

SURFICIAL GEOLOGIC MAP OF THE SALT LAKE CITY SOUTH QUADRANGLE, SALT LAKE COUNTY, UTAH Richard Van Horn

1979

QUATERNARY

STREAM DEPOSITS

MISCELLANEOUS DEPOSITS

LAKE GRAVEL UNDIFFERENTIATED (HOLOCENE AND

PLEISTOCENE)—Cobbly gravel and sand, light gray; thickness

ranges from 1 to more than 4 m. Upper 1 m locally moderately to

strongly cemented by calcium carbonate. Oolites present between

4415 ft (1345 m) and 4450 ft (1360 m) altitudes. At places

unconformities, fossil soils, and silt beds are present within the unit.

Source of sand and gravel. Present in the southwestern part of the

quadrangle. Deposited by longshore currents in a lake lower than

PLEISTOCENE)—Sand to silty sand, very light brownish gray;

cross-stratification inclined to southeast and to northwest; 3 m

thick. Gastropods locally abundant near base. Unified Soil Classifi-

cation (sample S79): SP(1). Deposited by longshore currents in a

lake. Mapped only near the southwest corner of the quadrangle.

(PLEISTOCENE)—Clay and clayey silt, locally contains very fine

sand, light gray to brown; thickness ranges from 1 to more than 6

m. Contains ostracode shells. Commonly weathers to 5-15 cm

cubes. Unified Soil Classification (nine localities, field procedure):

S(1), ML(1), MH-CL(1), CL-CH(2), and CH(4). Has been used

for highway fill. Deposited on a lake floor. Unit occurs near the

base of bluffs along the Jordan River in the southern part of the

quadrangle. Contains possible liquefaction failure features

DELTA DEPOSITS

olive gray to brown; beds 5-40 cm thick including many thin beds

of fine-grained sand. Contains few ostracodes, mica common in

sand. Soil consists of 15 cm dark-gray A horizon over 6 cm brown

B horizon. Unified Soil Classification (25 localities, field

procedure): S(2), ML(7), ML-MH(1), MH(8), MH-CL(1),

CL-CH(2), and CH(4). Twelve samples from S282, S333, S352,

S367 have the following characteristics: Unified Soil Classifications

ML-SM(3), ML(1), CL-ML(1), CL(6), and CH(1); liquid limits

range from 53 to 23 percent, plasticity index ranges from 29 to 5

percent; and swelling index ranges from noncritical to critical.

interfingering stream and lake deposits. Present in the

northwestern part of the quadrangle. At most places deposit is

water saturated below a depth of 1 m and excavations will

probably cave-in. The deposit is compressible and the surface

brownish gray, bluish gray and brown; beds generally more than

30 cm thick. Deposit more than 3 m thick. Contains few

ostracodes. Soil is 45 cm of dark-gray A horizon. Unified Soil

Classification (15 localities, field procedure): S(2), MH(1), CL(2),

CL-CH(2), and CH(8). Three samples from S288 and S330 have

the following characteristics: Unified Soil Classifications, ML, MH,

and CL; liquid limits, 46, 63, and 38 percent; plasticity index, 15,

21, and 19 percent; and swelling index ranges from noncritical to

marginal. The area about 1800 S., 4400 W. is the east end of a low

ridge gradually rising westward for 10 km where it merges into the

steep slopes adjoining the Oquirrh Mountains. This barlike feature

is parallel to a swale that lies to the south of it and contains three

former lakes near 2700 S., 4400 W. At the type locality of the

Ridgeland Formation a thin layer of the Ridgeland overlies this

deposit, but is not shown on the map. Deposited where streams

entered the lake, and consist of interfingering stream and lake

deposits. Present in northwestern part of quadrangle. At most

places deposit is water saturated below a depth of 1 m and

excavations will probably cave-in. The deposit is compressible and

(HOLOCENE)-Silt and clay, sandy, light to dark brown; more

than 1 m thick. Contains small amounts of mica. The soil developed

on deposit is a 15 cm thick A horizon. Unified Soil Classification

(two localities, field procedure): ML(2). Deposited by the Jordan

(HOLOCENE)—Silt and clay, sandy, very dark gray to brown;

more than 1 m thick. Soil on deposit, measured in a meander scar

may be thicker than normal because of redeposition of A horizon

eroded from elsewhere in the channel, consists of upper 5 cm

thick, salty tasting, very dark gray, massive A1 horizon grading

down into 12 cm thick, salty tasting, dark-gray, massive A2 hori-

zon. Unified Soil Classification (three localities, field procedure):

ML to CH. One sample (S367B) is principally illite but contains

some kaolinite; Unified Soil Classification, CL; liquid limit, 27

percent; plasticity index, 9 percent; and swell index, noncritical.

