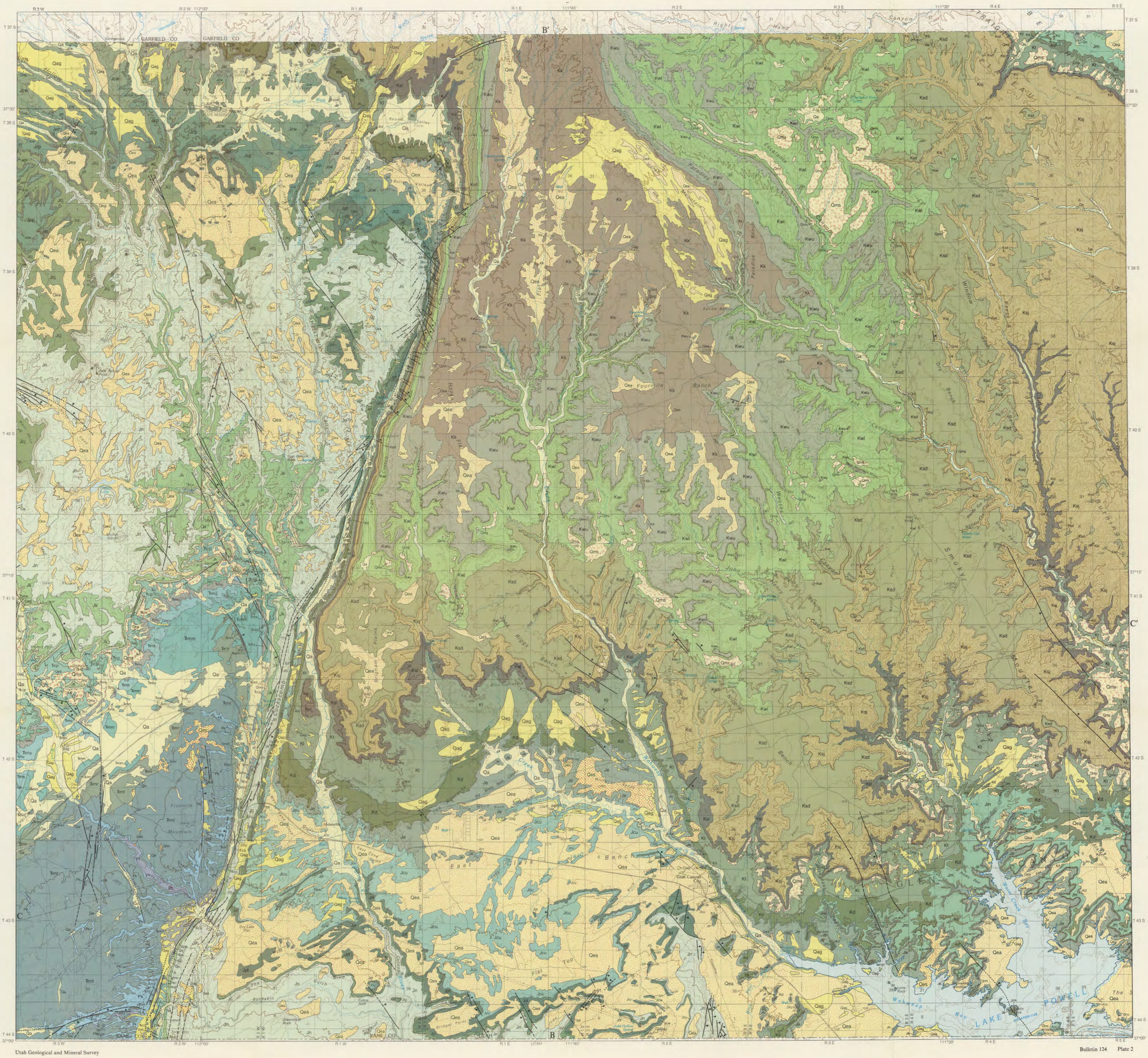
DIXIE NATIONAL FOREST
BRYCE CANYON NATIONAL PARK
KANE CO
GARFIELD CO
WASHINGTON CO
UTAH
A


