DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN-FILE REPORT 81-228

DESCRIPTION OF LITHOLOGIC AND SOIL STRATIGRAPHIC UNITS

LITHOLOGIC UNITS

ALPINE-BONNEVILLE LAKE DEPOSITS UNDIFFERENTIATED

(1) This unit consists of alternating coarse and fine sequences. Fine sequences consist of thinly interbedded pink (5 YR 7.5/4; 5/4 moist) silt, and very pale brown (10 YR 7.5/3; 5.5/3 moist) very fine-to-fine sand, and layers of pebbly sand. Silt beds range in thickness from less than 1 mm. to 5 mm. Sand beds range in thickness from less than 1 mm. to 15 cm. Coarse sequences consist of beds up to 15 cm. thick of well stratified medium to coarse sand and subrounded and rounded fine gravel (maximum size 4 cm., mode 0.5-1 cm.) interlayered with clean, fine-to-very fine sand.

POST-PROVO ALLUVIAL FAN DEPOSITS

(2) Pale brown to light yellowish brown (10 YR 6/3.5; 4/3.5 moist) gravelly coarse sand and sandy gravel; contains 20 to more than 50 percent rounded, subrounded, and subangular pebbles, cobbles, and boulders, mode 3-5 cm., cobbles between 10-20 cm. common, occasional boulders up to 50 cm.; crudely stratified. Initial dips range from approximately 4 to 9 degrees, westward, eastward dips from 3 to 20 degrees were measured within the area of subsidence west of the main fault trace.

SAG FILL DERIVED FROM THE NORTH AND ASSOCIATED COLLUVIUM

(3) Colluvium:
Adjacent to and within approximately 8 meters of the main fault scarp this unit consists of light yellowish brown to yellowish brown (10 YR 5.5/4; 3.5/4 moist) gravelly silty sand; contains 15-35 percent angular, subangular, and subrounded pebbles, cobbles, and boulders, maximum size 20 cm., mode 4-5 cm. Maximum size of boulders and cobbles decreases westward away from the main fault scarp. This unit grades laterally into sag deposits that consist of light grayish brown to grayish brown (10 YR 5.5/2; 4.5/2 moist) gravelly silty sand; contains 15-20 percent angular and subrounded gravel, maximum size 8 cm., mode 2 cm., 4-5 cm. clasts common.

(3B) Transitional Deposit:
Pale brown to light yellowish brown (10 YR 6/3.5; 4/3.5 moist) poorly sorted, pebbly silty sand; contains 10 percent subangular and subrounded pebbles, maximum size 8 cm., mode 3-8 mm.; mottled with iron oxide, contains irregular flecks and nodules of manganese oxide; numerous root tubules. Grades laterally into unit 3A.

(3C) Pond Deposits:
Pale brown to light yellowish brown (10 YR 6/3.5, 4/3.5 moist) sequence of graded beds; mottled with iron oxide and contains flecks and nodules of manganese oxide; occasional root tubules. Individual beds range in thickness from 1.5 to 25 cm. and consist of medium-to-coarse sand that fines upwards to silty sand and very fine sandy silt. At least 10 graded beds were measured in a 1.29 m. thick section between stations __ and __ in Trench A.

Several marker beds that could be used to measure the amount of vertical displacement were identified within this unit and are shown on the log of Trench A (Plate 2) as textural patterns and/or lower case letters. These include:

- (a) Basal gravelly sand
- (b) Light grayish brown medium grained sand
- (c) Light yellowish brown medium grained sand, manganese-oxide common
- (d) Light brown sand, manganese oxide staining
- (e) Light grayish brown medium grained sand, grades upward into gravel

LOCALLY DERIVED SAG FILL AND ASSOCIATED COLLUVIUM

(4A) Colluvium-Basal Facies
Light brown to reddish yellow (7.5 YR 6/4.5; 4/4.5 moist) poorly sorted very fine-to-coarse sand; contains less than 5 percent pebbles, maximum size 1.5 cm., mode 3-5 mm.; layers of light brown (7.5 YR 6/4; 4/4 moist) fine sand occur locally (stipled pattern); massive.

(4B) Colluvium:
Brown to yellowish brown (10 YR 5.5/3.5, dry; 3.5/3.5 moist) gravelly silty sand; typically 5 to 15 percent (up to 30 percent in Trench B) angular to subrounded pebbles, cobbles, and boulders, maximum size 50 cm., mode 3-5 cm., 10 cm. cobbles are common; poorly sorted; iron- and manganese-oxide staining common. In Trench A a zone approximately 0.5 m. wide adjacent to the main fault zone contains material derived predominantly from lake bed deposits and is generally finer grained.

