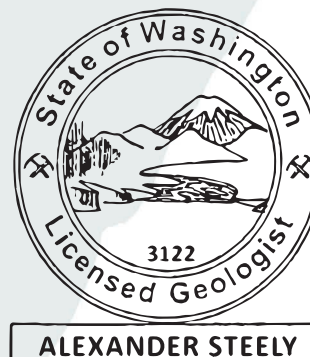




WASHINGTON STATE DEPT OF
NATURAL RESOURCES
WASHINGTON
GEOLOGICAL SURVEY



ALEXANDER STEELY
March 2024

ABSTRACT

This aggregate resource inventory for Skagit County identifies potential sources of aggregate—both sand and gravel, and bedrock (rock and stone)—using a combination of surficial and bedrock geologic mapping, subsurface information from boreholes and water wells, aggregate testing data, and records of current and historical mining activity. The aggregate resource classification scheme assesses both the quality and quantity of potential resources, and communicates that assessment using four classifications: Demonstrated, Inferred, Speculative, and Not a Resource. Areas that overlap with North Cascades National Park, Ross Lake National Recreation Area, federal wilderness areas, and National Wild River segment designations were not analyzed for this study. In total, our

inventory classifies 319,431 acres of land as having the potential for economically significant aggregate resources, which is about 29 percent of the county's land area. For sand and gravel resources mapped as Demonstrated and Inferred (our highest-certainty resource classifications), we estimate 1.3 to 2.9 billion cubic yards of aggregate (2.1 to 5.3 billion tons). Due to the difficulty of quantifying the thickness of bedrock aggregate resources, we did not estimate their volume or tonnage.

Approximately 17,716 acres (6%) of areas we identify as potential sources of aggregate may be inaccessible for resource extraction because they are on land classified as developed according to the

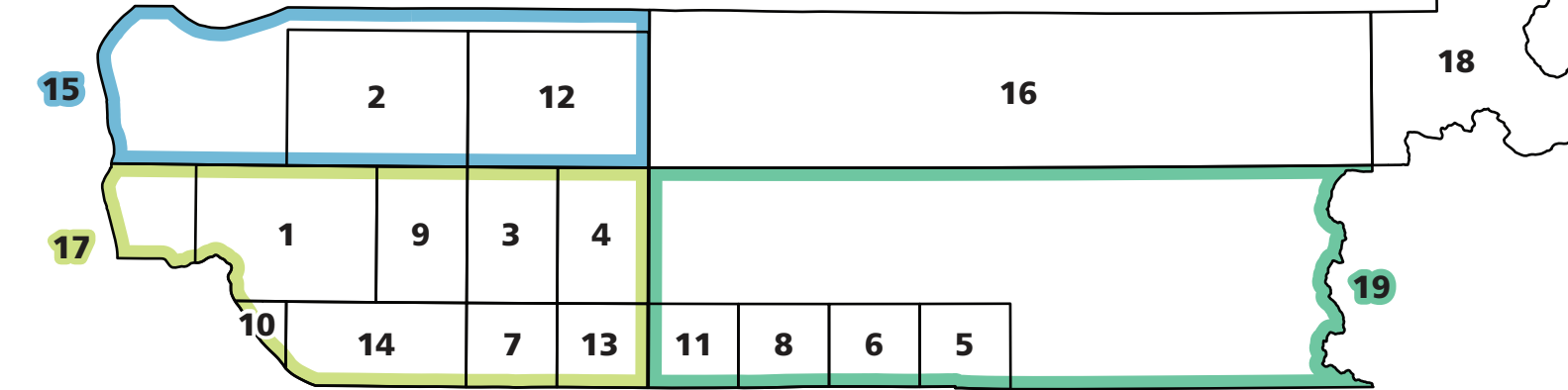
National Land Cover Database. A service-area analysis reveals a possible high stress on the limited number of active aggregate mines in the central and eastern portion of the county to serving the aggregate needs of maintaining Highways 20 and 530. An additional analysis explores opportunities to minimize transportation costs by prioritizing future sources of aggregate nearest to areas of aggregate demand. This assessment uses a road-network transportation analysis that identifies 41 percent of the aggregate resource areas in our inventory as being within a 20-mile driving distance from a variety of points of aggregate demand.

Aggregate Resource Inventory of Skagit County, Washington

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March 2024

GEOLOGIC MAP DATA SOURCES



1:24,000-scale Quadrangle

1. Anacortes South and LaConner
2. Bow and Alger
3. Clear Lake Northeast
4. Clear Lake Northwest
5. Darrington
6. Fortson
7. McMurray
8. Mount Higgins
9. Mount Vernon
10. Oak Harbor, Crescent Harbor, and Smith Island

Reference

- Dragovich and others, 2000a
Dragovich and others, 1998
Whetten and others, 1979
Whetten and others, 1980
Dragovich and others, 2002a
Dragovich and others, 2002b
Dragovich and others, 2006
Dragovich and others, 2003a
Dettler and Whetten, 1981
Dragovich and others, 2005

1:24,000-scale Quadrangle (cont.)

