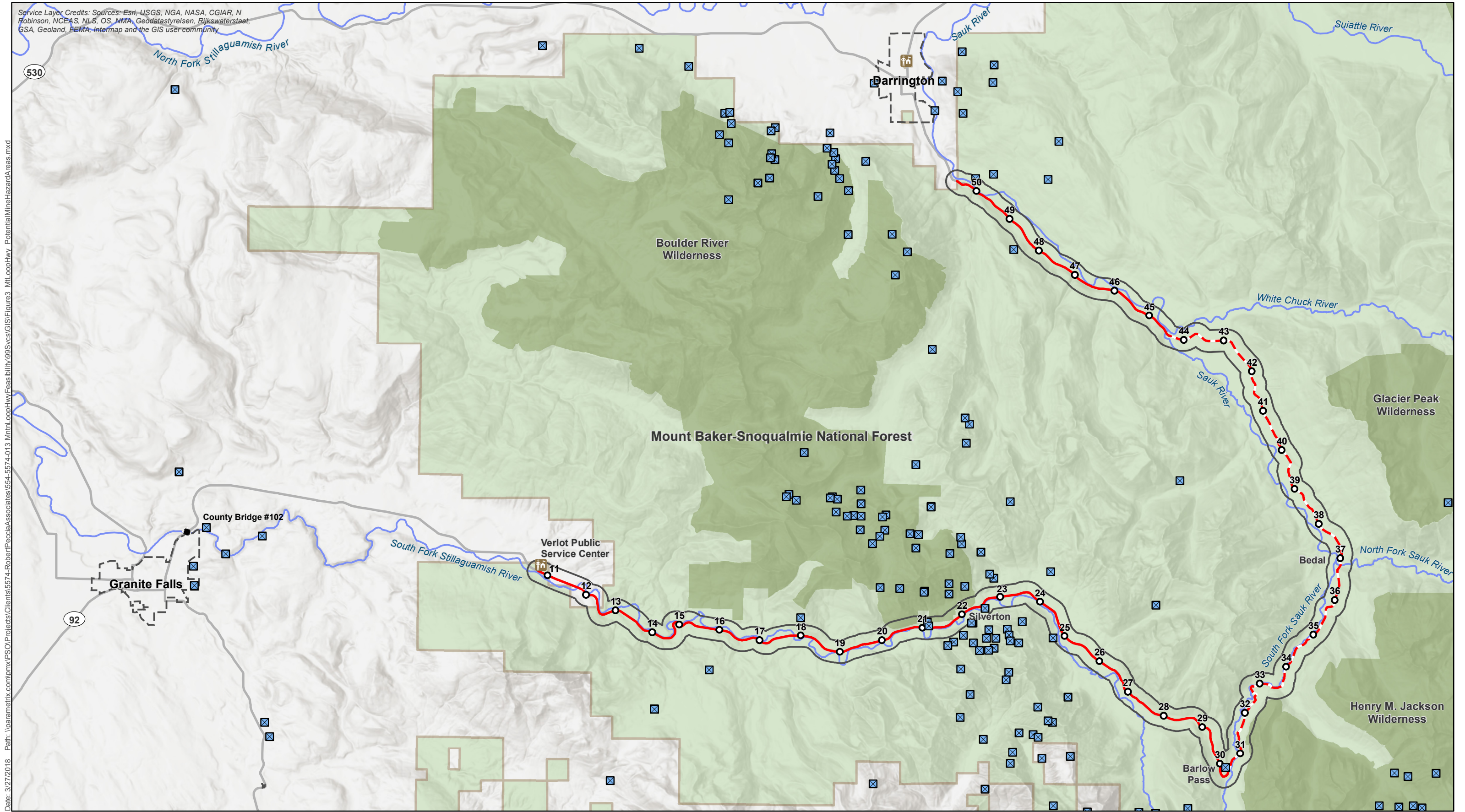
Mountain Loop Highway
Feasibility Study
Snohomish County, Washington



