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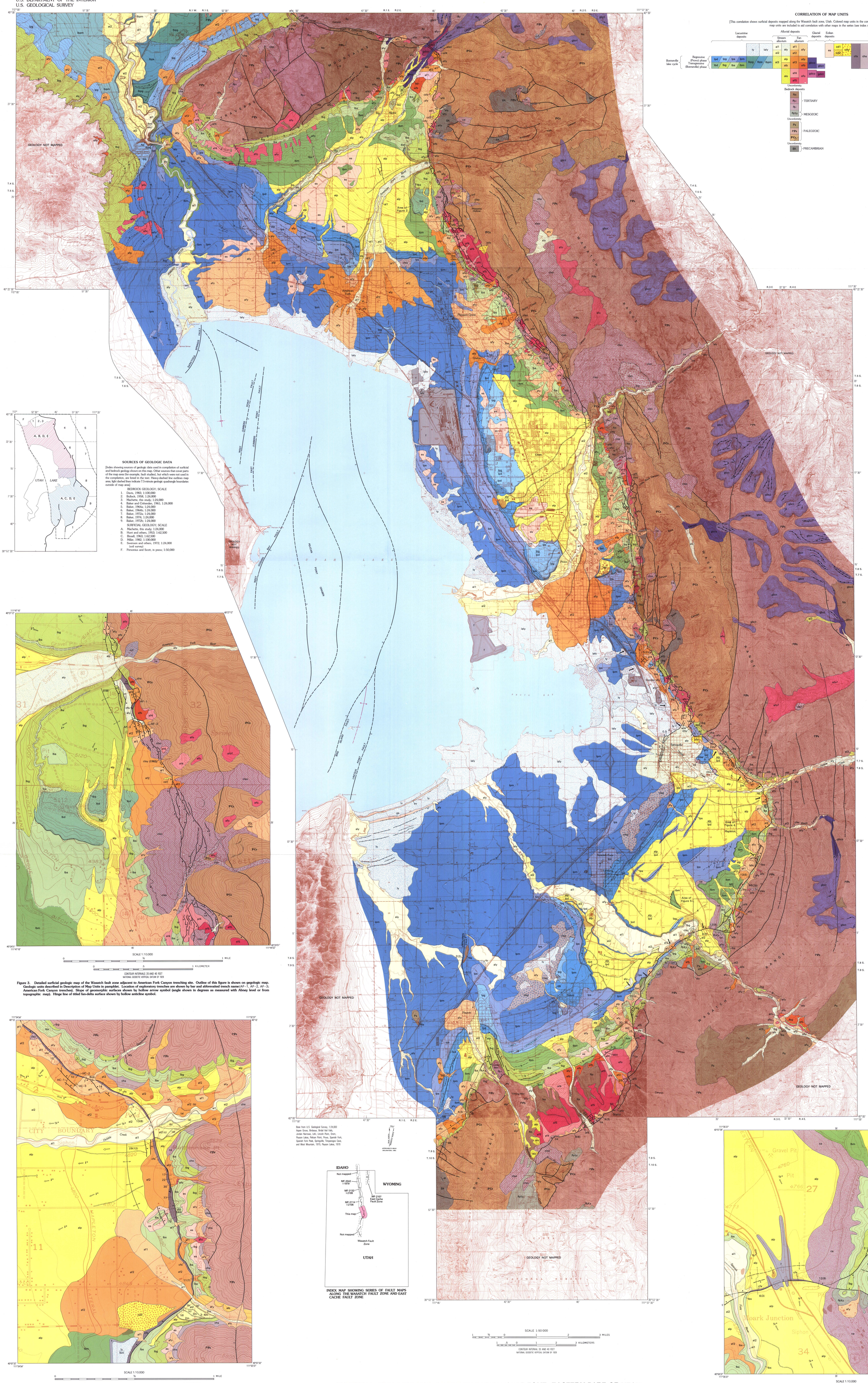
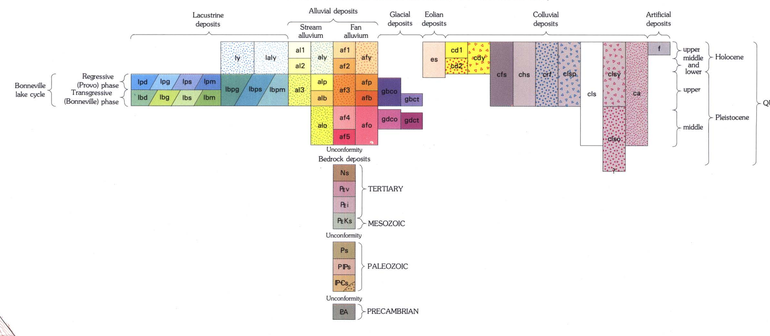
MISCELLANEOUS INVESTIGATIONS SERIES
MAP I-2095
Explanatory pamphlet accompanies map



