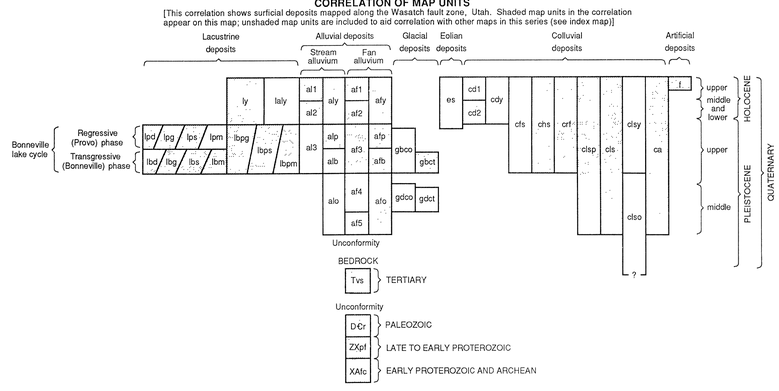
CORRELATION OF MAP UNITS

[This correlation shows surficial deposits mapped along the Wasatch fault zone, Utah. Shaded map units in the correlation appear on this map; unshaded map units are included to aid correlation with other maps in this series (see index map)]



DESCRIPTION OF MAP UNITS

LACUSTRINE DEPOSITS

[These deposits consist of gravel, sand, silt, and clay deposited in response to the rise and fall in the level of the last deep lake in the Bonneville Basin (the Bonneville lake cycle) and its Holocene successor—Great Salt Lake. Lacustrine deposits in map area are divided into four groups: (1) deposits that postdate the Bonneville lake cycle (<11 ka); (2) deposits associated with the Provo shoreline and the regressional phase of the Bonneville lake cycle (14.5–11 ka); (3) deposits associated with the Bonneville shoreline and the transgressional phase of the Bonneville lake cycle (32–14.5 ka); and (4) undivided sediment deposited topographically below the Provo shoreline that cannot be assigned to either phase of the Bonneville lake cycle. Sediment deposited near the mountain front is mostly gravel and sand; silt and clay were deposited in quieter, deeper water on the lake (valley) bottom, in sheltered bays between headlands, and less commonly in lagoons behind barrier bars. The thickness of mapped lacustrine deposits is unknown, but it probably varies from <1 m on the distal edges of most units to as much as 120 m (deltaic deposits at the mouths of the Weber and Ogden Rivers, units lpd and lbd). Thicknesses of units may vary markedly over very short distances, and few individual exposures show the total thickness of any units; therefore, we do not attempt to estimate thicknesses for each mapped unit. Fine-grained units (like units ly and lbpm are often thicker (5–30 m typically) than coarse-grained units like units lbg and lpg (2–20 m typically; Feth and others, 1966); most deposits are probably thickest adjacent to the mountain front on the downthrown side of the Wasatch fault zone]

Deposits younger than the Bonneville lake cycle
(Holocene to uppermost Pleistocene)

ly **Young lacustrine and marsh deposits**—Silt, clay, and minor sand deposited in Great Salt Lake, marshes, slow-moving streams and oxbow lakes, and in sag ponds resulting from faulting or incipient lateral-spread failures. Commonly organic rich; locally may contain peat deposits. Associated with areas of high water table. Includes mud flats or playas exposed by fluctuations of the level of Great Salt Lake. Commonly overlies and grades into or may contain small deposits of units lbpm and aly

Deposits of the Provo (regressive) phase of the Bonneville lake cycle
(uppermost Pleistocene)

[Typical soil profiles range from A-Bw/Bk-Cox-Cn to A-Bt/Bk-Cox-Cn; some Bk horizons have stage I carbonate morphology (Machette, 1985)]

lpd **Deltaic deposits related to regressive phase**—Clast-supported pebble and cobble gravel interbedded with thin sand beds, and matrix-supported gravelly sands; moderate to well sorted; clasts subround to round, with weak carbonate cementation common. Deposited as foreset beds with original dips of 30°–35°. Commonly capped with <5 m of topset alluvium (unit alp), which is a less well sorted, silty to sandy, pebble and cobble gravel. Mapped at the mouths of North Ogden, Ogden, Weber, and Ward Canyons, and the canyon of Mill Creek

lpg **Lacustrine sand and gravel related to regressive phase**—Clast-supported pebble and cobble gravel, with lesser amounts of matrix-supported gravelly sand; commonly interbedded with clean sand beds; well sorted within beds; clasts subround to round; may be carbonate cemented, especially along shorelines; thin to thick bedded; bedding ranges from horizontal to original dips of as much as 15°. Deposited in beaches, bars, spits, as well as deltas that no longer retain distinctive morphology. Mapped at Provo shoreline (1,466–1,487 m (4,810–4,880 ft) in map area) and below; commonly grades downslope into deposits of unit lbpg

lps **Lacustrine sands related to regressive phase**—Predominantly clean, coarse- to fine-grained sand, with lesser amounts of matrix-supported gravelly sand, silty sand, and sandy silt; commonly interbedded; good sorting within beds; clasts subround to round; thin bedded to massive. Deposited in relatively shallow water on beaches, bars, spits, as well as deltas that no longer retain distinctive morphology. Mapped at Provo shoreline (1,466–1,487 m (4,810–4,880 ft) in map area) and below; often grades downslope into deposits of unit lbps, lbpg, and lbpm. Mapped along most of southern half of map area

