69-308

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN FILE
1969

PRELIMINARY GEOLOGIC MAP OF THE SOUTHERN HALF OF THE FORT DOUGLAS QUADRANGLE, SALT LAKE COUNTY, UTAH

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

DESCRIPTION OF SURFICAL DEPOSITS

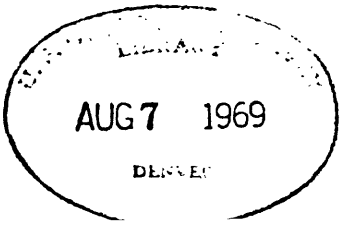
LACUSTRINE DEPOSITS

mm Marsh deposit: Silt and clayey silt, dark-gray, brown, and black, as much as 6 feet thick. Locally contains abundant carbonaceous material. At places deposit is interbedded with light-brown fine sand that may interfinger with adjacent alluvial fan deposits to the east. Probably deposited in marsh or shallow muddy-bottomed lake of restricted circulation. Occupies gently sloping lake plain in southwestern part of quadrangle. At places deposit is water saturated and probably would be unstable during earthquakes or in steep-walled excavations

Draper Formation:

ds Sand facies: Sand, fine, locally silty, light-brown to light-grayish-brown, 1-5 feet thick. Soil formed on deposit consists of 0.5 foot of dark-gray noncalcareous silt, underlain by 0.3 foot of massive leached clayey sand, which overlies 1.5 feet of calcareous sand; these units probably represent, respectively, the A, B, and Cca horizons of the soil. Deposited in a shallow lake. Steep slopes may be unstable. An ~~artificial~~ excavation caved in where this material was partly saturated with water

dsb Sand bar: probably deposited as an offshore bar



Bonneville Formation:

pg Upper gravel facies[1]: Gravel and sand, cobbly, light- to medium-gray, rounded clasts, steep foreset bedding, 5-30 feet thick. Locally contains thin beds of sand and silt. Deposit is a potential source of sand and gravel. Steep slopes may be unstable

bg Lower gravel facies: Gravel and sand, locally cobbly, rounded clasts, gray to brownish-gray, 5-20 feet thick. Locally has a weakly to moderately developed soil formed on it. Deposited as a lakeshore embankment at the Bonneville shoreline (about 5,150 feet above sea level). Deposit is a source of sand and gravel. Steep slopes may be unstable

bgb Bar ~~and~~ *or* spit: Sand and gravel; deposited as an offshore bar or small spit

bm Silt facies: Silt, sandy, and silty clay, light-brown, massive to thin-bedded, 5-25 feet thick. Locally contains 1-4 thin beds of white marl which at many places have abundant ostracodes, diatoms, and small calcium-carbonate concretions. Deposited on a lake floor

dpg Lake gravel undifferentiated: Gravel and sand, cobbly, light-gray, 5 to more than 20 feet thick. The upper 3 feet locally is moderately to strongly cemented by calcium carbonate. Deposit formed as deltas and as along-shore deposits in a lake at or lower than the Provo shoreline (about 4,830 feet above sea level). Steep slopes may be unstable. An excavation in this deposit caved in

[1]This lacustrine gravel is the upper member of the Bonneville Formation that was deposited at and below the Provo shoreline (about 4,830 feet above sea level).

Alpine Formation:

ag Gravel facies: Gravel and sand, cobbly, rounded clasts, medium- to light-bluish-gray, more than 20 feet thick. Boulders are commonly present near base. At many places the upper 10-15 feet commonly is moderately to weakly cemented by calcium carbonate. Deposited as a lakeshore embankment about 20 feet below the Bonneville shoreline (about 5,150 feet above sea level). Deposit is a source of sand and gravel. Steep slopes may be unstable

ac Clay and silt facies: Clay and clayey silt, light-gray to brown, 5 to more than 20 feet thick. Contains ostracodes. Commonly weathers into cubes 3-6 inches across. Silt predominates near the mountain front. Deposited on a lake floor. An earthquake might cause failure of steep slopes underlain by the clay and silt, especially where water saturated

lc Lake clay undifferentiated: Silty clay and clayey silt; contains a few beds of silt and fine sand; light yellowish gray, grayish brown, light brown, and light gray, 3 to more than 6 feet thick; thick to thin bedded; weathers into blocks as much as 6 inches across. Contains some ostracodes. At places has a weakly to moderately developed blocky B soil horizon. Deposited on a lake floor. In southwestern part of quadrangle locally is covered by less than 3 feet of sand of the Draper Formation