(4C) Pond Deposit:
Pale brown (10 YR 6/3; 3/3 moist) clayey silt; locally contains lenses of micaceous pebbly silty sand; mottled with iron-oxide staining. Grades laterally towards apex of alluvial fan into fine sandy silt that contains some small pebbles up to 2 cm. long and small flecks of manganese oxide; numerous root tubules. In places the upper 1-3 cm. contains more organic material and is grayish to dark grayish brown (10 YR 4.5/2; 3/2 moist).

(4D) Channel(?) Deposit:
Similar to 4C; except well stratified, contains lenses of sandy pebbly gravel.

(4E) Mudflow Deposit:
Pale brown to brown (10 YR 5.5/3, 3/3 moist) silty gravelly sand gravel; contains 30-35 percent pebbles and cobbles, maximum size 7 cm., mode 2-3 cm., pebbles are generally subangular and angular, some subrounded; some iron- and manganese-oxide staining; roots common.

(5) Pond Deposit:
Grayish brown to brown (10 YR 5/2.5; 3/2.5 moist) clayey silt; massive to finely laminated; exhibits an angular blocky to fine platey structure when crumbled; contains two dark grayish brown to very dark grayish brown (10 YR 3.5/2; 2/1 moist) layers that are approximately 3 cm. thick and contain very small fragments (less than 1 mm.) of detrital charcoal; numerous roots; grades upwards into Unit 7.

YOUNG SCARP COLLUVIUM

(6A) Colluvium-Basal Facies
Similar to Unit 4A; locally contains fragments of grayish brown sandy loam (a), and reddish brown silt and fine sand derived from Unit 1 (b) (see Trench G, Figure __). The following units can be differentiated in Trench F (Figure __):

- ($6A_1$) Light brown (7.5 YR 6/4; 4.5/4 moist) gravelly sand; contains 20-30 percent angular to subangular gravel, maximum size 7 cm., mode 1-3 cm.; grades upwards into stratified coarse sand; the upper contact is marked by a 1 to 2 cm. thick layer of light brown (7.5 YR 6/4; 4/4 moist) silty fine-to-coarse sand.
- ($6A_2$) Light brown (7.5 YR 6/4; 4.5/4 moist) fine-to-very coarse sand; contains occasional small pebbles (less than 1.5 cm.) and some cobbles, maximum size 20 cm.; contains numerous fragments derived from reddish brown silt beds in Unit 1.
- ($6A_3$) Grayish brown to brown (10 YR 5/2.5; 3/3.5 moist) silty fine-to-medium sand; contains less than 3 percent pebbles, maximum size 5 cm.; grades laterally into $6A_1$.
- ($6A_4$) Similar to $6A_2$, execpt coarser and more friable.

(6B) Colluvium/Slopewash Deposits:
Light brownish gray (10 YR 6/2; 4/2 moist) gravelly sand; contains 5-30 percent rounded, subrounded, and subangular pebbles, cobbles, and boulders, maximum size 30 cm., mode 10-15 cm.; numerous roots.

- ($6B_1$) Dark grayish brown (10 YR 4/2; 3/2 moist), micaceous silty sand.

PRE-SETTLEMENT DEPOSITS

(7) Pond Deposit/Soil:
Grayish brown (10 YR 5/2; 3.5/2) clayey silt; occasional small pebbles (less than 1 cm.); massive to medium crumb structure; mottled by darker organic material; numerous roots.