Deposits of the Bonneville (transgressive) phase of the Bonneville lake cycle
(uppermost Pleistocene)

[Typical soil profiles range from A-Bw/Bk-Cox-Cn to A-Bt/Bk-Cox-Cn; some Bk horizons have stage I or II carbonate morphology (Machette, 1985)]

lbd **Deltaic deposits related to transgressive phase**—Interbedded sand, silty sand, and gravelly sand; moderately to well sorted within beds; clasts subround to round. Mapped only north of the mouth of Weber Canyon; other deposits that existed in map area have been largely eroded by streams

lbg **Lacustrine sands and gravels related to transgressive phase**—Clast-supported pebble and cobble gravel with lesser amounts of matrix-supported gravelly sand; commonly interbedded with clean sand beds; well sorted within beds; clasts subround to round; may be carbonate cemented, especially along shorelines. Thin to thick bedded; bedding ranges from horizontal to original dips of as much as 15°. Forms constructional landforms such as beaches, bars, spits, and small deltas. Mapped between the Provo and Bonneville shorelines (1,475–1,591 m (4,840–5,220 ft)); commonly covered by hillslope colluvium (unit chs). Typically forms bench at the highest (Bonneville) shoreline, and several less well developed shorelines between the highest Bonneville and Provo shorelines in map area. Very sandy where mapped southeast of Bountiful

lbs **Lacustrine sands related to transgressive phase**—Mostly clean, coarse- to fine-grained sand; commonly interbedded with matrix-supported gravelly sand and silty sand; well sorted within beds; clasts subround to round; thin bedded to massive. Deposited in relatively shallow water in beaches, bars, spits, as well as deltas that no longer retain distinctive morphology. Mapped between the Provo and Bonneville shorelines (1,475–1,591 m (4,840–5,220 ft)), usually below unit lbg

lbm **Lacustrine silt and clay related to transgressive phase**—Predominantly silt deposits, with minor amounts of clay and fine sand; usually thick bedded to massive; deposited in quiet water environments, either in sheltered bays between headlands (directly north of North Ogden on the Pleasant View salient) or in lagoons behind barrier beaches at the Bonneville shoreline (near south edge of map area). Usually overlies coarse-grained transgressive shoreline deposits, implying deposition in increasingly deeper, quieter water of a transgressive lake. Shorelines not developed on this unit

Undivided deposits of the Bonneville lake cycle
(uppermost Pleistocene)

[Mapped below the Provo shoreline where deposits cannot be correlated with a specific phase of the Bonneville lake cycle]

lbpg **Lacustrine sand and gravel, undivided**—Sand and clast-supported pebble gravel in a matrix of sand and silt; mapped downslope from Provo shoreline deposits (units lpg or lps) or correlative sandy deposits (unit lbps). Often consists of a thin, discontinuous veneer of Provo regressional deposits, overlying gravelly deposits of the transgressive phase of the Bonneville lake cycle. Numerous shorelines developed on these deposits usually cannot be identified as either transgressional or regressional

lbps **Lacustrine sand, undivided**—Sand, silty sand, gravelly sand, and minor silt mapped downslope from Provo shoreline deposits (unit lps) and correlative gravelly deposits (unit lbpg); also mapped south of the mouth of Weber Canyon, where the location of the Provo shoreline is uncertain between units lbs and lps. Often consists of a thin, discontinuous veneer of Provo regressional deposits, overlying Bonneville transgressional deposits. Numerous shorelines developed on these deposits usually cannot be identified as either transgressional or regressional

lbpm **Lacustrine silt and clay, undivided**—Clay, silt, and minor fine sand deposits deposited in deep and (or) quiet water. Indistinct shorelines preserved where not modified by cultivation. Usually in gradational contact with distal parts of units af1, afy, lbps, lps, and lbpg upslope, and unit ly downslope; may include small deposits of these units

ALLUVIAL DEPOSITS

[These unconsolidated to weakly consolidated deposits consist of variable amounts of gravel, sand, silt, and minor amounts of clay deposited by perennial and intermittent streams and debris flows. Map units are separated into four ages of stream (flood-plain and terrace) alluvium and seven ages of alluvial-fan deposits. The relative ages and correlation of stream and fan deposits are based on the following criteria: (1) relation to lacustrine deposits and shoreline features of known age, (2) position relative to modern stream level, (3) degree of soil development, and (4) degree of morphologic expression, such as degree of preservation of initial surface morphology or degree of dissection. The thickness of mapped alluvial deposits is generally unknown, but probably varies from <1 m (distal edges of fans and stream deposits in small drainages) to as much as 60 m (rapidly deposited fans graded to the Provo shoreline, Feth and others, 1966). Thicknesses of units may vary markedly over very short distances and few exposures reveal the thickness of a given unit; we do not attempt to estimate thicknesses for any mapped unit. Fans immediately adjacent to the mountain front on the downthrown side of the Wasatch fault zone are the only alluvial units likely to be significantly more than 20 m thick]