Deposited by the Jordan River in northwestern part of quadrangle

Silt and clay, light to dark gray and light to dark brown, more than 1

m thick. Contains disseminated particles of very fine grained sand

and very small amounts of mica. Locally a 5 cm thick salt pan

deposit is 30 cm below surface. Soil developed on deposit consists

of an upper 2 cm thick light-gray salty A1 horizon overlying 8 cm

dark-gray salty A2 horizon. Unified Soil Classification (one locality,

STREAM DEPOSITS

FLOOD-PLAIN ALLUVIUM (HOLOCENE)—Clay to silty sand, locally

field procedure): ML and MH. Deposited by the Jordan River in

cobbly and clayey, dark to light gray; many angular sand grains;

more than 3 m thick. Meander scars may be visible on surface.

Deposits of the Jordan River are micaceous, and locally contain

large gastropods. Unified Soil Classification (13 localities, field

procedure): \$(5), ML(1), MH(1), ML-MH(1), MH-CL(2), MH-

CH(2), and CH(1). Deposited by streams in the eastern and

infrequent flooding. Contaminated ground water may be a poten-

tial health hazard in areas of high water table and numerous septic

tanks. Steep slopes may be unstable; trenches and excavations

may be subject to caving. The deposit is compressible and the

surface may subside under heavy loads

central parts of quadrangle. Surface of the deposit subject to

the surface tends to subside under heavy loads

River in northwestern part of quadrangle

fdcy YOUNGER DELTA DISTRIBUTARY CHANNEL FILL

fdco OLDER DELTA DISTRIBUTARY CHANNEL FILL (HOLOCENE)—

northwestern part of quadrangle

fde DELTA DISTRIBUTARY CHANNEL FILL UNDIFFERENTIATED

CLAY UNIT (HOLOCENE)—Clay, some sand, and silt, light gray, light

tends to subside under heavy loads

Deposited where streams entered the lake, and consist of

SILT AND SAND UNIT (HOLOCENE)-Silt, sand, and clay, light to

the Provo shoreline. Steep slopes may be unstable

ac CLAY AND SILT UNIT OF THE ALPINE FORMATION

Steep slopes are unstable

LAKE SAND UNDIFFERENTIATED (HOLOCENE AND

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MISCELLANEOUS INVESTIGATIONS SERIES MAP I-1173

Younger unit—Sand to silty clay, locally cobbly, dark gray to brown; more than 1 m thick. At places meander scars plainly visible. Unified Soil Classification (9 localities, field procedure): GS(2), S(3), ML(1), and MH-CL(3). Deposited by streams. Steep slopes may be unstable. Top of deposit is approximately equivalent to the estimated level of an intermediate regional flood (U.S. Army Corps of Engineers, 1969) and in the event of such an occurrence would probably be covered by flood waters

Older unit—Sand to sandy silt, very dark gray to brown; as much as 2 m thick. At places meander scars faintly visible. Unified Soil Classification (4 localities, field procedure): S(2) and ML(2). Deposited by streams. Steep slopes may be unstable. Top of deposit is approximately equivalent to the estimated level of the standard project flood (U.S. Army Corps of Engineers, 1969) and in such an event may be subject to flooding ta TERRACE ALLUVIUM (HOLOCENE AND PLEISTOCENE)—Silt and sand, deposits from tributaries east of Jordan River may be

cobbly and pebbly, dark brown to dark to medium gray; more than 4 m thick. Locally micaceous. Deposited by streams. Potential source of sand and gravel. Steep slopes may be unstable Younger unit (Holocene)—Silty to pebbly sand and silt, dark gray to field procedure): GP(1), S(3), S-ML(1), and MH-CH(2). Deposited by streams. Potential source of sand and gravel. Steep slopes

may be unstable Intermediate unit (Holocene)—Silty sand to sandy silt, dark to light gray and brown, more than 4 m thick. Generally micaceous. Soil developed on deposits consists of as much as 25 cm of humic silt. Unified Soil Classification (13 localities, field procedure): S(3), S-ML(3), ML(5), ML-MH(1), and MH(1). Deposited by Jordan River. Steep slopes may be unstable

Post-Draper alluvium (Holocene)—Sand and silt, locally coarse and pebbly, medium gray to brown; as much as 3 m thick; locally micaceous. Maximum soil development, about 40 cm of darkbrown pebbly silt A horizon; equivalent to the Midvale Soil. Unified Soil Classification (15 localities, field procedure): S(6), S-ML(3), ML(1), ML-MH(1), MH(3), and MH-CL(1). One sample (S294U3) had Unified Soil Classification ML; liquid limit, 24 percent; plasticity index, 2 percent; and swell index, nonswelling. Deposited by streams, mainly the Jordan River. Appears to be graded to the Gilbert shoreline at 4250 ft (1295 m) altitude. Located in south-central part of quadrangle

