

GENERALIZED DESCRIPTION OF MAP UNITS IN LIVENGOOD AND TANANA QUADRANGLES, ALASKA

Map Unit (Listed by age)	Name	Description	Distribution & Thickness	Topography & Vegetation	Permafrost	Susceptibility to Frost Action	Drainage Surface	Subsurface (if thawed)	Susceptibility to Erosion	Construction Uses	Remarks
Qag	Alluvium	Silt, sand, and subangular to rounded gravel; material fine-grained in creeks at low elevations; relatively coarse-grained in fast-flowing creeks on steep slopes.	Throughout; up to 50' thick.	Gentle to relatively steep slopes covered by small spruce and shrubs.	Generally absent; may be present at depth below streams that freeze to bottom during winter.	Gravel - low Silt & sand - high	Good	Good	Variable; gravel--low; Silt & sand - high.	Local source of borrow, especially in major streams and rivers.	Character of alluvium variable both in grain size and amount of ice in permafrost; subject to maximum probable earthquake of magnitude 7.5.
Qfp	Floodplain Deposits	Silt, & sand derived from overbank deposition generally overlying stream gravels	Chatanika and Tolovana Rivers; up to 25' thick.	Gentle slopes moderately covered by spruce, birch, and other vegetation.	Generally present within 2 feet of surface.	Moderate to high	Poor	Poor	High	None.	Locally contain ice wedges and lenses; locally subject to flooding; subject to maximum probable earthquake of magnitude 7.5.
Qco	Colluvium	Heterogeneous mixture of silt, sand, & rock fragment; chiefly silts in low-lying areas; on knobs close to bedrock, chiefly rock fragments.	Throughout; up to 50' thick.	Gentle to steep slopes; heavily covered by spruce, birch, and other vegetation.	Present at 1-1/2' in protected areas; south-facing slopes glacially present at depths of 6'.	Coarse fragments - low; silt & sand - high.	Good	Poor	Variable; coarse-grained colluvium - low to moderate; fine-grained colluvium - high.	Coarse-grained sediments source of borrow material.	Highly variable in character and amount of ice; locally may have ice wedges & lenses; subject to soil slides if thawed; subject to maximum probable earthquake of magnitude 7.5.
Qaf	Alluvial Fan	Fine- to coarse-grained, poor to well stratified silt, sand, and gravel; material coarser at apex of fans than at toe.	Throughout, south of Lost Creek; up to 50' thick.	Gentle to steep slopes; moderately covered by spruce, birch, and other vegetation.	Generally present within 3' of surface.	Moderate to high	"	Good	Variable; fine-grained sediments - high; coarse-grained sediments - low to moderate.	Source of borrow material in coarse fractions of sediment; locally source of concrete aggregate, but much of gravel contains deleterious fragments.	Generally fine-grained; fans subject to flooding; subject to maximum probable earthquake of magnitude 7.5.
Qsw	Swamp Deposits	Grass, sedges, and other vegetation with some silt.	Flat-lying areas north of Globe Creek; may be as much as 15' thick.	Flat undrained areas; grasses, sedges, & small shrubs.	Generally present within 2' of surface.	High	Poor	Poor	Low, except if water channeled through deposit.	None.	Locally contain ice wedges and lenses; subject to maximum probable earthquake of magnitude 7.5.
Qls	Landslide	Angular bedrock blocks of Cal unit (see description of Cal)	On tributary to Globe Creek; thickness unknown.	Rough, irregular topography with scarp at head of slide; covered by birch & spruce.	May be present within 6' of surface.	Low	Generally good.	Good	Low	None.	Should be left undisturbed; slide could be rejuvenated if disturbed; subject to maximum probable earthquake of magnitude 7.5.
Qsu	Silt, Undifferentiated	Silt, sand, & local swamp deposits; overlies gravels along Chatanika, Ray, & Hess Creeks; along Tolovana River, material chiefly silt.	Throughout; ranges from 5' to 20' thick.	Occurs at low elevations as gentle slopes; variable vegetation cover; generally small trees & shrubs.	Present within 3' of surface.	High	Poor to fair.	Poor	High	None; underlying gravel may be source of borrow material.	Thickness & composition highly variable; subject to maximum probable earthquake of magnitude 7.5.