Stream alluvium deposits

[Stream deposits are mapped on flood plains and as thin strath terrace deposits along perennial and intermittent streams; gravel in these deposits generally is more rounded and better sorted than those in equivalent-age alluvial-fan deposits. The sediment is commonly well sorted and usually has a clast-supported framework. Stream deposits are differentiated by their positions relative to levels of the Bonneville lake cycle and to modern stream level]

al1 **Stream alluvium 1 (upper Holocene)**—Clast-supported pebble and cobble gravel, gravelly sand, and silty sand; moderately sorted; clasts subangular to round; thin to medium bedded. Deposited by perennial streams on modern flood plains and on low terraces <10 m above modern stream level. May include minor debris-flow deposits and colluvial deposits overlying alluvium along steep stream embankments. Widely distributed along North Ogden Canyon, Farmington Canyon, the canyon of Mill Creek, and North Canyon (south of Bountiful), and as a series of several low terraces at the mouth of Weber Canyon. Deposits in many canyons grade downvalley into large Holocene alluvial fans (units af1 and afy)

al2 **Stream alluvium 2 (middle Holocene to uppermost Pleistocene)**—Clast-supported pebble and cobble gravel and gravelly sand; moderately sorted; clasts subangular to round; thin to medium bedded. Deposited by the Weber River and exposed as terraces 10–30 m above the river west of the mouth of Weber Canyon. Soils on these terraces typically have thin (25 cm), weakly developed, Bt horizons (R.R. Shroba, written commun., 1985)

aly **Younger stream alluvium, undivided (Holocene to uppermost Pleistocene)**—Undivided flood-plain and terrace gravel, sand, and silty sand that postdate regression of Lake Bonneville from the Provo level; moderately sorted; clasts subangular to round; thin to medium bedded. Deposited by streams on the modern flood plain and in terraces <10 m above modern stream level. May include minor debris-flow deposits and colluvial deposits overlying alluvium along steep stream embankments. Mapped in many drainages where upper Holocene alluvium (unit al1) was not distinguished from older postregressive phase alluvium of Holocene age (unit al2). Widely distributed in drainages west of the mountain front between Kaysville and the Weber River, near Ogden, and at the mouth of the Ogden River

alp **Stream alluvium related to regressive phase of the Bonneville lake cycle (uppermost Pleistocene)**—Clast-supported pebble and cobble gravel and gravelly sand; poorly to moderately sorted; clasts subangular to round; thin to medium bedded. Deposited at the mouth of Farmington Canyon by streams graded to Provo and other regressive phase shorelines of the Bonneville lake cycle

Alluvial-fan deposits

[Alluvial-fan deposits occur mainly in the piedmont (alluvial apron at the mountain front) at the mouths of ephemeral streams. The sediment is commonly poorly sorted and typically has a matrix-supported framework. In some areas Holocene fan deposits (units af1, af2, and afy) are differentiated by soil properties as outlined by Shroba (1982, 1984) and Scott and others (1982); soil horizon designations follow those of Birkeland (1984) and Machette (1985). Fan deposits are thickest along the base of the mountain front, and on the downthrown sides of faults in the Wasatch fault zone]

af1 **Fan alluvium 1 (upper Holocene)**—Clast-supported pebble and cobble gravel, locally bouldery, and matrix-supported gravelly and silty sand; poorly sorted; clasts angular to subround, with very rare well-rounded clasts derived from gravels of the Bonneville lake cycle; medium to thick bedded to massive. Deposited by intermittent streams, debris flows, and debris floods graded to modern stream level. Forms small, discrete fans on some of the older alluvial fans (units afy and af2), and large fans that bury lacustrine and older fan deposits at the mouths of many canyons throughout map area. Mapped units may contain small deposits of units cd1, al1, afy, and af2. No lacustrine shorelines occur on surfaces formed by this unit. Surfaces commonly bouldery; braided channel morphology is occasionally preserved on surfaces. Usually grades downslope into units afy or lbpm. Typical soil profiles range from A-Ch to A-Bw-Cox-Cn; a few profiles have stage I carbonate morphology (Machette, 1985)