B′
C′
C
B
GARFIELD CO
KANE CO
UTAH
Fourmile Bench
Smoky Mountain
Riggs Bench
East Clark Bench
Flat Top
Fivemile Mountain
Glen Canyon City
LAKE POWELL
Wahweap Bay
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
T37S
T38S
T39S
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112°00′
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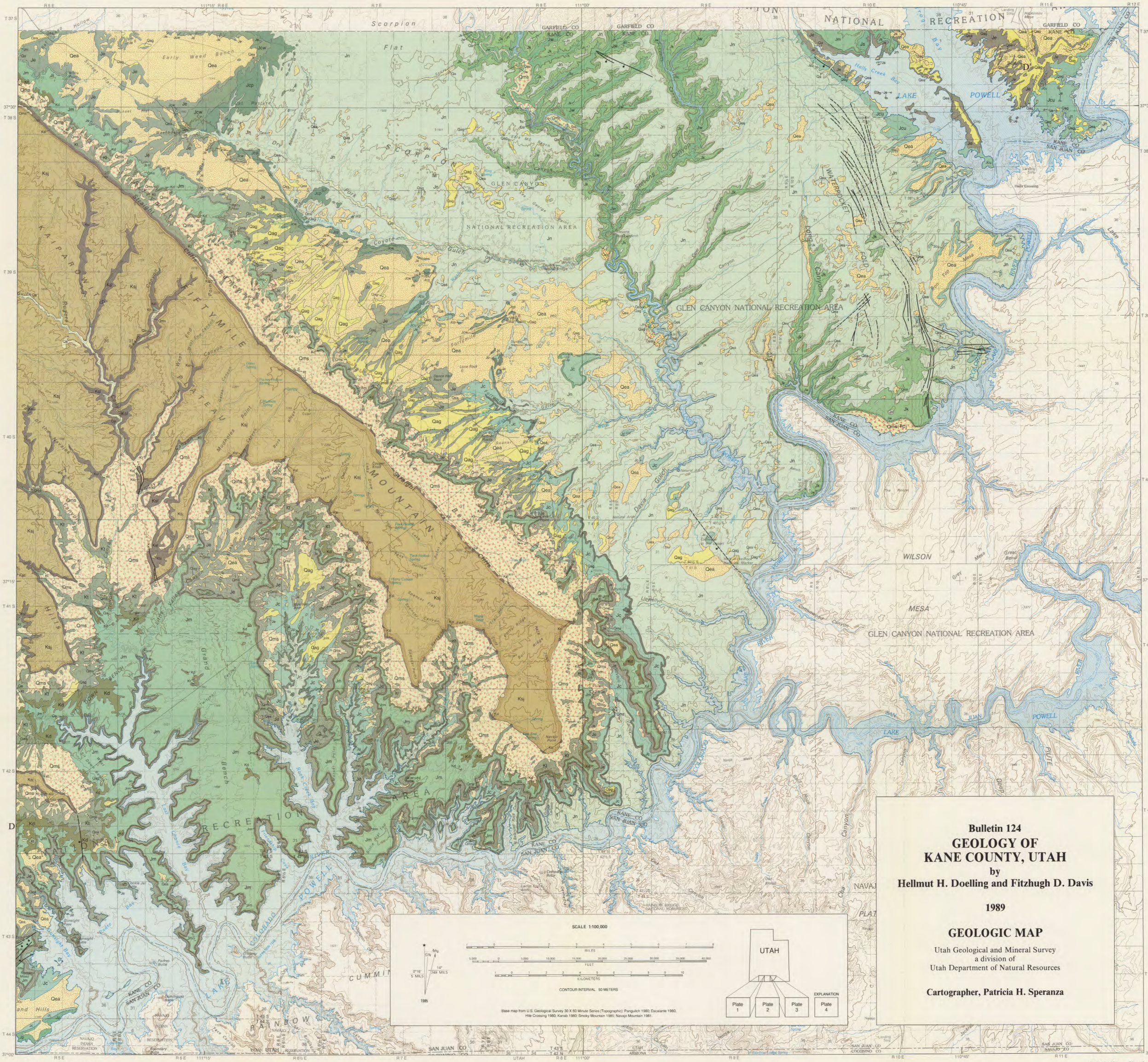
111°30′



