BEECHEY POINT AND SAGAVANIRKTOK

GENERALIZED DESCRIPTION OF MAP UNITS IN THE BEECHEY POINT AND SAGAVANIRKTOK QUADRANGLES, ALASKA

OPEN FILE MAP
SHEET 2 OF 2

Important notes:
1. This portion of the proposed trans-Alaska pipeline route is considered to be subject to a maximum probable earthquake with a Richter magnitude of 5.0.
2. Bedrock has been folded into a series of broad anticlines and synclines whose axes trend east-west; their limbs generally dip less than 30°.
3. Temperature of permafrost at depths just below the zone of seasonal variation is generally below -5°C (23°F).
4. Known maximum thickness of permafrost in the Prudhoe Bay area is 2,000 feet.

Map Units Symbol	Name	Description	Distribution and Thickness	Topography and Vegetation	Permafrost	Susceptibility to Frost Action	Drainage Surface	Drainage Subsurface (if thawed)	Susceptibility to Erosion	Construction Uses	Remarks
Qac	Active flood plain	Coarse, sandy gravel and sand with minor amounts of silt. Gravel clasts subrounded to rounded. Generally poorly stratified with local beds and lenses of sand. Along the Sagavanirktok River, gravel becomes progressively coarser upstream.	Extensive deposits occur along the Sagavanirktok and Ivishak rivers, and smaller deposits locally along the Putuligayuk River. Thickness quite variable; near Franklin Bluffs, less than 20 feet; however, to the north deposits are more than 50 feet thick.	Flat plain with complex network of braided channels with local relief of 2 to 10 feet. Generally bare of vegetation.	Permafrost generally absent in proximity to main channels of rivers; possibly present at depth.	Low	Good	Good	High	Excellent for fill, base course, and surface course. Local concentrations of chert particles are deleterious to aggregate.	Locally subject to aufeis conditions, flooding, and intensive erosion. Shallow ground-water table restricts depth of excavation. Rivers especially subject to flooding during spring breakup.
Qaf	Alluvial fans	Poorly sorted silty gravel and sand. Materials coarse grained at apex of fan but grade to finer-grained material at toe.	Occurs at 3 localities along the western side of Franklin Bluffs. Thickness highly variable ranging from a few feet at apex and along sides to more than 50 feet in the middle of fan.	Steep slopes at apex, gradually becoming less steep toward the toe of the fan. Generally bare of vegetation.	Generally present within 2 feet of the surface.	Moderate	Good	Good	High, along stream courses	Generally unsuited for construction purposes.	Subject to torrential floods, shifting channels, and local icings.
Qc	Colluvium	Unsorted to poorly sorted gravelly sandy silt with admixtures of angular rock fragments where local bedrock is competent. Stratification, where present, generally parallels surface at about angle of repose.	Occurs along the southwest side of Franklin Bluffs, along the steepest slopes of the hills just south of the confluence of the Sagavanirktok and Ivishak rivers, and at the southern edge of the Sagavanirktok quadrangle.	Very steep to moderately steep slopes. Generally bare of vegetation	Generally present within 2 feet of the surface.	High	Fair	Generally poor	High	"	Colluvial slopes generally unstable.
Qty	Young alluvial terraces	Coarse, sandy gravel and sand with minor amounts of silt. Gravel clasts subrounded to rounded. Generally poorly stratified with local beds and lenses of sand. Commonly mantled by 1/2 to 3 feet of organic-rich silty sand.	Extensive deposits occur along the Sagavanirktok and Ivishak rivers. Thickness quite variable; near Franklin Bluffs, less than 25 feet; however, to the north deposits are more than 50 feet thick.	Series of flat-topped terraces separated from one another and from the active flood plain by small scarps. Tundra vegetation; locally on upper reaches of Sagavanirktok River, low brush.	Generally present within 2 feet of the surface. Ice coats particles and fills voids in gravel. Ice wedges present locally, especially well developed in terraces away from active flood plain.	Generally low, but high in silty overburden.	Generally good near active flood plain, but poor away from it.	Good	Generally low, but moderately high for silty overburden.	Sand and gravel excellent for fill, base course, and surface course. Local concentrations of chert are deleterious to aggregate.	Shallow ground-water table under low terraces limits depth of excavation. Low terraces near active flood plain are subject to bank erosion and occasional flooding. In many places materials would have to be thawed before they could be excavated for borrow. Locally ice-rich permafrost could cause severe differential settlement if allowed to thaw.
Qto	Old alluvial terraces	Coarse, sandy gravel and sand with minor amounts of silt. Gravel clasts subrounded to rounded. Generally poorly stratified with local beds and lenses of sand. Commonly mantled by 2 to 10 feet of organic-rich silty sand.	Occurs discontinuously along the Sagavanirktok and Ivishak rivers. Thickness slightly greater than the thickness of young terraces (map unit Qty).	Series of flat-topped terraces separated from one another and from the young terraces (map unit Qty) by small scarps. Tundra vegetation.	Generally present within 2 feet of the surface. Ice commonly coats particles and fills voids. Ice wedges generally present.	Generally low, but high in silty overburden.	Generally poor	Good	Generally low, but moderately high for silty overburden.	Generally unsuited for most construction purposes because of thick, silty overburden, and ice-rich permafrost.	In many places, ice-rich permafrost could cause severe differential settlement if allowed to thaw.
