

WASHINGTON GEOLOGICAL SURVEY **OPEN FILE REPORT 2022-01** Surficial Geologic Map of the Sadie Creek Fault

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varied amounts; generally unsorted; typically loose; shown along mostly colluvium-covered slopes that appear potentially unstable; locally includes small exposures of other units (including confidently identified landslide deposits that were too small to show on the map); also contains features that could be landslide deposits but which we could not identify with confidence.

Alluvial fan—Boulders, gravel, sand, silt, and clay

deposited in a fan shape at the edge of the mountain front and onto the valley floor; unit includes generally coarser sediments in upper reaches and finer sediments toward the valley floor; clast or matrix supported, moderately to loosely stratified, moderately to poorly sorted, and subrounded to angular. In areas with multiple generations of fans, the designation of subscript 'y' or 'o' is given to delineate younger and older fans, respectively. Unit Qfo deposits have been consistently dated through OSL and radiocarbon at ~14–17 ka. As such, we interpret unit Qf_0 to be deposited following glacial retreat when the landscape was unstable and sediment supply was high (Ballantyne, 2017). Deposits from unit Qf_V are inset into unit Qf_O and are interpreted to have formed after ~14 ka.

Glacial Deposits

- Juan de Fuca lobe till—Boulders, gravel, sand, silt, and clay, all in varied amounts; deposited directly by glacial ice of the Juan de Fuca lobe; unsorted; highly compacted; matrix-supported; rounded to angular; gray in color where exposure is fresh, light yellowish brown where oxidized; characterized by distally sourced sediment transported by glacial ice from Canada but may contain clasts of Olympic Peninsula bedrock; includes lodgment till, ablation till, and moraines. Lodgment till is characterized by over-compaction and is common along valley floors and hillslopes. Ablation till is loose, unstratified, unsorted, primarily composed of yellowish brown silt and clay with minor amounts of gravel, and forms a <2 m thick blanket on top of lodgment till. Sublinear, evenly spaced ridges oriented orthogonal to the ice flow direction are classified as "ribbed moraines" and may have formed as push moraines, grounding line moraines, or as till injection into ice fractures (Lundqvist, 1997; Hättestrand and Kleman, 1999; Boulton, 1986). Unit Qgt lies stratigraphically below units Qgo and Qgoi. OSL dating of a sand lens within glacial till produced an age of 21.79 ± 3.67 ka (Duckworth, 2019).
- Deglaciation within the study area at ~14 ka provides a minimum age for unit Qgt.
- Recessional outwash—Dominantly gravel and sand with lesser amounts of silt and clay; characterized by distally sourced rock types but may locally contain more than 95 percent Olympic Peninsula bedrock clasts; well-rounded to subangular; loose; sorted; stratified; deposited by glacial meltwater during recession of the Juan de Fuca lobe. The subscript 'i' designates outwash interpreted as ice-contact deposits. OSL samples collected from unit Qgo and unit **Qgoi** produce depositional ages of 12.67 ± 2.11 ka and 17.93 ± 3.12 ka, respectively, and help constrain the timing of deglaciation in the study area (Duckworth, 2019). The sample from unit Qgoi was collected ~250 m above the valley floor and thus represents the onset of deglaciation or melting during a recessional period. The sample from unit Qgo, which was collected on the valley floor, provides a minimum age of deglaciation as the glacier must have receded prior to deposition.

Undivided Bedrock

Bedrock—We mapped the contact between bedrock and surficial units throughout the map area, but did not differentiate specific bedrock units. According to Schasse (2003), bedrock in the map area consists of the middle Eocene Aldwell Formation, the upper Eocene Lyre Formation and Twin River Group, the Eocene to Oligocene Makah Formation, and the Oligocene to Miocene Pysht Formation. These are mostly marine sedimentary rocks with lesser volcanic rocks that, outside of the map area, overlie basalt of the Paleocene to Eocene Crescent Formation (Schasse, 2003).

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CORRELATION OF MAP UNITS



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