Bulletin 124

GEOLOGY OF KANE COUNTY, UTAH

by

Hellmut H. Doelling and Fitzhugh D. Davis

1989

GEOLOGIC MAP

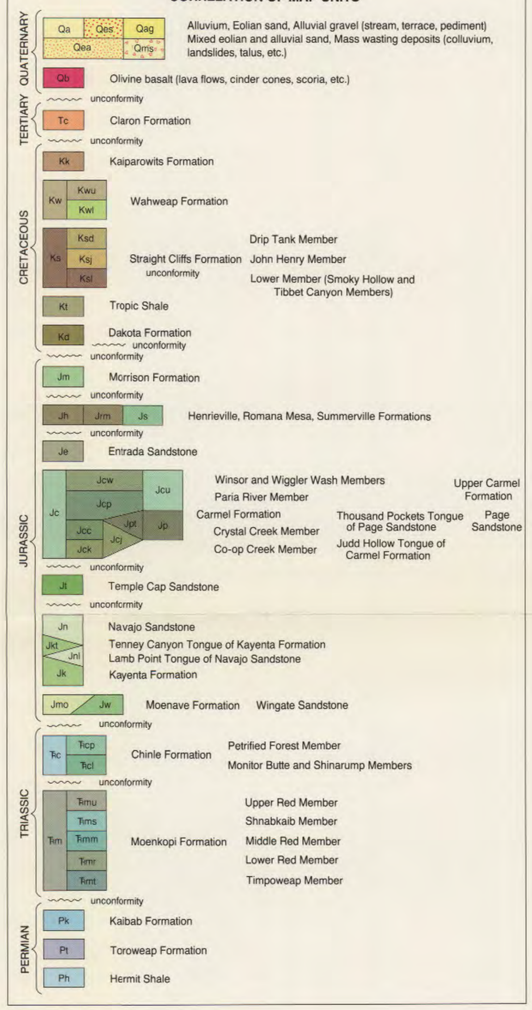
Utah Geological and Mineral Survey
a division of
Utah Department of Natural Resources

Cartographer, Patricia H. Speranza

FORMATION or MEMBER	MAP SYMBOL	THICKNESS IN FEET
Claron Formation	Tc	1300+
Kaiparowits Formation	Kk	400-2200
Wahweap Formation	Kwu Kwl	400-1700
Straight Cliffs Formation: Drip Tank Mbr	Ksd	85-1600: 140-550
Straight Cliffs Formation: John Henry Member	Ksj	85-1600: 590-1100
Straight Cliffs Formation: Smoky Hollow Mbr.	Ksl	85-1600: 24-234
Straight Cliffs Formation: Tibbet Canyon Mbr.		85-1600: 70-185
Tropic Shale	Kt	500-1000
Dakota Formation	Kd	3-450
Morrison Formation	Jm	0-700
Henrieve, Romana Mesa, Summerville	Jh Jrm Js	0-234
Entrada Sandstone: Escalante and Cannonville Members	Je	0-950+: 0-560
Entrada Sandstone: Lower "Slickrim" Gunsight Butte		0-950+: 0-570
Carmel Formation: Winsor & Wiggler Wash	Jcw	100-700: 0-350
Carmel Formation: Paria River Mbr.	Jcp	100-700: 50-230
Carmel Formation: Thousand Pockets Page	Jpt Jp	100-700: 0-200
Carmel Formation: Crystal Creek Judd Hollow	Jcc Jcj	100-700: 0-180 0-230
Carmel Formation: Co-op Creek	Jck	100-700: 0-250
Temple Cap Sandstone	Jt	0-150
Navajo Sandstone	Jn	950-2000
Tenney Canyon Tongue	Jkt	90-170
Lamb Point Tongue	Jnl	90-410
Kayenta Formation	Jk	190-340
Moenave Formation or Wingate Sandstone	Jmo Jw	260-435 240-400
Chinle Formation: Upper or Petrified Forest Member	Ticp	550-1000: 500-900
Chinle Formation: Lower or Shinarump	Ticl	550-1000: 0-155
Moenkopi Formation: Upper Red Mbr.	Trmu	±1035: ±125
Moenkopi Formation: Shnabkaib Mbr.	Trms	±1035: ±220
Moenkopi Formation: Middle Red Mbr.	Trmm	±1035: ±370
Moenkopi Formation: Virgin Limestone	Trmv	±1035: ±30
Moenkopi Formation: Lower Red Mbr.	Trml	±1035: ±220
Moenkopi Formation: Timpoweap Mbr.	Trmt	±1035: 20-120
Kaibab Formation	Pk	0-500
Toroweap-White Rim Coconino	Pt	260-450
Hermit Shale Organ Rock	Ph	106-624