CORRELATION OF MAP UNITS

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



LIST OF MAP UNITS

[See Description of Map Units in pamphlet for detailed descriptions of units]

LACUSTRINE DEPOSITS

Deposits younger than the Bonneville Lake Cycle (Holocene to upper Pleistocene)

- ly — Younger lacustrine and marsh deposits
- laly — Lacustrine, marsh, and alluvial deposits, undivided

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

- lpd — Deltaic deposits
- lpg — Lacustrine gravel
- lps — Lacustrine sand
- lpm — Lacustrine silt and clay

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

- lbd — Deltaic deposits
- lbg — Lacustrine gravel
- lbs — Lacustrine sand
- lbm — Lacustrine silt and clay

Deposits of the Bonneville lake cycle, undivided by phase (upper Pleistocene)

- lbpg — Lacustrine gravel
- lbps — Lacustrine sand
- lbpm — Lacustrine silt and clay

ALLUVIAL DEPOSITS

Deposits of stream alluvium

- al1 — Stream alluvium, unit 1 (upper Holocene)
- al2 — Stream alluvium, unit 2 (middle Holocene to uppermost Pleistocene)
- aly — Younger stream alluvium, undivided (Holocene to uppermost Pleistocene)
- alp — Stream alluvium related to the Provo phase of the Bonneville lake cycle (uppermost Pleistocene)
- alb — Stream alluvium related to the Bonneville phase of the Bonneville lake cycle (upper Pleistocene)
- al3 — Stream alluvium unit 3, related to undifferentiated phases of the Bonneville lake cycle (upper Pleistocene)
- alo — Older stream alluvium, undivided (upper? to middle Pleistocene; probably pre-Little Valley lake cycle)

Alluvial-fan deposits

- af1 — Fan alluvium, unit 1 (upper Holocene)
- af2 — Fan alluvium, unit 2 (middle Holocene to uppermost Pleistocene)
- afy — Younger fan alluvium, undivided (Holocene to uppermost Pleistocene)
- afp — Fan alluvium related to the Provo phase of the Bonneville lake cycle (uppermost Pleistocene)
- afb — Fan alluvium related to Bonneville phase of the Bonneville lake cycle (upper Pleistocene)
- af3 — Fan alluvium unit 3, related to undivided phases of the Bonneville lake cycle (upper Pleistocene)
- af4 — Fan alluvium, unit 4 (upper to middle Pleistocene; pre-Bonneville lake cycle)
- af5 — Fan alluvium, unit 5 (middle Pleistocene; pre-Little Valley lake cycle)
- afo — Older fan alluvium, undivided (upper to middle Pleistocene; pre-Bonneville lake cycle)

GLACIAL DEPOSITS

- gbco — Outwash of the Bells Canyon advance (upper Pleistocene, Pinedale equivalent)
- gbct — Till of the Bells Canyon advance (upper Pleistocene, Pinedale equivalent)
- gdco — Outwash of the Dry Creek advance (uppermost middle Pleistocene, Bull Lake equivalent)
- gdct — Till of the Dry Creek advance (uppermost middle Pleistocene, Bull Lake equivalent)

EOLIAN DEPOSITS

- es — Eolian sand and silt (Holocene to uppermost Pleistocene)

COLLUVIAL DEPOSITS

- cd1 — Debris flows, unit 1 (upper Holocene)
- cd2 — Debris flows, unit 2 (middle Holocene to uppermost Pleistocene)
- cdy — Debris flows, undivided (Holocene to uppermost Pleistocene)
- cfs — Fault-scarp colluvium (Holocene to uppermost Pleistocene)
- chs — Hillslope colluvium (Holocene to upper Pleistocene)
- crf — Rockfall deposits (Holocene to upper Pleistocene)
- clsp — Lateral-spread deposits (Holocene to upper Pleistocene)
- clsy — Younger landslide deposits (Holocene to upper Pleistocene)
- clso — Older landslide deposits (upper Pleistocene to upper Tertiary?)
- ca — Colluvium and alluvium, undivided (Holocene to middle Pleistocene)