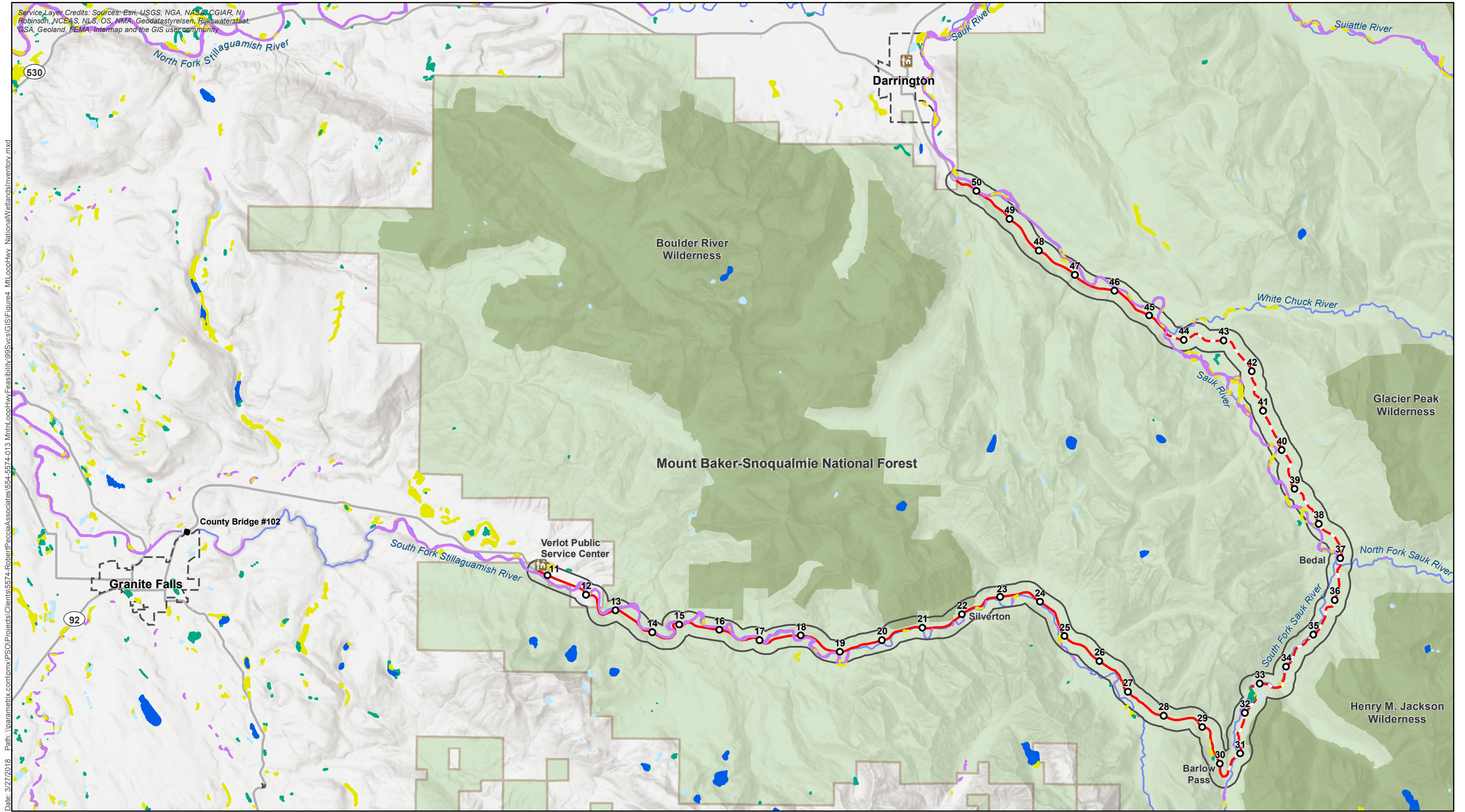
Parametrix

Figure A.8
Landslide Hazard Areas

Mountain Loop Highway
Feasibility Study
Snohomish County, Washington



Date: 3/27/2018 Path: \\paramatrix.com\pmx\PSOI\Projects\Clients\5574-RobertPecciaAssociates\554-5574-013 MntLnLoopHwyFeasibility\99Svc\GIS\Figure3_MtLnLoopHwy_PotentialMineHazardAreas.mxd