LITHOLOGY

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Qa — Alluvium—*Mostly sand with lenses of silty clay, sandy silt, and gravel deposited in stream beds and adjacent floodplains, 0-120 feet.*

Qes — Eolian sand—*Sand in active dunes and sheets, mostly fine to medium grained, mostly of quartz, 0-100 feet.*

Qea — Mixed eolian and alluvial sand—*Mostly sand with minor amounts of clay, silt, or gravel, 0-100 feet.*

Qag — Alluvial gravel—*Poorly to well-sorted gravel and sand with interlayers of silt and mud in pediments and river terraces, 0-60 feet.*

Qms — Mass movements—*Includes rockfall, colluvium, talus, detrital masses, toreva blocks, landslides of all types, and landslide complexes, 0-250 feet.*

Qb — Olivine basalt—*Blocky lava flows, cinder cones, scoria, bombs, lapilli, cinders, ash, and dust, flows to 60 feet, cones to 300 feet.*

Tc — Claron Formation—*Upper part white limestone and dolomite, with subordinate yellow-gray, loosely cemented sandstone, tuffaceous sandstone, calcareous gray and reddish shales, and gray conglomerate; lower part mostly irregularly bedded pink or pink-stained limestone, mudstone, and conglomerate that weathers into cliffs and pinnacles usually overlying a basal conglomerate; total exposed unit is 1300+ feet.*

Kk — Kaiparowits Formation—*Drab gray mostly slope-forming arkosic sandstone, 400-2200 feet.*

Wahweap Fm.

Kw — Wahweap Formation—*Mostly gray to yellowish-gray interbedded mudstone, claystone, sandstone, siltstone and conglomerate; brown fine- to medium-grained sandstone; forms cliffs and ledges; not divisible west of the Kaiparowits Plateau, 400-1700 feet.*

Kwu — Upper member—*Light gray, grayish orange, and yellowish-brown, fine- to medium-grained sandstone; forms cliffs and ledges; 150-800 feet.*

Kwl — Lower member—*Interbedded yellowish-gray and yellowish-brown sandstone, shale, and siltstone; mostly slope former; 250-900 feet.*

Straight Cliffs Fm.

Ks — Straight Cliffs Formation—*Yellow-gray, very fine to fine-grained, poorly sorted, medium- to thick-bedded, cliff-forming, calcareous sandstone interbedded with thin-bedded dark yellow-brown, less resistant sandstone and gray to brown shale or mudstone; the unit cannot be divided into members west of the Kaiparowits Plateau; 85-1600 feet.*

Ksd — Drip Tank Member—*Yellow-gray and yellow-brown fine- to medium-grained, lenticular sandstone; 140-550 feet.*

Ksj — John Henry Member—*Yellow-gray slope- and ledge-forming sandstone, mudstone, carbonaceous mudstone, and coal; contains the major coal resources of the Kaiparowits Plateau; 590-1100 feet.*