af2 **Fan alluvium 2 (middle Holocene to uppermost Pleistocene)**—Clast-supported pebble and cobble gravel, locally bouldery, and matrix-supported gravelly and silty sand; poorly sorted; clasts angular to subround, with rare well-rounded clasts derived from gravels of the Bonneville lake cycle; medium to thick bedded to massive. Deposited by perennial and intermittent streams, debris flows, and debris floods, graded to or slightly above modern stream level. More loess and fine-grained colluvium covers fan surfaces than on unit af1 fans. Forms large fans that are either incised into fine-grained lacustrine sediment (units lps, lbm, and lbs) or bury lacustrine shoreline sediment (units lbg and lpg). May contain small deposits of units af1 and cd1. No lacustrine shorelines occur on the surfaces formed by this unit. Mapped north of North Ogden, at Garner Canyon, at small canyons north and south of the Ogden River, at the Kaysville trench site, and near the Bonneville shoreline south of Bountiful. Typical soil profiles range from A-Bw-Cox-Cn to A-Bt(weak)-Cox-Cn; some have stage II- carbonate morphology (Machette, 1985)

afy **Younger fan alluvium, undivided (Holocene to uppermost Pleistocene)**—Undivided fan alluvium that postdates the regression of Lake Bonneville from the Provo level. Mapped in areas where both units af1 and af2 occur, but are too small to map separately; also mapped where the age of Holocene fan deposits has not been determined

afp **Fan alluvium related to regressive phase of the Bonneville lake cycle (uppermost Pleistocene)**—Clast-supported pebble and cobble gravel, locally bouldery, and gravelly sand; poor to moderately sorted; clasts angular to well rounded; medium to thick bedded to massive. Deposited by streams associated with the Provo (regressional) phase of the Bonneville lake cycle. Reworked in part from deltaic or fan-delta deposits. Forms fans graded to the Provo shoreline, and other regressional shorelines above the modern flood plain. Regressional shorelines locally preserved on the surfaces of fans graded to levels below the Provo shoreline. Preserved mostly as remnants at mouths of larger canyons; Holocene stream and fan alluvium overlaps or fills channels cut in deposits of unit afp. Includes small areas of colluvium on fan remnants. Typical soil profiles range from A-Bw-Cox-Cn to A-Bt-Cox-Cn

afb **Fan alluvium related to transgressive phase of the Bonneville lake cycle (uppermost Pleistocene)**—Clast-supported pebble and cobble gravel, locally bouldery, and gravelly sand; poorly sorted; clasts angular to subangular; medium to thick bedded to massive. Forms fans graded to levels of the transgressive phase of Lake Bonneville. Commonly covered by thin deposits of younger alluvium and colluvium. Mapped at the mouths of several small canyons just north and south of the Weber River and at the southern boundary of the Weber segment. Typical soil profiles range from A-Bt(weak)-Cox-Cn to A-Bt/Bk-Cox-Cn; some have stage II+ carbonate (Machette, 1985)

af3 **Fan alluvium 3, related to either phase of the Bonneville lake cycle (uppermost Pleistocene)**—Undifferentiated alluvial-fan deposits (units afb and afp) dating from the transgressive or regressive phases of the Bonneville lake cycle. Mapped at mouths of some tributary and ephimeral streams where correlation with deposits of the Bonneville lake cycle cannot be established

afo **Older fan alluvium, undivided (upper and middle Pleistocene)**—Undifferentiated fan alluvium that is graded to levels significantly above the Bonneville shoreline. Most deposits significantly predate the Bonneville lake cycle. Mapped above the Bonneville shoreline north of North Ogden, at several canyons south of Mill Creek near Bountiful, and as small remnants at a few other locations between Kaysville and the Weber River. Includes small areas of colluvium on fan remnants. Eroded soils at two sites have thick (40–100 cm), reddish-brown (5YR hue), clay-rich Bt horizons

GLACIAL DEPOSITS

[These deposits consist of till and outwash of the Bells Canyon advance (upper Pleistocene) and younger advances (see Mulvey (1985) and Scott (1988b) for discussion of nomenclature and ages of glacial deposits)]

gbct **Till and outwash (upper Pleistocene)**—Sandy cobble to boulder gravel with a matrix of sand, silt, and minor clay. Clasts are angular to subround; crudely bedded or massive. Forms small moraines and associated proglacial deposits in the highest cirques along the crest of the Wasatch Range northeast of Kaysville. Includes small areas of alluvium and colluvium. Compiled from Bryant (1984)

COLLUVIAL DEPOSITS

[These deposits consist of poorly sorted to unsorted gravity-induced deposits; composition of clasts generally reflects deposits from which they were derived. Mapped almost entirely from aerial photographs. Two ages of debris-flow deposits (units cd1 and cd2) are differentiated by their surface morphology and by relations to present stream level and to alluvial deposits of similar age. As with alluvial and lacustrine deposits, the thicknesses of units at most locations are unknown. However, the catastrophically deposited units (units clsp, cls, and cd1) are likely to be tens of meters thick. Most of the slope deposits that accumulate gradually (units ca, chs, and crf) are generally thin (1–5 m)]