Service Layer Credits: Sources: Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

Date: 3/27/2018 Path: \\parametrix.com\pmx\PSOI\Projects\Clients\5574\RobertPecciaAssociates\5574-013 MntLnLoopHwyFeasibility\99Svcs\GIS\Figure4 MntLnLoopHwy NationalWetlandsInventory.mxd

Parametrix

WSDOT, Snohomish County, US Department of Agriculture, US Department of Forestry, US Geological Society, Washington Department of Natural Resources, US Department of Fish and Wildlife (National Wetlands Inventory)

00.512

Miles

Mountain Loop Hwy (Paved)

Mountain Loop Hwy (Unpaved)

Study Area (1/4 Mile Buffer)

Milepost

City Limit

River/Stream

National Forest

Wilderness Area

National Wetlands Inventory Wetland Type

Freshwater Emergent

Freshwater Forested/Shrub

Freshwater Pond

Riverine

Lacustrine (Lake)

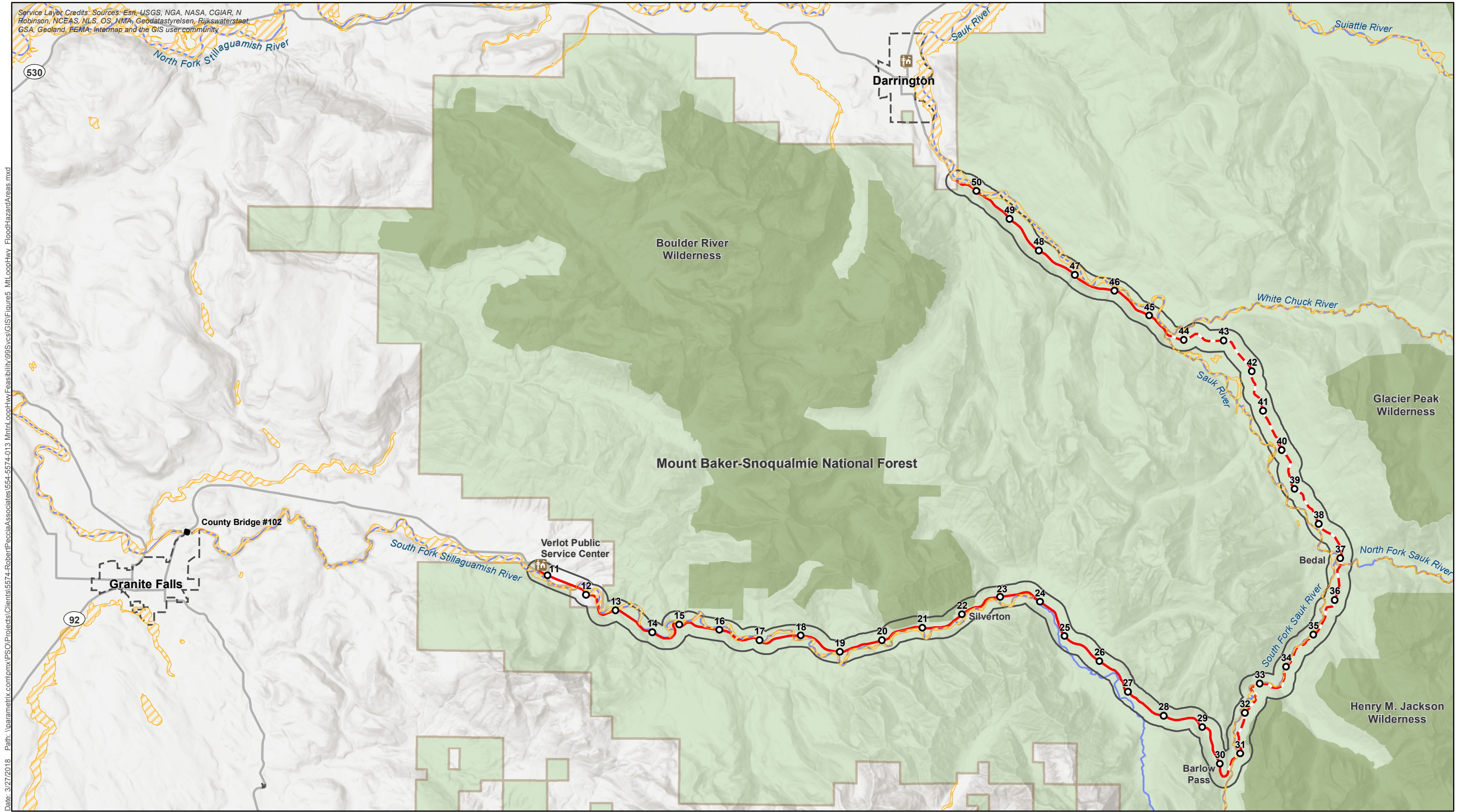
Figure A.10

National Wetlands Inventory

Mountain Loop Highway

Feasibility Study

Snohomish County, Washington



Parametrix

WSDOT, Snohomish County, US Department of Agriculture, US Department of Forestry, US Geological Society, Washington Department of Natural Resources, Federal Emergency Management Agency

0 0.5 1 2 Miles

— Mountain Loop Hwy (Paved)

- - Mountain Loop Hwy (Unpaved)

Study Area (1/4 Mile Buffer)

○ Milepost

City Limit

River/Stream

National Forest

Wilderness Area

Mapped 100-Year Floodplain

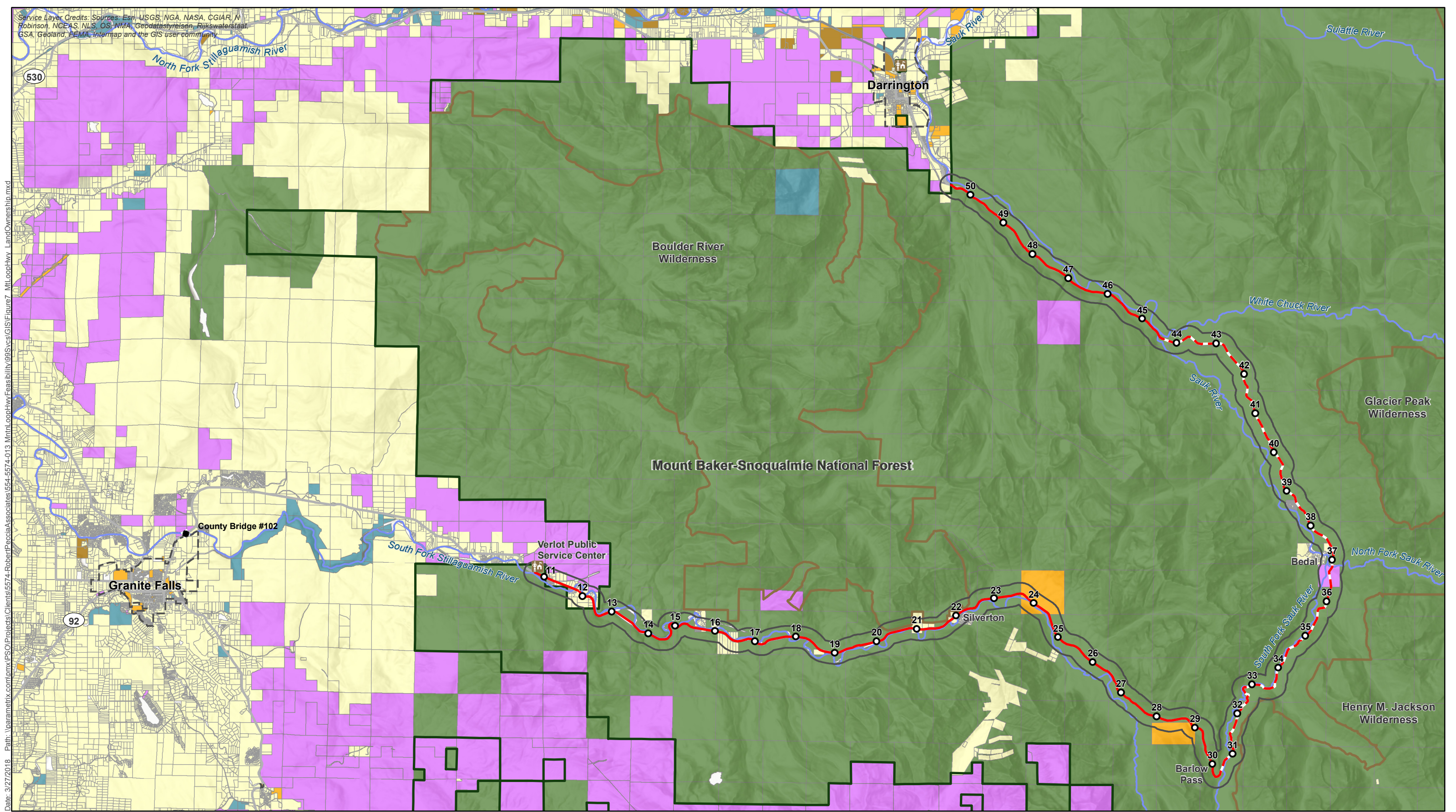
Note: This figure depicts preliminary flood hazard data from the Federal Emergency Management Agency. Preliminary data are for review and guidance purposes only and are subject to change.

