



Topographic Map of
A Portion of
MAKUSHIN VALLEY & VICINITY
UNALASKA, ALASKA

Produced for
STATE OF ALASKA DIVISION OF
GEOLOGICAL AND GEOPHYSICAL SURVEYS
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Scale: 1:24,000
Magnetic Declination: 14°26' East

GEOLOGIC LEGEND
(Surficial geologic units in the bottom of Makushin Valley)

- ALLUVIAL DEPOSITS**
- Af** Fan deposits Gently sloping fan-shaped deposit of poor to moderately stratified sand, gravel, and silt alluvium. Deposits form where a tributary stream enters the Makushin Valley. The alluvial fans are derived from eroded volcanic ash deposits, glacial tills, and volcanic and volcaniclastic rocks present in the Makushin Valley region. Deposits are widespread along Makushin Valley. Fans form where a constricted valley ceases abruptly, not solely where there is a change in gradient of stream bed. Fan deposits are usually coarser grained if they have steep slopes.
 - Aa** Active bar deposits Good to moderately stratified bedload sand, gravel, silt, and boulders deposited in and along the stream forming unvegetated point bars, channel bars, and alluvial islands. Deposits result from lateral accretion of stream bed load during sideways migration of channels. The river occupying Makushin Valley is hybrid in character. In the wide upper part of Makushin Valley the river has a braided character with gradient and discharge being high and the channels are shallow and wider. The channels interlace, branch, and reunite. Sediment load consists of sand and gravel with numerous channel-lag cobbles and boulders. Braided channels develop due to continual obstruction and shifting of channels by coarse grained sediments deposited by the stream or they occur where a stream flows from a canyon out into a wider valley. In the lower part of Makushin Valley, the river is less braided and begins to take on a meandering habit. The channels are narrower and deeper and sediment load is sand, gravel, and silt with minor boulders. In the Makushin Canyon area the geometric and hydraulic characteristics of the river are highly constricted and sediment load consists of sand, gravel, and boulders.
 - Ab** Bankfull bar deposits Moderately stratified bedload sand, gravel, and silt with some boulders deposited during frequent and periodic high bankfull flow. Bankfull flow occurs when water fills the active channel completely and is level with the floodplain. The deposits border the active channel alluvium described above. Deposits are sparsely vegetated and represent the highest areas of the active channel.
 - Alo** Low overbank flood bar and channel deposits Moderately stratified, finer textured, bedload sand, gravel, and increasing silt with few boulders. Sediments are deposited during infrequent overbank flow when the river is spilling over its banks into floodplain spillways and flood channels. Deposits are moderately vegetated and usually contain thin well stratified silt and fine sand which covers coarser underlying alluvium.
 - Aho** High overbank flood bar deposits Thin to moderately thick, well-stratified silt and fine sand deposited above coarser textured bedload sand, gravel, and silt alluvium. Sediments are deposited during infrequent high overbank flow when the river is flowing over adjoining floodplain areas outside the normal and overflow channels. Deposits are densely vegetated and represent the highest area of the inactive floodplain.
 - Afb** Floodbasin deposits Thick, organic rich silt and clay deposited during a long history of repeated but infrequent overbank flood flow. Sediments are deposited in the low, flat-lying flood basin, grassy meadow, and swampy areas of the floodplain. Silt deposition over a long period of time from overbank floods repeatedly buries existing marshy vegetation, resulting in mixed organic and mineral deposits (muck). Marshy vegetation consists of sedges, grasses, and other hydrophilic plants. The upper 1 to 2 meters of marsh consists of grass and sedge sod bound together by roots. Water table is less than a foot deep in most of these flood basins. Beneath the surface sod layer is 5 to 7 meters of muck which overlies silt and volcanic ash deposits. Most of the muck, silt, and volcanic ash sediments encountered in the three power auger holes were probably deposited in an infilling shallow lake or lagoonal environment. Most of the flood basin and areas of active alluvium in lower Makushin Valley are underlain by these lacustrine/lagoonal sediments. These sediments are gradual with the overlying flood basin deposits and it is difficult to differentiate between them.
 - Al** Levee deposits Thick, well stratified fine sand and silt deposited along river channels during overbank flood flows. The deposits are most pronounced along a straighter river channel segment in lower Makushin Valley. The deposits are densely vegetated and form broad low ridges on each side of the channel. The channel in this area has more stable banks, lateral channel movement is relatively slow, and repeated additions of overbank flood deposits are responsible for the development of levees.
- LACUSTRINE/LAGOONAL DEPOSITS**
- Li** Infilling lake or lagoon deposits Stratified organic muck and organic rich silt deposited in shallow, fresh water or brackish water and later exposed due to continuous infilling and eventual draining. Deposits are wet and swampy and resemble flooded grassy meadows. Water table is at or near the ground surface.
- MARINE DEPOSITS**
- Mrb** Recent beach deposits Unconsolidated, well sorted, temporary accumulation of marine wave-washed, fossiliferous silt, sand, and gravel sediments, and shell-rich clay and silty littoral sediments. Sediments extend from the low water level to wave-cut berm or ridge (highest storm wave limit), and are formed and washed by longshore currents, waves, and tides.
 - Mob** Older, elevated beach ridge deposits Unconsolidated, well-sorted, marine, fossiliferous, silt, sand, and gravel sediments which extend from the wave-cut berm (highest storm wave limit) to the edge of the floodplain and underlying lacustrine/lagoonal deposits. Ridges which are heaped up by wave action may occur singly or as a series of approximately parallel deposits behind the beach. Each ridge marks the position of a pre-existing strandline and is a feature of prograding (constructional) shores.

MAP EXPLANATION

- ROAD LEGEND**
(represented by heavy weight lines)
- Existing and ready for use
 - Existing but needing improvement (see Repair Site numbers)
 - R-1 -R-2 Possible new route requiring moderate fill and slope excavation (R1 and R2)
 - R-3 Possible new route requiring extensive base fill and underlayment (R3)
 - R-4 Possible new route requiring extensive slope excavation (R4)
- TRANSMISSION LINE LEGEND**
(represented by heavy weight lines)
- Possible valley bottom route with small, closely-spaced towers
 - UA-U Possible upland route with large, widely-spaced towers
 - TS-3 TS-4 Potential tower sites along upland route
- Other Symbols:**
- Aa Afb Surficial geologic contact
 - Helicopter staging area
 - Area underlain by lacustrine/lagoonal deposits

**SURFICIAL FLOODPLAIN GEOLOGY
AND POTENTIAL POWER TRANSMISSION LINE
AND ROAD CORRIDORS IN THE MAKUSHIN VALLEY REGION**

by
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1986

This report is a preliminary publication of DGS. The author is solely responsible for its content and will appreciate candid comments on the accuracy of the data as well as suggestions to improve the report.