cd1 **Debris-flow deposits 1 (upper Holocene)**—Clast- and matrix-supported cobble and boulder gravel, with a matrix of silt, sand, and minor clay; usually unsorted and unstratified except for interbedded fluvial sand and gravel layers. Surfaces very rubbly; fresh-appearing levees and channels commonly preserved. Deposited on surfaces of alluvial and lacustrine units at the mouths of canyons, especially between Farmington and Bountiful; some flows moved as recently as 1983. Abundant debris-flow deposits near canyon mouths too small to map are included in units af1, afy, al1, and aly. Residential development at many canyon mouths prevents mapping cd1 units separately from larger af1 units

cd2 **Debris-flow deposits 2 (middle Holocene to uppermost Pleistocene)**—Clast- and matrix-supported cobble and boulder gravel, with a matrix of silt, sand, and minor clay; usually unsorted and unstratified. Mapped in two locations near Farmington. Other deposits too small to map are included in units af2 and afy

chs **Hillslope colluvium (Holocene to upper Pleistocene)**—Pebble, cobble, and boulder gravel, gravelly sand, silty sand, and sandy silt; usually unsorted, unstratified; clasts usually angular to subangular, but may contain rounded gravel from lacustrine units of the Bonneville lake cycle. Includes small debris-flow, talus, and landslide deposits too small to map. Deposited by surface wash, creep, and other mass-wasting processes on moderate to steep mountain slopes and along stream valleys in steep-sided canyons. Units >1 km from the Wasatch fault zone are compiled from previous maps and 1:60,000-scale aerial photographs

crf **Rock fall and talus deposits (Holocene to upper Pleistocene)**—Pebble, cobble, and boulder gravel, usually clast supported, with a matrix of sand, silt, and minor clay; usually unsorted, unstratified; clasts usually angular to subangular. Includes small debris-flow, landslide, and talus deposits too small to show at map scale. Clasts deposited by falling, sliding, and slumping on very steep mountain slopes and along steep stream cuts

clsp **Lateral-spread deposits (Holocene to middle Pleistocene)**—Pebble gravel, sand, silt, and minor clay of the Bonneville lake cycle and younger lacustrine, marsh, and alluvial deposits; redeposited by lateral spreading as a result of liquefaction. Bedding commonly contorted, or often tilted within large landslide blocks. Upper parts of failures have headscarps, elongate grabens and ridges parallel to the headscarps, and undrained depressions between the ridges. Lower (distal) parts of failures are characterized by hummocky topography. Much of the redeposited material consists of units lbpm and ly. Major areas of these deposits are mapped on north and south edges of Ogden (Miller, 1980) and west of Farmington (Van Horn, 1975). Two large deposits in the southwestern corner of map area west of Bountiful were recognized on aerial photographs by Van Horn (1982). The northern lateral spread appears to truncate the southern lateral spread; the contact between the two is drawn on differences in vegetation and the degree of preservation of hummocky topography. Both deposits west of Bountiful partly cover the Gilbert shoreline, indicating both lateral spreads formed <10,500 years ago

cls **Landslide deposits (Holocene to middle Pleistocene)**—Unsorted, unstratified deposits that range in size from small slump-earthflows of clay and silt to massive slides of boulder-rich, open-work gravels and bedrock blocks; texture reflects that of deposits in source area. Usually deposited on relatively steep slopes. Includes many small areas of alluvium and colluvium; many small areas are unmapped or are included in units chs and clsp. Units >1 km from the Wasatch fault zone are compiled from previous maps and 1:60,000-scale aerial photographs; many old (pre-Bonneville lake cycle) landslides are not mapped

ca **Colluvium and alluvium, undivided (Holocene to middle Pleistocene)**—Gravel, sand, silt, and clay; texture reflects that of deposits directly upslope. Generally poorly sorted; commonly massive. Unit consists of stream and fan alluvium, hillslope colluvium, and small landslide and talus deposits; also mapped near the base of large fault or landslide scarps. Mapped mainly from aerial photography, except immediately adjacent to some fault scarps (includes unit cfs of Machette, 1989)

ARTIFICIAL DEPOSITS

f **Artificial fill and associated disturbed ground (historic)**—Consists primarily of locally derived surficial debris disturbed during construction of highways in southwestern corner of map area. Smaller areas of fill in developed areas are not shown. Thickness unknown

BEDROCK

[The bedrock section, which ranges from Tertiary to Archean in age, is divided into four units. The outcrop pattern of these units provides generalized information about source rocks for alluvial and colluvial units and major structural relations within the Wasatch Mountains. Descriptions of units are summarized from Crittenden and Sorensen (1985), Van Horn (1981), Bryant (1984), and Van Horn and Crittenden (1987)]

Tvs **Volcanic and sedimentary rocks (Tertiary)**—Consists of undivided volcanic and sedimentary rocks of Tertiary age in the Salt Lake salient near southern boundary of map area

DCr **Sedimentary rocks (Devonian to Cambrian)**—Consists of sedimentary rocks of Devonian through Cambrian age in northern part of map area; includes the Lower and Middle Cambrian Tintic Quartzite