Figure A.11

Flood Hazard Areas

Mountain Loop Highway Feasibility Study

Snohomish County, Washington



Service Layer Credits: Sources: Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatasysteisen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

Date: 3/27/2018 Path: \\paramatrix.com\pmx\PSO\Projects\Clients\5574-RobertPecchiaAssociates\5574-5574-013 Mntnl oophw\Feasibility\99Syvs\GIS\Figure7_Mtl oophw LandOwnership.mxd

Parametrix

Source: WSDOT, Snohomish County, US Department of Agriculture, US Department of Forestry, US Geological Society, Washington Department of Natural Resources

0 0.5 1 2 Miles

— Mountain Loop Hwy (Paved)
- - Mountain Loop Hwy (Unpaved)
□ Study Area (1/4 Mile Buffer)
○ Milepost

□ City Limit
— River/Stream
□ Wilderness Area
□ National Forest

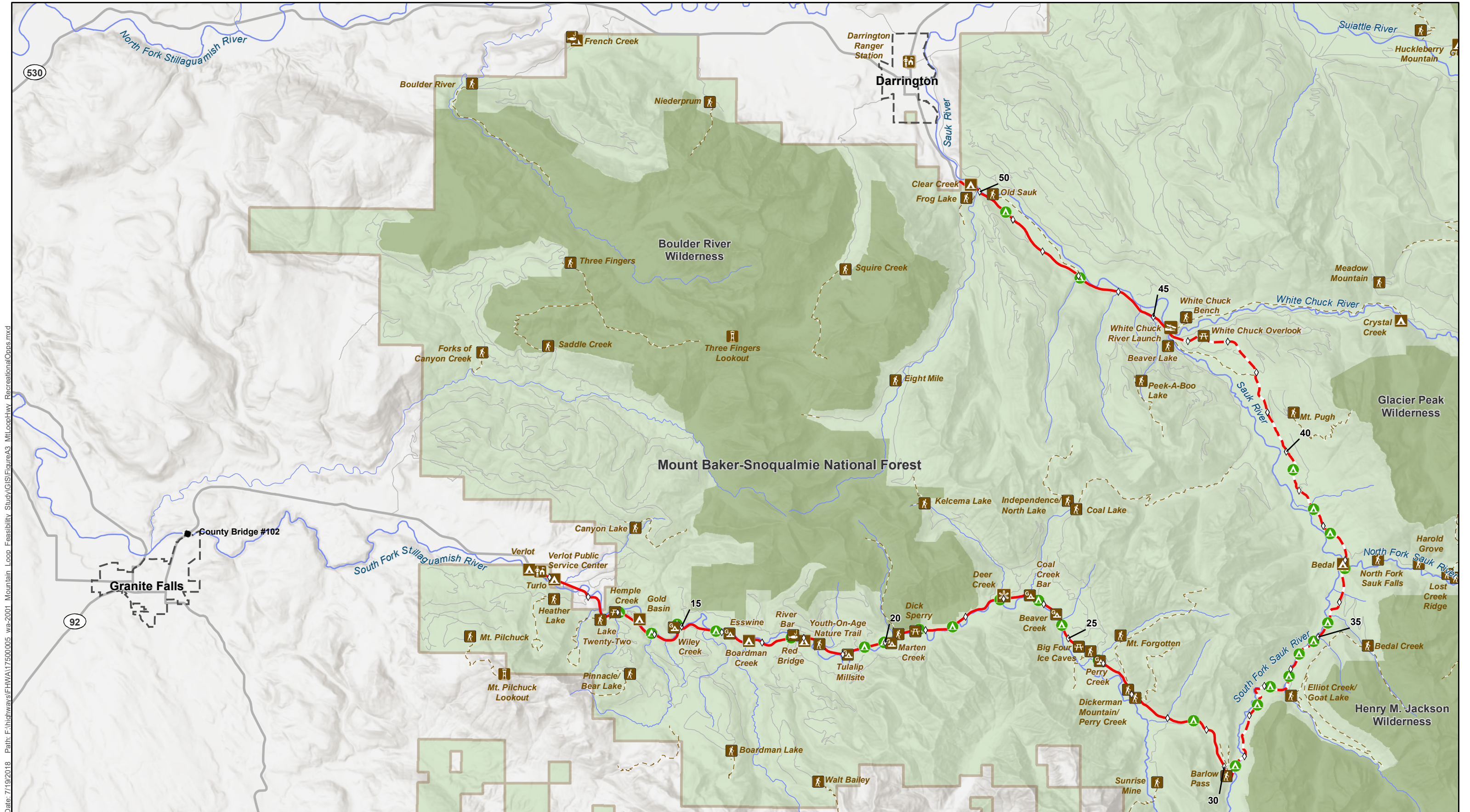
Land Ownership
National Forest
Tribal
State

County
City
Private

Figure A.13
Land Ownership

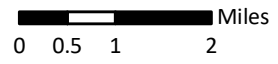
Mountain Loop Highway
Feasibility Study
Snohomish County, Washington

Date: 7/19/2018 Path: F:\highways\FHWA\17500005_wa-2001 Mountain Loop Feasibility Study\GIS\FigureA3_MtLoopHwy_RecreationalOpps.mxd



WSDOT, Snohomish County, US Department of Agriculture, US Department of Forestry, US Geological Society, Washington Department of Natural Resources





- Milepost - City Limit - River/Stream - Major Roads - Forest Roads	- National Forest - Wilderness Area - Trail - Mountain Loop Hwy (Paved) - Mountain Loop Hwy (Unpaved)	- Boating Site - Campground - Fishing Site - Group Campground - Group Picnic Site - Info Site/ Ranger Station	- Lookout / Cabin - Picnic Site - Snowpark - Trailhead - Dispersed Camping Site(s)
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Figure A.14

Recreational Opportunities

Mountain Loop Highway

Feasibility Study

Snohomish County, Washington