Ksl — Lower Member—*Interbedded white and gray sandstone, mudstone, carbonaceous mudstone and coal (Smoky Hollow Member) 24-234 feet; underlain by yellowish gray to brown, cliff-forming sandstone (Tibbet Canyon Member) 70-185 feet.*

Kt — Tropic Shale—*Dark gray, drab marine shale with subordinate gray sandstone; 500-1000+ feet.*

Kd — Dakota Formation—*Interbedded sandy shale, carbonaceous shale, shaly sandstone, conglomerate and coal, contains the major coal resources of the Paunsaugunt and Markagunt Plateaus, basal conglomerate may be Lower Cretaceous in age; 3-450 feet.*

Jm — Morrison Formation—*Gray, yellow, and brown cliff-forming lenticular conglomeratic sandstone and sandstone, subordinate green, gray or purple mudstone (Salt Wash Member); unit only exposed in eastern Kane County; 0-700 feet.*

Jh — Henrieville Sandstone—*Upper part consists of white and yellowish-white horizontally bedded sandstone, shale, siltstone and claystone; forms steep slopes and cliffs; unit exposed only between Cannonville and Cottonwood Canyon; 0-234 feet.*

Jrm — Romana Mesa Sandstone—*Grayish-yellow green, yellowish-gray, or light tan very fine- to fine-grained cliff-forming sandstone; unit is exposed only along the southeastern margins of the Kaiparowits Plateau; 0-145 feet.*

Js — Summerville Formation—*Brown with some white alternating thin to medium even beds of siltstone, shale, mudstone, and fine-grained sandstone; cliff forming; exposed only in extreme eastern part of Kane County; about 145 feet.*

Je — Entrada Sandstone—*Upper part (Escalante and Cannonville Members) is mostly reddish-brown, fine-grained sandstone; upper part is cliffy, lower part is non-resistant and often covered with sandy alluvium; earthy weathering and eolian facies; 0-560 feet; lower part (Gunsight Butte Member) is fine-grained sandstone forming smooth "slickrim" erosional forms and cliffs; orange-brown in north, yellowish gray in south; 0-570 feet. The Entrada Sandstone is missing in western exposures.*

Jc — Carmel Formation—*Earthy weathering sandstone and siltstone, limestone and shaly limestone, gypsum; 100-700 feet.*

Carmel Fm.

Jcw — Winsor and Wiggler Wash Members—*Reddish or yellow slope-forming and earthy weathering silty sandstone, 0-230 feet; between Cannonville and Cottonwood Canyon includes the overlying Wiggler Wash Member, reddish and lavender siltstone and earthy weathering sandstone, and gypsum, 0-75 feet.*

Jcp — Paria River Member—*Gypsum, reddish siltstone and sandstone, with white chippy limestone at top, rests on Thousand Pockets Tongue of Page Sandstone in central Kane County and on Crystal Creek Member to west; 50-230 feet.*

Jcu — Upper member—*Upper part mostly reddish or brown slope-forming and earthy weathering silty sandstone or siltstone intercalated with sporadic irregular beds of white calcareous fine-grained sandstone, locally gypsiferous, includes Wiggler Wash and Winsor Members of western sections, 60-150 feet; lower part mostly dark-reddish siltstone or silty sandstone with a few tan or brown fine-grained sandstone beds capped by silty or sandy white or pink, chippy weathering limestone (Paria River Member); 50-70 feet.*

Jpt — Thousand Pockets Tongue—*Yellow, white or brown massive crossbedded sandstone, often with thin reddish siltstone intercalation, overlies Judd Hollow Tongue and Paria River Member of Carmel Formation in central Kane County; 0-250 feet.*

Jp — Page Sandstone—*Mostly fine- to medium-grained, quartzose, crossbedded eolian sandstone; dark-reddish basal siltstone or silty sandstone locally present; unconformably overlies the similar-appearing Navajo Sandstone, present only in eastern part of Kane County; 30-250 feet.*

Jcc — Crystal Creek Member—*Brown-banded earthy weathering sandstone; 0-180 feet.*