HISTORICAL DEPOSITS

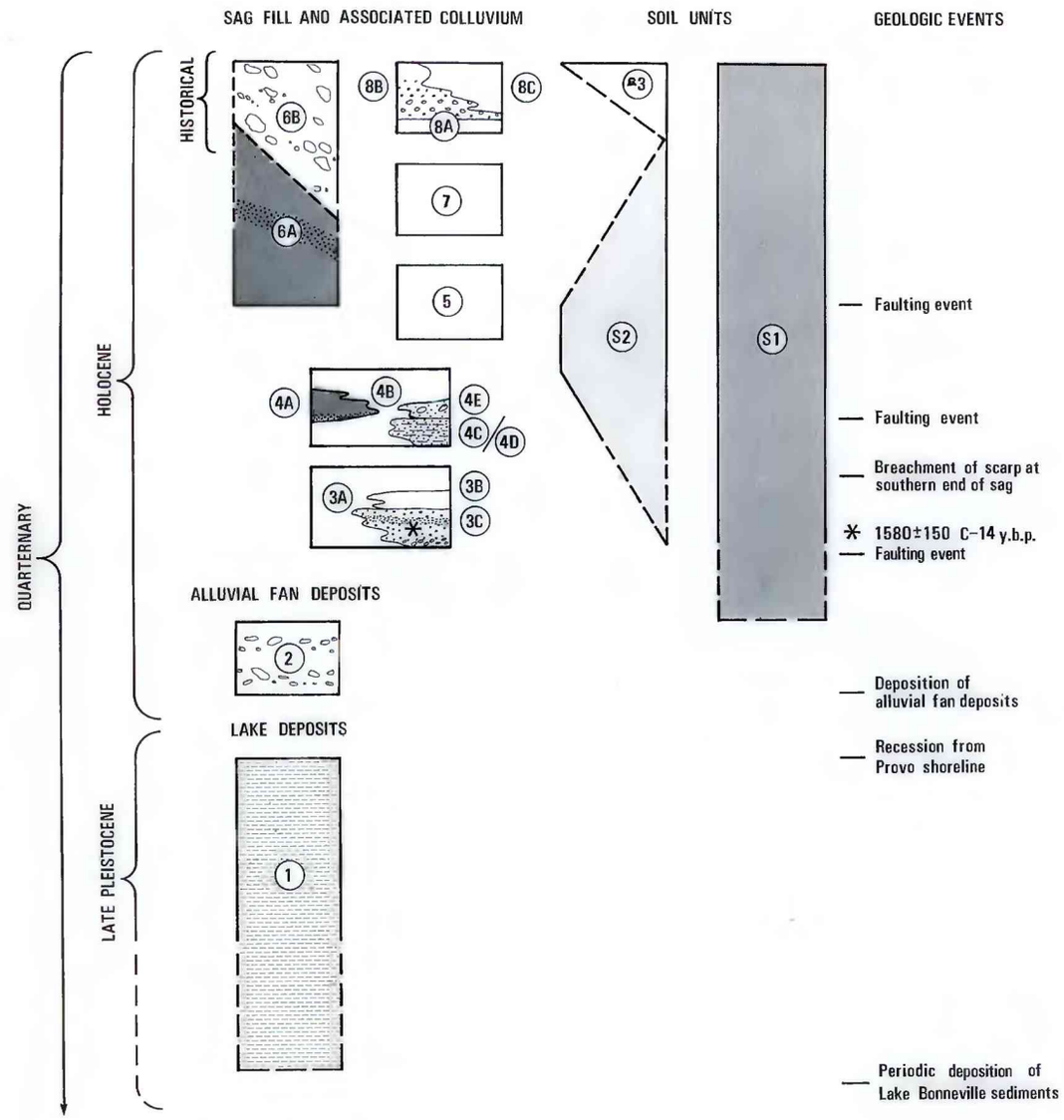
(8A) Pond Deposit:
Brown (10 YR 5/3, 3/3 moist) silty fine sand mottled with yellowish brown (10 YR 5.4); massive; micaceous; numerous roots and insect burrows.

(6B) Alluvial Fan Deposit from 1919 Flood:
Pale brown (10 YR 6/3; 3/3 moist) stratified gravelly coarse sand; contains 30-40 percent pabbles, maximum size 6 cm., mode 3.5 cm., 2-4 cm. pebbles common; loose; grades laterally (downslope) into micaceous, medium sand which, in turn, grades into well sorted micaceous fine sand having a fine platey structure.

- ($8B_1$) Similar to 8B, except contains only 5-20 percent angular to subrounded gravel; exhibits only weakly developed platey structure that parallels the ground surface; grades lateraly into 8B.

(8C) Pond Deposit:
Brown (10 YR 5/3; 3/2 moist) clayey sandy silt; micaceous; fine laminar structure crumbles to fine platey structure; slightly mottled with iron and manganese oxides; locally contains more organic-rich pods; numerous roots.

CORRELATION OF LITHOLOGIC AND SOIL UNITS



SOIL UNITS

(S1) Soil Developed on Post-Provo Alluvial Fan Deposits:
Weak to moderate (A/AB/C) soil profile developed on post-Provo alluvial fan deposits (Unit 2); see Figure __ for detailed description.

(S2) Alluviated Soil developed on 4B
Dark grayish brown (10 YR 4/2; 3/2 moist) gravelly sandy loam; contains 5-10 percent angular, subangular and subrounded pebbles and cobbles, maximum size is 15 cm. adjacent to main scarp and 9 cm. in the center of the graben, mode 1-4 cm.; massive; micaceous; slight iron-oxide staining locally; roots common in upper part.

- ($S2_1$) Alluviated Soil developed on 3B
Dark grayish brown (10 YR 4/2; 3/2 moist) pebbly silt loam; contains less than 5 percent subangular and subrounded pebbles, maximum size 5 cm., mode 5 mm.; numerous roots. Adjacent to the antithetic scarp this soil contains a higher percentage (5-7 percent) of larger cobbles and pebbles, maximum size 8 cm., mode 3-5 cm.

(S3) Topsoil:
Light brownish gray (10 YR 6/2; 3/2 moist) silt loam; plastic; fine-to-medium platey structure; micaceous; numerous roots; locally disturbed by plowing.

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

PLATE 1: Description and Correlation of Units Shown on Kaysville Trench Logs