ARTIFICIAL DEPOSITS

- f — Artificial fill and associated disturbed ground (historic)

BEDROCK

- Ns — Neogene sedimentary rocks
- Pzv — Paleogene volcanic rocks
- Pzi — Paleogene intrusive rocks
- PzKs — Paleogene and Upper Cretaceous sedimentary rocks, undivided
- Ps — Paleozoic sedimentary rocks, upper part (Lower Permian)
- PPs — Paleozoic sedimentary rocks, middle part (Lower Permian and Pennsylvanian)
- PCs — Paleozoic sedimentary rocks, lower part (Lower Pennsylvanian, Mississippian, Devonian, and Cambrian)—Stipple pattern indicates Manning Canyon Shale
- ꟼA — Proterozoic and Archean rocks (Precambrian)

Contact—Solid where well located or defined; dashed where approximately located; dotted where concealed

Gradational contact—Contact between two units that intertongue or between two differentiated units (such as af1 and af2) and its undifferentiated counterpart (afy)

Normal fault—Bar and solid ball on down-dropped side along Wasatch fault zone; bar and hollow ball along other faults. Dashed where approximately located; dotted where concealed. Height of fault scarp and amount of offset of geomorphic surface (in parentheses) shown in meters. Location of exploratory trenches shown by following symbols: AF, American Fork Canyon; RC, Rock Creek; DH, Deadmans Hollow; HC, Hobble Creek; MN, Mapleton North; MS, Mapleton South; WC, Water Canyon; and WH, Woodland Hills

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

Anticline—Solid arrows show folded lake beds as indicated by geophysical surveys of Utah Lake. Hollow arrows show anticline in surficial units

Syncline—Solid arrows show folded lake beds as indicated by geophysical surveys of Utah Lake. Hollow arrows show syncline in surficial units

Dip and strike of deformed Neogene fanglomerate (unit Ns)

Major, continuous or prominent shorelines related to levels of the Bonneville lake cycle and its successor, Utah Lake—May coincide with contact, topographic escarpment, or topographic crest of lacustrine bar or spit

Highest shoreline of the Bonneville (transgressive) phase

Other shorelines of the Bonneville phase—Mostly transgressive

Highest shoreline of the Provo (regressive) phase—Dotted where buried by younger units or removed by erosion

Other shorelines below the highest Provo shoreline—Mostly of the Provo phase, but may include some shorelines of the Bonneville (transgressive) phase

Shorelines of Utah Lake

Topographic crest of lacustrine bar or spit

Topographic crest of lateral- or terminal-glacial moraine (units gbct and gdct)

Topographic escarpment—Escarpment along stream channels, terraces, and deltas; formed primarily by fluvial processes. Where escarpment coincides with the contact between map units, points face upslope; dashed where approximately located; queried where position of escarpment is poorly located. Height of escarpment (in meters) shown in selected areas

Landslide escarpment—Major headscarp and (or) fissure in landslide (unit clsy or clso) or lateral spread (unit clsp) deposit; may coincide with geologic contacts

Paleostream channel—Preserved margin of abandoned stream channel or debris-flow levee. Half-head of arrow on outer edge of feature

Broadly tilted geomorphic surface—Arrow points in general direction of downwarp

SOURCES OF GEOLOGIC DATA

[Index showing sources of geologic data used in compilation of surficial and bedrock geology shown on this map. Other sources that cover parts of the map area (for example, fault studies), but which were not used in the compilation, are listed in the text. Heavy-dashed line outlines map area; light dashed lines indicate 7.5-minute geologic quadrangle boundaries outside of map area]

BEDROCK GEOLOGY; SCALE

1. Davis, 1983; 1:100,000
2. Bullock, 1958, 1:24,000
3. Machette, this study; 1:24,000
4. Baker and Crittenden, 1961; 1:24,000
5. Baker, 1964a; 1:24,000
6. Baker, 1964b; 1:24,000
7. Baker, 1972a; 1:24,000
8. Baker, 1974; 1:24,000
9. Baker, 1972b; 1:24,000