Jck — Co-op Creek Member—*Thin- to medium-bedded light-gray limestone and tan limestone shale; 0-250 feet.*

Jcj — Judd Hollow Tongue—*Interbedded sandstone, siltstone, and minor reddish and lavender limestone (Crystal Creek and Co-op Creek Members of western Kane County), exposed only along the southern part of the Cockscomb and as far east as Lake Powell; 0-230 feet.*

Jt — Temple Cap Sandstone—*Light crossbedded cliff-forming sandstone with a few intercalations of dark-reddish siltstone (White Throne Member) and a prominent dark-reddish siltstone and silty sandstone at the base (Sinawava Member), unconformably underlies the Co-op Creek Member and unconformably overlies the Navajo Sandstone in western Kane County; 0-150 feet.*

Jn — Navajo Sandstone—*White, pink, and brown, highly crossbedded sandstone that forms cliffs, domes and bare rock outcrops, excellent aquifer; 950-2000 feet.*

Jkt — Tenney Canyon Tongue of Kayenta Formation—*Slope-forming reddish brown siltstone, mudstone, and fine-grained sandstone; 90-170 feet.*

Jnl — Lamb Point Tongue of Navajo Sandstone—*White or light gray highly cross-bedded cliff-forming sandstone, excellent aquifer; 90-410 feet.*

Jk — Kayenta Formation—*Ledge- and slope-forming lenticular sandstone, siltstone, limestone, and intraformational conglomerate. Mostly reddish, but lavender, white, and brown sandstones common; 190-340 feet.*

Jmo — Moenave Formation—*Reddish flat-bedded fine-grained sandstone and siltstone, thin to thick cliff-forming beds, present only in west half of county; 260-435 feet.*

Jw — Wingate Sandstone—*Reddish-orange or brown cliff-forming massive sandstone; present only in eastern Kane County; 240-400 feet.*

Chinle Fm.

Ticp — Upper member (Petrified Forest Member)—*Varicolored, banded, slope-forming mudstone, claystone, sandstone, siltstone, limestone, and conglomerate, locally contains abundant petrified wood; 500-900 feet.*

Ticl — Lower member (Monitor Butte and Shinarump Members)—*Conglomeratic sandstone, sandstone, mudstone; lenticular and cliffy; 0-155 feet.*

Moenkopi Fm.

Trmu — Upper red member—*Dark brown fine-grained sandstone in thin to thick cliffy beds; about 125 feet.*

Trms — Shnabkaib Member—*Light-brown and white earthy weathering sandstone, siltstone, and gypsum; about 220 feet.*

Trmm — Middle red member—*Light reddish-brown, lightly banded, fine-grained gypsiferous and earthy weathering sandstone; about 370 feet.*

Trmv — Lower red member—*Reddish fine-grained slope-forming sandstone and siltstone capped by 30 feet of tan, platy to thin-bedded, ledge-forming, calcareous sandstone (Virgin Limestone Member); about 250 feet.*

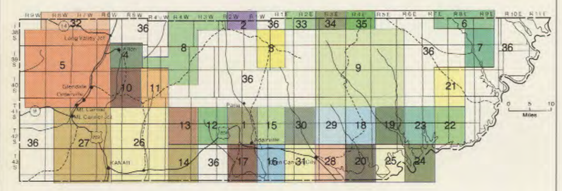
Trmt — Timpoweap Member—*Hard limestone, sandstone, siltstone, chert breccia; 20-120 feet.*

Pk — Kaibab Formation—*Thick to massive cliff-forming fossiliferous and cherty limestone. (Mostly subsurface); 0-500 feet.*