ZXpf **Formation of Perry Canyon (Late or Middle Proterozoic) and Facer Formation (Early Proterozoic)**—Consists of low- to high-grade metamorphic and metasedimentary rocks in northern part of map area. Both formations are very susceptible to landsliding

XAfc **Farmington Canyon Complex (Early Proterozoic and Archean)**—Consists of high-grade metamorphic rocks; makes up most of the bedrock in the Wasatch Range south of Taylor Canyon

Contact—Dashed where approximately located; dotted and dashed between geomorphic features of different relative ages within same map unit

Normal fault—Bar and solid ball on downdropped side along Wasatch fault zone; bar and hollow ball along other faults in bedrock (where sense of displacement is known). Dashed where approximately located; dotted where concealed; queried where tectonic origin is uncertain. Height of fault scarp and amount of vertical offset of geomorphic surface (in parentheses) shown in meters

Thrust fault—Sawteeth indicate overriding plate or block (mapped in bedrock only). Dashed where approximately located; dotted where concealed

Strike and dip of beds

Major shorelines related to levels of Bonneville lake cycle—May coincide with geologic contacts

Highest shoreline of Bonneville (transgressive) phase

Other shorelines of Bonneville phase

Highest shoreline of Provo (regressive) phase

Other shorelines of Provo phase

Highest shoreline of Gilbert phase

Undesignated shorelines of Bonneville lake cycle

Topographic crest of major lacustrine bar or spit

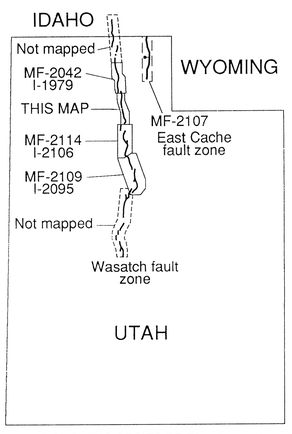
Topographic escarpment—Escarpments along stream channels, terraces, and deltas; formed primarily by fluvial processes. Hachures face upslope. May coincide with geologic contacts

Landslide escarpment—Major headscarps and (or) fissures in landslides (unit cls), lateral-spread deposits (unit clsp), alluvial deposits (units af1 and afy), and lacustrine deposits (unit lbpm). Hachures face downslope. May coincide with geologic contacts

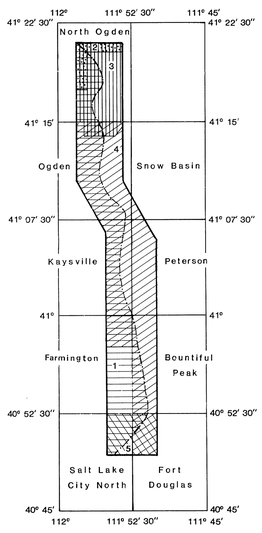
Paleostream channel—Preserved margin of abandoned stream channel or debris-flow levee. Arrows near outer margin of feature

Tilted geomorphic surface—Arrow points in general direction of downward tilt

lps / clsp **Thin surficial deposit (upper unit symbol) covering older unit (lower unit symbol)**—For example, lps/clsp indicates thin lacustrine sands (lps) overlying lateral-spread deposits (clsp)



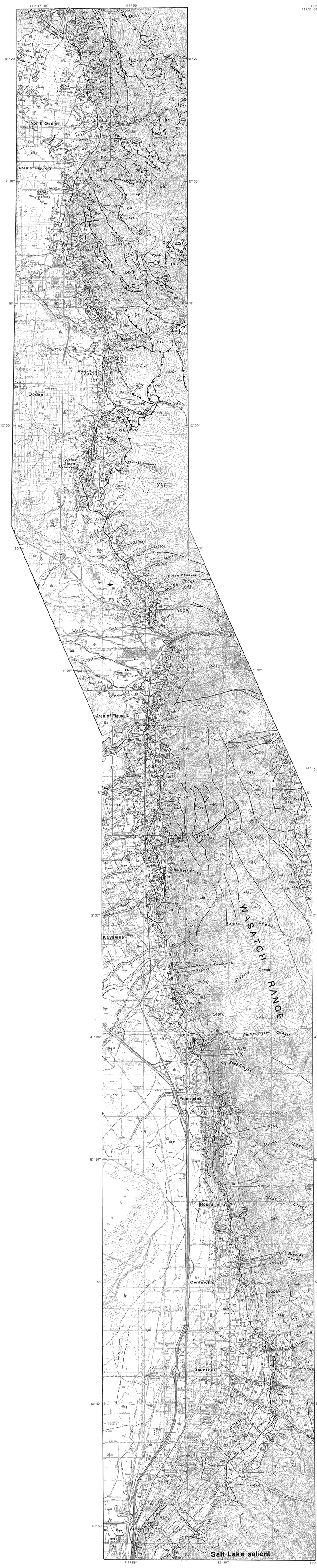
INDEX MAP SHOWING SERIES OF FAULT MAPS ALONG THE WASATCH FAULT ZONE AND EAST CACHE FAULT ZONE



SOURCES OF GEOLOGIC DATA

[Index showing major sources of geologic data used in compilation of this map. Other sources that provided limited information in small areas are listed in text]

1. Miller (1980); 1:100,000 scale
2. Personius (1988a, 1990); 1:50,000 scale (this map series).
3. Crittenden and Sorensen (1985); 1:24,000
4. Bryant (1984); 1:50,000
5. Personius and Scott (1990); 1:50,000 scale (this map series).