SURFICIAL GEOLOGY; SCALE

A. Machette, this study; 1:24,000
B. Hunt and others, 1953; 1:62,500
C. Bissell, 1963; 1:62,500
D. Miller, 1982; 1:100,000
E. Swenson and others, 1972; 1:24,000 (soil survey)
F. Personius and Scott, in press; 1:50,000

Figure 3. Detailed surficial geologic map of the Wasatch fault zone adjacent to American Fork Canyon trenching site. Outline of this figure is shown on gegologic map. Geologic units described in Description of Map Units in pamphlet. Location of exploratory trenches are shown by bar and abbreviated trench name (AF–1, AF–2, AF–3; American Fork Canyon trenches). Slope of geomorphic surfaces shown by hollow arrow symbol (angle shown in degrees as measured with Abney level or from topographic map). Hinge line of titled fan-delta surface shown by hollow anticline symbol.

Figure 4. Detailed surficial geologic map of the Wasatch fault zone adjacent to Hobble Creek and Deadmans Hollow study areas. Outline of this figure shown on geologic map. Geologic units described in Description of Map Units in pamphlet. Location of exploratory trenches west of Deadmans Hollow are shown by bar and abbreviated trench name (HC–1, HC–2, HC–3; Swan and others, 1980, fig. 6). Lines of traverse show scarp height and (or) surface offset values (in parentheses) in meters. Slope of geomorphic surfaces shown by hollow arrow symbol (angle shown in degrees as measured with Abney level or from topographic map). Hinge line of titled fan-delta surface shown by hollow anticline symbol. Tectonic terraces along the two major streams are designated as subsets of unit al2 (a (low) to d (high)); height between successive terraces shown in meters.

Base from U.S. Geological Survey, 1:24,000
Aspen Grove, Birdseye, Bridal Veil Falls, Jordan Narrows, Lehi, Lincoln Point, Orem, Payson Lakes, Pelican Point, Provo, Spanish Fork, Spanish Fork Peak, Springville, Timpanogos Cave, and West Mountain, 1975; Payson Lakes, 1979

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

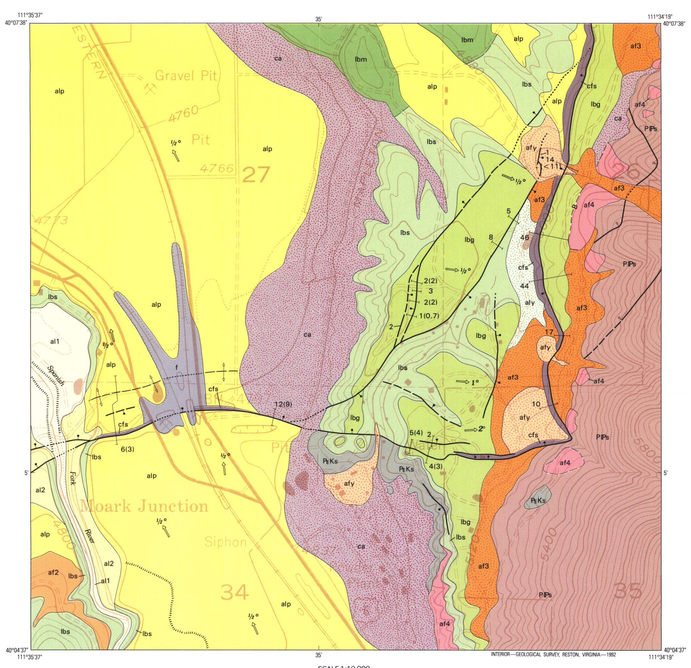


Figure 5. Detailed surficial geologic map of the Wasatch fault zone adjacent to Spanish Fork Canyon study area. Outline if this figure shown on geologic map. Geologic units described in Description of Map Units in pamphlet. Lines of traverse show scarp height and (or) surface offset values (in parentheses) in meters. Slope of geomorphic surfaces shown by hollow arrow symbol (angle shown in degrees as measured with Abney level or from topographic map). Hinge line of titled fan-delta surface shown by hollow anticline symbol

SURFICIAL GEOLOGIC MAP OF THE WASATCH FAULT ZONE, EASTERN PART OF UTAH VALLEY, UTAH COUNTY AND PARTS OF SALT LAKE AND JUAB COUNTIES, UTAH

By
Michael N. Machette
1992

Manuscript approved for publication, August 23, 1989

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