ALLUVIAL DEPOSITS

fa Flood-plain alluvium: Sand, cobbly to silty, dark-gray at top, grading downward to medium-gray to light-gray sandy to cobbly gravel and sand in lower part; locally bouldery near mountain front; more than 5 feet thick. Abandoned channels generally visible on surface. Surface of the deposit infrequently subject to flooding. A potential health hazard exists in areas of high water table and numerous septic systems

ta Terrace alluvium: Gravel and sand, cobbly, dark- to medium-gray, 5-10 feet thick. Locally contains silty sand in upper 1 foot. Deposit is a potential source of sand and gravel. Steep slopes may be unstable

da Alluvium: Gravel and sand, cobbly, locally silty, light- to brownish-gray, 5 to more than 10 feet thick. Forms high level terraces graded to former lake shorelines below the Provo shoreline. Near shorelines the deposit contains small amounts of silt and about 10 percent cobbles, both of which increase in quantity eastward. Contains boulders near the mountains. Locally cemented by calcium carbonate near shorelines. At places 1 foot of weakly developed soil is formed on the alluvium. Steep slopes may be unstable. An excavation in this deposit caved in

pa Alluvium: Gravel and sand, silty to cobbly, subangular to subround clasts, gray to brownish-gray, 5-20 feet thick. Soil formed on the deposit consists of, from top to bottom, 0.5 foot dark-brown silt; 0.5-1 foot reddish-brown fine angular blocky clayey silt; 1.5 feet sandy silt; these units probably represent, respectively, the A, B, and Cca units of a soil. This stream-deposited gravel forms high level terrace graded to deltaic gravel at the Provo shoreline at mouths of major streams. Deposit is a potential source of sand and gravel. Steep slopes may be unstable

Alluvial fan deposits:

Silt, bouldery to sandy in lower parts of the basin and bouldery to silty gravel and sand in higher parts of the basin; clasts angular to subround; dark gray to moderate brown; as much as 20 feet thick. Locally overlies, and at places grades laterally into, lake gravel. Alluvium mostly deposited during floods at places where streams lose carrying power. Includes alluvium in narrow channels upstream from alluvial fans. Younger deposits are subject to sudden and violent flash floods and mudflows

fgy Undifferentiated fan deposits younger than Bonneville shoreline

fgo Undifferentiated [illegible] fan deposits that predate the Bonneville shoreline

MISCELLANEOUS DEPOSITS

f Artificial fill: Clay- to gravel-sized sediments, some trash, poorly to well compacted. 5-50 feet thick. Many narrow strips of fill along the downhill side of subdivision streets are not shown. Steep slopes may be unstable; two cave-ins have occurred in excavations in this material

cm Colluvium: Silt and local sand, clayey to cobbly, crudely bedded to massive, gray to brown, 1-20 feet thick. Present on most slopes but mapped only where it precludes determination of underlying material. Deposited by the slow downhill movement of weathered and eroded material. Colluvium is potentially unstable where saturated or where water is present at the base of the material

es Eolian sand: Sand, fine, silty, light-brown, 0-10 feet thick. Generally poorly consolidated. Deposit has hummocky topography. Deposited by wind on the Bonneville shore embankment east of City Creek. Steep slopes may be unstable

ld Landslide deposit: Clay to boulders; 15-30 feet thick. Deposited by slow to rapid downslope movement. Landslide deposits have resulted from unstable conditions. Any disturbance of these deposits by earthquake, excavation, or loading may lead to additional movement