

Surficial geologic map of the Lake Clark and western Kenai quadrangles, Alaska: A work in progress

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This map is part of a series of geologic maps and reports covering much of southwest Alaska; responds to a request by the National Park Service for a surficial deposits map to aid ecosystem mapping. Existing surficial deposit maps part of the study area around Iniskin and Tuxedni Bays (Detterman and Hartsock, 1966), in the vicinity of Iliamna (Waythomas and Miller, 1999), and Redoubt volcanoes (Till and others, 1996), along Cook Inlet (Reihle and Emmel, 1980), and along the western Chignik Mountains (Fritschen, 1995). Although the ideal approach to mapping involves extensive fieldwork, air-photo interpretation, measured sections, geochronology and tephrochronology, and a good dose of inference based on geologic understanding and imagination, all but air-photos and imagination were in supply short. As a result the map relies heavily on air-photo interpretation and inference.

The map area shows evidence for a number of glacial advances or stillstands during Late Wisconsin and earlier times. Southeast of the Mulchatna River valley extensive Late Wisconsin deposits form well-defined moraines and locally, remnants of well-developed shorelines and alluvial deltas from a large number of short-lived meltwater lakes that formed dammed behind the moraine ridges. Northwest of the Mulchatna River valley, Late Wisconsin age deposits are less common and consist primarily of outwash alluvium and aeolian deposits. Extensively weathered Early (?) Wisconsin and older (?) deposits in this area indicate a much greater extent for earlier glaciers.

We are basing our interpretations on Detterman's (1986) framework for the glacial history of the Alaska Peninsula. Much of the framework was based on geology mapped by Detterman and Reed (1973) in the Iliamna quadrangle immediately south of our map area. He divided Late Wisconsin Brooks Lake Glaciation into four advances, named (oldest to youngest), Kvichak, Iliamna, Newhalen, and Iliuk advances. Along the border with the Iliamna quadrangle, correlation of the Kvichak, Iliamna, and Newhalen can be well established and, with minor changes, provided a useful starting point for this map. However, the number of advances and/or recessional still-stands in the Lake Clark region exceeds the four-advance character of the Brooks Lake Glaciation. Yet, clear ties between deposits along the quadrangle boundary (note, deposits of the Iliuk advance do not occur along the boundary), suggest that the time range for Late Wisconsin glaciation in the Lake Clark region matches that of the areas to the south. Therefore, an effort is being made to lump moraine complexes consistent with the Detterman's four-advance character.

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