Qas	Fine-grained alluvium and colluvium	Poorly sorted sandy silt, silty sand, and gravelly silty sand, generally mantled by organic-rich silty sand and sandy silt.	Occurs along drainage ways of small, low-gradient streams and in depressions within the rolling foothills south of the confluence of the Sagavanirktok and Ivishak rivers. Thickness generally greater than 15 feet.	Flat to gently sloping terrain. Tundra vegetation.	Generally present within 2 feet of the surface and generally ice rich. Ice wedges common.	High	Poor	Poor	High	Generally unsuited for most construction purposes.	"
Qlb	Drained lake basins	Thin bedded to massive, organic-rich, silty sand and sandy silt overlying sandy gravel and gravelly sand. Distinguished from surrounding deposits (map unit Qs) by conspicuous low scarps marking former shorelines.	Scattered throughout coastal plain, superimposed on coastal plain silt and sand (map unit Qs). Thickness generally less than 15 feet.	Flat terrain surrounded by subdued scarps (former shorelines). Tundra vegetation.	Generally present within 2 feet of the surface and generally extremely ice rich. Ice wedges common and closed-system pingos present locally.	High	Poor	Poor	High	"	"
Qls	Landslide	Unsorted mass of poorly consolidated Tertiary conglomerate, sandstone, and siltstone, with minor amounts of interbedded coal (map unit Ts).	Occurs on north side of hill west of Sagavanirktok River 3 miles west of the confluence of the Sagavanirktok and Ivishak rivers. Thickness probably less than 100 feet.	Moderate slopes on gently undulating terrain. Tundra vegetation.	Generally present within 2 feet of the surface.	High	Poor	Poor	High	"	"
Qs	Coastal-plain silt and sand	Organic-rich silty sand and sandy silt overlying sandy gravel and gravelly sand.	Underlies most of coastal plain. Thickness generally ranges from 5 to 15 feet on west side of Sagavanirktok River; however, on the east side south of Franklin Bluffs the deposits are much thicker.	Flat, lake-dotted plain. Tundra vegetation.	Generally present within 2 feet of the surface and generally extremely ice rich. Ice wedges common and closed-system pingos present locally.	High	Poor	Poor	High	"	"
Qmo	Old moraine	Unsorted, heterogeneous mixture of gravel, sand, silt, and clay, generally ranging from gravelly, sandy silt to silty, sandy gravel. Gravel clasts, generally subangular to subrounded. Deposits include irregular lenses and pockets of sandy gravel and gravelly sand.	Occurs at southern border of the Sagavanirktok quadrangle. Thickness highly variable ranging from a few feet to more than 50 feet.	Moderate slopes of subdued hummocky, lake-dotted terrain. Tundra vegetation.	Generally present within 2 feet of the surface. Locally ice rich. Ice wedges common in depressions.	Moderate	Fair	Fair	Moderate	"	"
Ts	Tertiary sediments	Poorly consolidated conglomerate, sandstone, and siltstone, locally with minor amounts of interbedded coal. In many places bedrock mantled by unconsolidated, gravelly, sandy silt and silty sand.	Underlies Franklin Bluffs and the hills just south of the confluence of the Sagavanirktok and Ivishak rivers. Mantle of fine-grained material quite variable in thickness, from a few feet to more than 50 feet.	Steep to gentle slopes. Tundra vegetation; locally bare of vegetation on steep slopes and summits.	Generally present at variable depths depending on soil and vegetation cover, and exposure to solar radiation. Voids and fractures filled with ice. Mantle of fine-grained materials generally extremely ice rich.	Generally low in granular material.	Fair	Bedrock good; fine-grained mantle poor.	Variable, fine-grained materials very susceptible.	Coarse-grained fraction good for fill and base course. Local concentrations of chert particles, coal, and other carbonaceous materials deleterious to aggregate.	Locally, deposits subject to landsliding.
Ksc	Cretaceous sandstone and conglomerate	Generally well-indurated sandstone and conglomerate. Chiefly sandstone to the north, becoming conglomeratic to the south. Bedrock generally mantled by unconsolidated, gravelly, sandy silt and silty sand.	Occurs on both sides of the Sagavanirktok River south of the Tertiary sediments (Ts) for a distance of about 20 miles to the southern border of the Sagavanirktok quadrangle. Mantle of fine-grained material quite variable in thickness, from a few feet to more than 50 feet.	Generally moderate slopes, but locally steep. Tundra vegetation.	"	Bedrock low; fine-grained mantle high.	Bedrock good; fine-grained mantle poor.	Bedrock good; fine-grained mantle poor.	Bedrock low; fine-grained mantle high.	Bedrock, where well indurated, good for riprap and coarse fill; fine-grained mantle generally unsuited for most construction purposes.	In many places, ice-rich permafrost could cause severe differential settlement if allowed to thaw.

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey standards and nomenclature.