Older unit (Holocene and Pleistocene)—Cobbly gravel, dark brown to light gray; more than 3 m thick. Deposited by Little Cottonwood Creek. Potential source of sand and gravel. Steep slopes may be da ALLUVIUM (PLEISTOCENE)—Sand, medium grained, pale olive gray; as much as 1 m thick. Pebbly layer 15 cm thick at base is

predominantly limestone and quartzite with a few granitic pebbles. Deposited by streams and occurs between two lake beds believed to be younger and older parts of the Draper Formation. Found only near 6400 S., 100 E. ALLUVIUM(?) OF POST-ALPINE AGE (PLEISTOCENE)—Sand, coarse grained, pebbly to cobbly, light gray; as much as 4 m thick; rounded to subrounded stones. Unified Soil Classification (3

localities, field procedure): SG(2) and S(1). Probably deposited by a stream. Recognized only in southern part of quadrangle exposed in terrace scarps of the Jordan River and in a deep roadcut near 6400 S., 100 E. ALLUVIAL FAN DEPOSITS (HOLOCENE AND PLEISTOCENE)— Bouldery to clayey silt, stones angular to subrounded, dark gray to moderate brown; as much as 4 m thick. Locally overlies, and at

places grades laterally into, lake gravel. Mostly deposited by floods at places where streams lose carrying power Undifferentiated fan deposits younger than the Bonneville shoreline-Relative age indicated by number (ages relative to other stream deposits not implied by position of boxes in correlation diagram); unit fg7 (only unit to appear on this map) is youngest. All areas where units are located are subject to sudden

and violent flash floods and mudflows Unit fg7—Sandy silt dark gray to reddish brown slightly plastic and contains a few pebbles; generally 1-3 m thick. Locally contains thin beds of fine sand and overlies lake clay or alluvial gravel and sand. Deposited on flat plain of former lake in the northeastern part of quadrangle

MISCELLANEOUS DEPOSITS ARTIFICIAL FILL—Clay- to gravel-size sediments and some trash, poorly to well compacted; 1–15 m thick. Unified Soil Classification (2 samples, field procedure): MH(1) and CH(1). Many narrow strips of fill along the downhill side of subdivision streets are not shown. Organic material in fill deposits may generate methane gas. Steep slopes may be unstable Dump—Mostly trash and garbage. Sanitary landfills have been cov-

ered with locally derived natural material. Organic material in the deposits may generate methane gas Engineered fill—Selected material that has been compacted at optimum moisture content. Found under most modern highways and railroads. Fill materials under railroads are mostly cinders that have been compacted

quartz, and feldspar. This is waste material from milling operations after the ore-bearing minerals have been removed. Generally covered by 50-100 cm of well-compacted select material Radioactive fill—Silt, light gray to light brown. Radioactivity comes from emanations of radon gas. Mainly found in the tailings of the no longer operating Vitro Chemicals Corporation mill at 3300 S., 600 W. Some of this material is believed to have been used as local fill at 29 localities in the quadrangle. These localities have been listed by Duncan and Eadie (1974). There may be other unknown small areas of radioactive fill. Locally, dust from this fill has been windblown onto other deposits near 700 W., 3300 S. Potentially hazardous radiation may be present

Engineered fill of ground rock—Silt, light gray. Contains pyrite, mica,

Slag—Fused waste rock from smelters, black to brown; as much as 3 m thick. Is hard, harsh, and brittle. Source of crushed aggregate. Present at 5000 S., 100 W. and 5700 S., 800 W. es EOLIAN SAND (HOLOCENE)—Silty fine sand, light brown to light gray, poorly consolidated; 0-3 m thick; hummocky topography. Deposited by wind on the younger terrace alluvium near 3900 S.,

900 W. Steep slopes may be unstable LANDSLIDE DEPOSIT (HOLOCENE)—Composition similar to material upslope; as much as 6 m thick. Deposited by slow to rapid downslope movement of material forming the slope. Occurs near 6400 S., 1200 W. Deposit has resulted from unstable slope conditions; any disturbance by earthquake, excavation, or loading may lead to additional movement

CONTACT—At places approximately located or inferred. Dotted FAULT—At places approximately located or inferred. Dotted where concealed. Shown only where surficial deposits appear to have been involved in the faulting

△S333 TYPE LOCALITY OF THE RIDGELAND FORMATION AND THE

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