Qf	Windblown Silt	Reworked wind-blown silt & sand; chiefly silt.	Mantles much of map area; up to 100' thick.	Slopes, hilltops, & low-lying flat areas; heavily mantled by spruce, birch, & other vegetation.	Present within 2' to 3' of surface.	"	Good	"	"	None.	Ice content highly variable; locally has ice wedges up to 35' thick; subject to soil flow if thawed; subject to maximum probable earthquake of magnitude 7.5.
Qst	Silt Terrace	Silt and sand overlying gravel.	Along Treasure Creek; varies from 3 to 50' thick.	Occurs at low elevations as gentle slopes; moderately mantled by small spruce, birch, & shrubs.	Within 2 to 3' of surface.	"	"	"	Generally high.	None; underlying gravel unit source of borrow material.	Deposit varies in thickness and ice content; subject to maximum probable earthquake of magnitude 7.5.
Qhg	High-level Gravels	Well-sorted, clean gravel up to 2" in diameter.	Along Lost Creek; thickness unknown, may be as much as 100'.	Moderately dipping slope; scant vegetation cover with local dense vegetation.	Within 4' of surface.	Low	"	Good	Generally low, locally moderate to high.	Source of borrow material; source of concrete aggregate that may contain some deleterious fragments.	Locally, deposit may contain ice lenses; subject to maximum probable earthquake of magnitude 7.5.
Tvs	Extrusive & Sedimentary Rocks	Basalt, shale, sandstone, & conglomerate; probably tuffaceous.	Small isolated outcrops between Hess Creek & Yukon River.	Moderate to gentle slopes mantled by scant vegetation.	Depth unknown but generally within 10' of surface; ice may heal fractures.	"	"	"	Low	Source of coarse borrow material if crushed; tuffaceous character of rock deleterious as concrete aggregate.	Subject to maximum probable earthquake of magnitude 7.5.
KJsh	Shale, Graywacke, & Conglomerate	Shale, graywacke, & quartzite.	Along O'Brien Creek.	Moderate to steep slopes mantled by scant vegetation.	"	"	"	"	"	Local source of coarse borrow material if crushed; poor as concrete aggregate.	"
KJc	Graywacke, Shale, & Conglomerate	Graywacke, shale, & conglomerate.	Between O'Brien Creek & Tolovana River.	Moderate to steep slopes mantled by scant vegetation.	"	"	"	"	"	Source of borrow material; locally may have to be crushed; may offer good rip-rap.	"
Fpu	Extrusive, Intrusive, & Sedimentary Rocks	Basalt, agglomerate, & associated tuffaceous slaty shale, argillite, chert, diorite, diabase, gabbro, basalt, & minor amounts of sandy limestone.	From Lost Creek to north boundary of map area.	Gentle to steep slopes mantled by scant vegetation.	"	"	"	"	"	Variable as use for borrow material because of varying composition of unit.	"
Dcl	Graywacke, Shale, & Conglomerate.	Graywacke, shale, conglomerate, & minor amounts thin-bedded limestone.	Isolated outcrops north of Tolovana River.	Moderate to steep slopes; scant vegetation.	"	"	"	"	"	Source of coarse borrow material.	"
Dst	Tolovana Limestone	Limestone & some dolomite.	North of Globe Creek	Steep slopes; little or no vegetation.	"	"	"	"	"	Source of coarse borrow material; may have to be crushed.	"
Dod	Dolomite & Limestone	Dolomite, limestone, silicified carbonate rocks, & cherts.	Between Tolovana River & Lost Creek.	Moderate to steep slopes; scant vegetation.	"	"	"	"	"	Source of coarse borrow material; chert deleterious as concrete aggregate.	"
Doc	Chert & Shale	Chert & shale with some tuffaceous shale & siltstone; may include some red argillite.	Between Tolovana River & west tributary of Erickson Creek.	"	"	"	"	"	"	Local source of borrow material; unit contains deleterious rocks as concrete aggregate.	"
PZm	Mafic & Ultramafic Rocks	Diorite, basalt, & serpentinite.	Crops out north of Globe Creek & north of Tolovana River.	"	"	"	"	"	"	Source of borrow material if crushed; serpentinite deleterious as concrete aggregate.	"
Cal	Argillite, Slate, & Limestone	Argillite, slate, & limestone; includes red & green slate-argillite.	Crops out north of Wickersham Dome & north of Lost Creek.	Gentle to steep slopes; scant to no vegetation.	"	"	"	"	"	Generally poor source for borrow material.	"
Qgg	Grit, Quartzite, Slate, & Argillite.	Grit, quartzite, slate, & argillite.	Wickersham Dome area.	Gentle to moderate slopes; scant to no vegetation.	"	"	"	"	"	Source of borrow material.	"
GP	Greenschist	Greenschist facies schist.	South of Wickersham Dome.	Gentle to steep slopes; scant to no vegetation.	"	"	"	"	"	Poor source of borrow material.	"

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