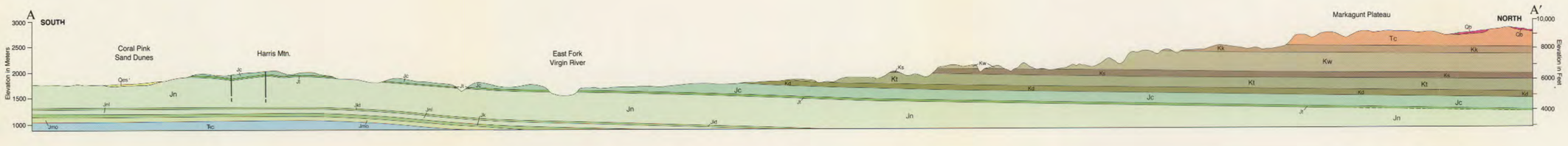
Pt — Toroweap Formation—*Cyclic limestone, dolomite, anhydrite and gypsum, and sandstone (mostly subsurface), in the subsurface includes Coconino and White Rim Sandstones; 260-450 feet.*

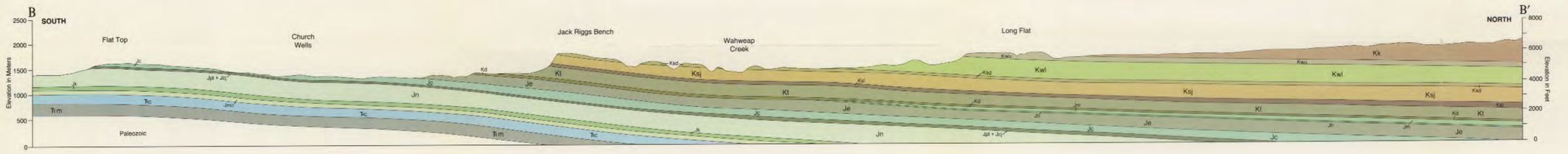
Ph — Hermit Formation-Organ Rock Shale—*Reddish-brown silty sandstone (mostly subsurface); 106-624 feet.*