Base from U.S. Geological Survey, 1:24,000
Bountiful Peak, Farmington, Fort Douglas, Kaysville, North Ogden, Ogden, Peterson, Salt Lake City North, Snow Basin, 1975

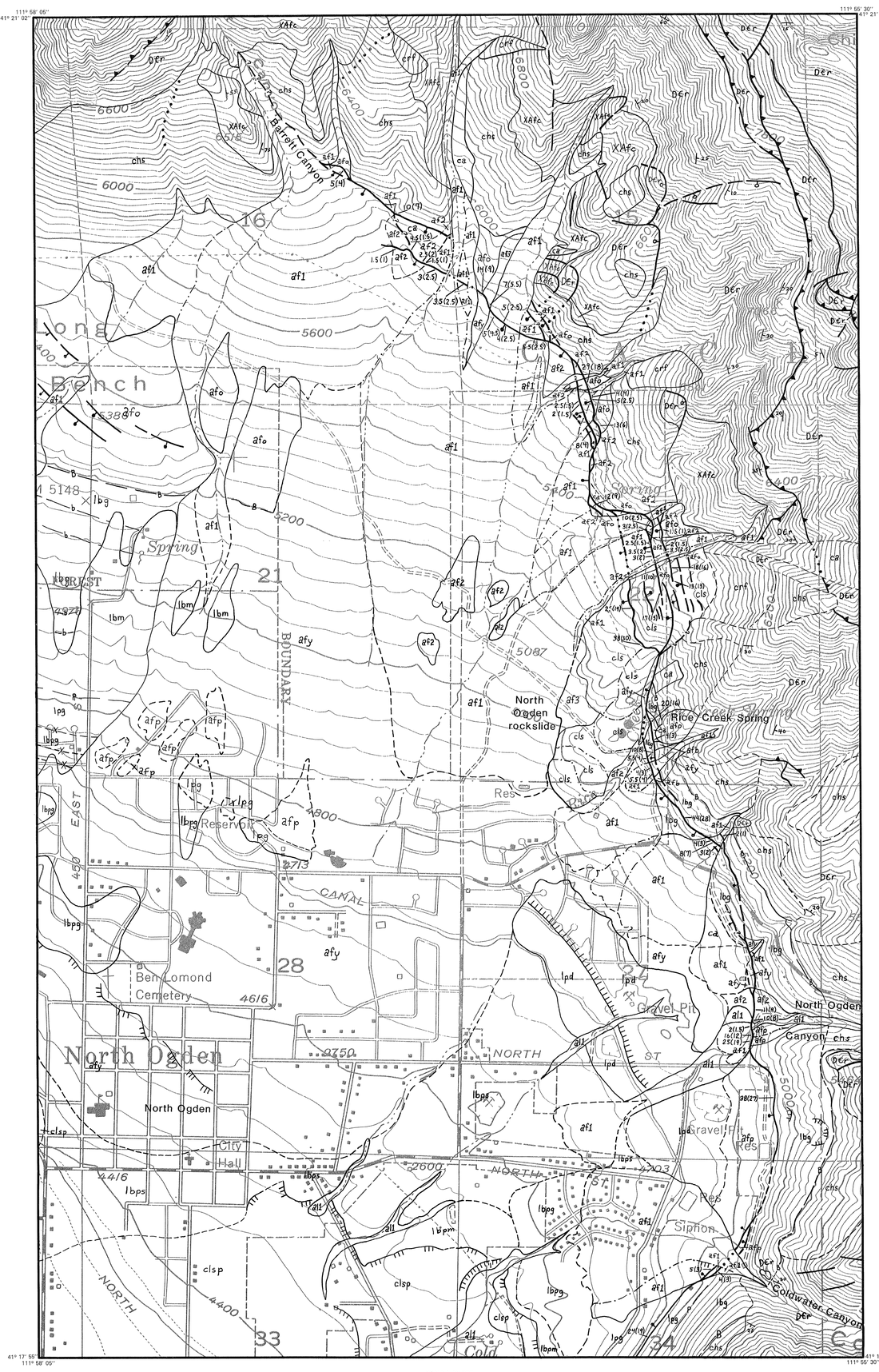
See "Sources of Geologic Data"