11. Cro
12. Sedro-Woolley North and Lyman
13. Stinson Hill
14. Utsalady and Conway

Reference

- Dragovich and others, 2003b
Dragovich and others, 1999
Dragovich and others, 2004a
Dragovich and others, 2004b

1:100,000-scale Quadrangle

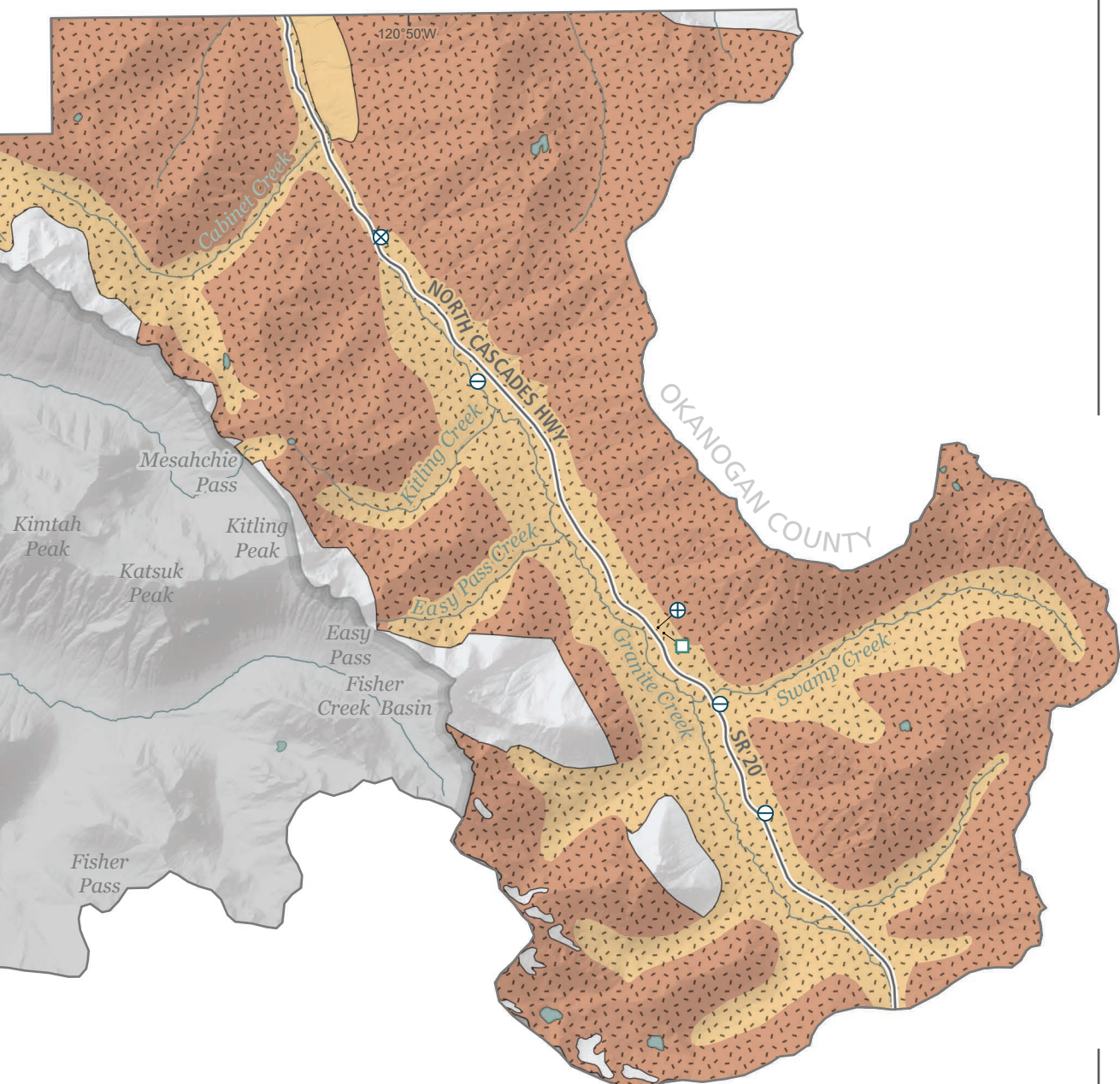
15. Bellingham
16. Mount Baker
17. Port Townsend
18. Robinson Mountain
19. Sauk River

Reference

- Lapen, 2000
Taber and others, 2003
Steely and others, unpublished
Storil and others, 1999
Taber and others, 2002

WASHINGTON GEOLOGICAL SURVEY
MAP SERIES 2024-01
Aggregate Resource Inventory of Skagit County, Washington

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WASHINGTON SKAGIT COUNTY

Some of the resource areas were mapped at 1:24,000 scale, which is more detailed than the scale shown on this plate (1:100,000). To maintain readability at the map scale, tribal and city boundaries are not shown. For a more detailed view of the data please visit the Washington Geological Survey Geologic Information Portal: <https://geologyportal.dnr.wa.gov>

You can also download the full dataset here: https://fortress.wa.gov/dnr/geologydata/publications/data_downloadportal_aggregate_resources.zip

DISCOVERED RESOURCE	UNDISCOVERED RESOURCE	Speculative	Not a Resource	Excluded Federal Lands	TEST SITE	SURFACE MINE SITE
Demonstrated	Inferred	Speculative	Not a Resource	Excluded Federal Lands	partial fill / incomplete test	active permitted mine site (may include sites that are in the reclamation phase)
>80 feet thick	>80 feet thick	unknown thickness			fail	other mine site (includes inactive, cancelled, or terminated permitted sites, locations of historical mining activity, or small mines)
25-80 feet thick	25-80 feet thick	<25 feet thick				
<25 feet thick	<25 feet thick	undetermined thickness				
undetermined thickness	undetermined thickness	undetermined thickness				

Lambert conformal conic projection
North American Datum of 1983
Base map data: City, town, tribal lands, federal lands, highway, and stream data from Washington State Department of Natural Resources (DNR). Physical feature names from the USGS Geographic Names Information System (GNIS). Shaded relief generated from a lidar bare-earth digital elevation model (available from the Washington Geological Survey, geologyportal.dnr.wa.gov) and from a 10-meter resolution USGS digital elevation model. GIS by Amy Rudko
Cartography by Daniel E. Cox
Editing and production by Nikolas Midlum and Susan R. Schurr