Manuscript approved for publication May 29, 1990

APPROXIMATE MEAN DECLINATION, 1990

SCALE 1:50 000

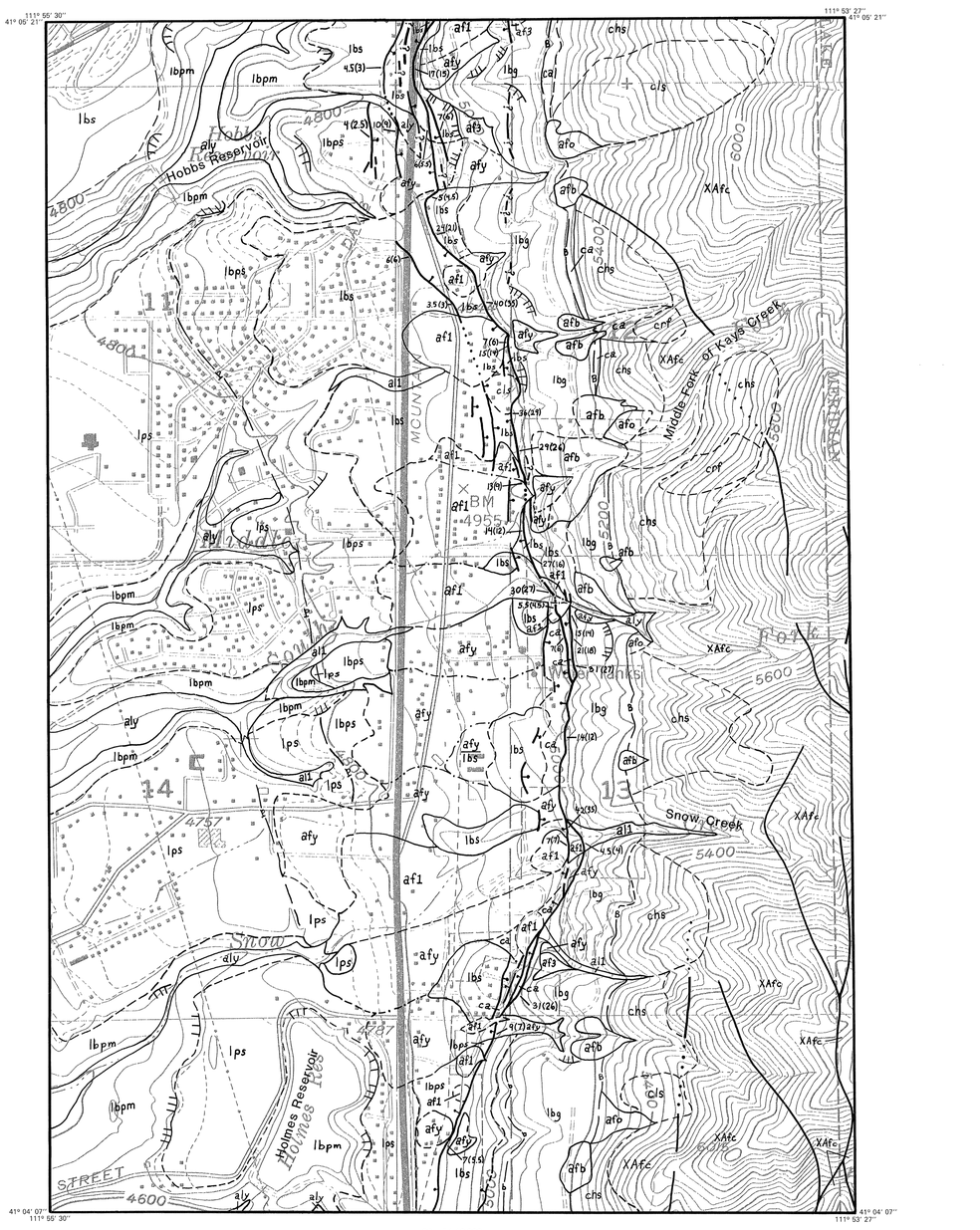
CONTOUR INTERVAL 20 AND 40 FEET
WITH SUPPLEMENTARY CONTOURS AT 5 AND 10 FOOT INTERVALS
NATIONAL GEODETIC VERTICAL DATUM OF 1929



SCALE 1:10,000

CONTOUR INTERVAL 10 AND 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Figure 3.–Detailed surficial geologic map of an area of complex faulting at the northern end of the Weber segment between Barrett Canyon and Coldwater Canyon, northeast of North Ogden, Utah. Outline of figure is shown and geologic units and symbols are explained on main geologic map.



SCALE 1:10,000

CONTOUR INTERVAL 10 AND 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Figure 4.–Detailed surficial geologic map of an area of complex faulting between Hobbs Reservoir and Holmes Reservoir northeast of East Layton, Utah. Outline of figure is shown and geologic units and symbols are explained on main geologic map.

PRELIMINARY SURFICIAL GEOLOGIC MAP OF THE WEBER SEGMENT, WASATCH FAULT ZONE, WEBER AND DAVIS COUNTIES, UTAH

By
Alan R. Nelson and Stephen F. Personius
1990

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1990

For sale by U.S. Geological Survey Map Distribution, Box 25286, Federal Center, Denver, CO 80225