GEOLOGIC MAP SOURCES



1. Blakey, R. C., 1970, Geology of the Paria northwest quadrangle, Kane County, Utah: University of Utah M. S. thesis.
2. Bowers, W. E., 1975, Geologic map and coal resources of the Henrieville quadrangle, Garfield and Kane Counties, Utah: U. S. Geological Survey Map C-74.
3. Bowers, W. E., 1983, Geologic map and coal sections of the Butler Valley quadrangle, Kane County, Utah: U. S. Geological Survey Map C-95.
4. Cashion, W. B. Jr., 1961, Geology and fuels resources of the Orderville-Glendale area, Kane County, Utah: U. S. Geological Survey Map C-49.
5. Cashion, W. B. Jr., 1967, Geologic map of the south flank of the Markagunt Plateau, northwest Kane County, Utah: U. S. Geological Survey Map I-494.
6. Davidson, E. S., 1967, Geology of the Circle Cliffs area, Garfield and Kane Counties, Utah: U. S. Geological Survey Bulletin 1229, pl. 2.
7. Detterman, J. S., 1955, Photogeologic map of the Navajo Mountain-4 quadrangle (Stevens Canyon South), Kane County, Utah: U. S. Geological Survey Map I-43.
8. Doelling, H. H., 1972, Alton coal field in Southwestern Utah Coal Fields: Utah Geological Survey Monograph 1, (parts of Bryce Point and Cannonville, all of Deer Spring Point, Rainbow Point, Podunk Creek quadrangles).
9. Doelling, H. H., and Graham, R. L., 1972, Kaiparowits Plateau coal field, *in* Southwestern Utah Coal Fields: Utah Geological and Mineral Survey Monograph 1 (Petes Cove, Collet Top, Basin Canyon, Needle Eye Point, East of the Navajo, and Ship Mountain Point Quadrangles).
10. Goode, H. D., 1973a, Preliminary geologic map of the Bald Knoll quadrangle, Utah: U. S. Geological Survey Map MF-520.
11. Goode, H. D., 1973b, Preliminary geologic map of the Skutumpah Creek quadrangle, Utah: U. S. Geological Survey Map MF-521.
12. Hackman, R. J., 1957a, Photogeologic map of the Buckskin Gulch NE quadrangle, Kane County, Utah: U. S. Geological Survey Map I-259.
13. Hackman, R. J., 1957b, Photogeologic map of the Buckskin Gulch NW quadrangle, Kane County, Utah: U. S. Geological Survey Map I-251.
14. Hackman, R. J., 1957c, Photogeologic map of the Buckskin Gulch SW quadrangle, Kane County, Utah and Coconino County, Arizona: U. S. Geological Survey Map I-244.
15. McQueen, Kathleen, 1958a, Photogeologic map of the Paria NE quadrangle, Kane County, Utah: U. S. Geological Survey Map I-266.
16. McQueen, Kathleen, 1958b, Photogeologic map of the Paria SE quadrangle, Kane County, Utah: U. S. Geological Survey Map I-265.
17. Olson, A. B., 1957, Photogeologic map of the Paria SW quadrangle, Kane County, Utah: U. S. Geological Survey Map I-263.
18. Peterson, Fred, 1967, Preliminary geologic map and coal deposits of the northwest quarter of the Gunsight Butte quadrangle, Kane County, Utah: Utah Geological and Mineral Survey Map 24-E.
19. Peterson, Fred, and Horton, G. W., 1967, Preliminary geologic map and coal deposits of the northeast quarter of the Gunsight Butte quadrangle, Kane County, Utah: Utah Geological and Mineral Survey Map 24-F.
20. Peterson, Fred, 1973, Geologic map of the southwest quarter of the Gunsight Butte quadrangle, Kane and San Juan Counties, Utah, and Coconino County, Arizona: U. S. Geological Survey Map MF-306.
21. Peterson, Fred, 1975, Geologic map of the Sooner Bench quadrangle, Kane County, Utah: U. S. Geological Survey Map I-874.
22. Peterson, Fred, and Barnum, B. E., 1973a Geologic map and coal resources of the northeast quarter of the Cummings Mesa quadrangle, Kane County, Utah: U.S. Geological Survey Map C-63.
23. Peterson, Fred, and Barnum, B. E., 1973b, Geologic map and coal resources of the northwest quarter of the Cummings Mesa quadrangle, Kane County, Utah: U. S. Geological Survey Map C-64.
24. Peterson, Fred, and Barnum, B. E., 1973c, Geologic map of the southwest quarter of the Cummings Mesa quadrangle, Kane and San Juan Counties, Utah, and Coconino County, Arizona: U. S. Geological Survey Map I-759.
25. Peterson, Fred, and Waldrop, H. A., 1967, Preliminary geologic map of the southeast quarter of the Gunsight Butte quadrangle, Kane and San Juan Counties, Utah, and Coconino County, Arizona: Utah Geological and Mineral Survey Map 24-G.
26. Sargent, K. A., and Philpott, B. C., 1985, Geologic map of the Johnson quadrangle, Kane County, Utah, and Coconino County, Arizona: U. S. Geological Survey Map GQ-1602.
27. Sargent, K. A., and Philpott, B. C., 1987, Geologic map of the Kanab quadrangle, Kane County, Utah, and Coconino County, Arizona: U. S. Geological Survey Map GQ-1603.
28. Waldrop, H. A., and Peterson, Fred, 1967, Preliminary geologic map of the southeast quarter of the Nipple Butte quadrangle, Kane County, Utah, and Coconino County, Arizona: Utah Geological and Mineral Survey Map 24-C.
29. Waldrop, H. A., and Sutton, R. L., 1967a, Preliminary geologic map and coal deposits of the northeast quarter of the Nipple Butte quadrangle, Kane County, Utah: Utah Geological and Mineral Survey Map 24-B.
30. Waldrop, H. A., and Sutton, R. L., 1967b, Preliminary geologic map and coal deposits of the northwest quarter of the Nipple Butte quadrangle, Kane County, Utah: Utah Geological and Mineral Survey Map 24-A.
31. Waldrop, H. A., and Sutton, R. L., 1967c, Preliminary geologic map and coal deposits of the southwest quarter of the Nipple Butte quadrangle, Kane County, Utah: Utah Geological and Mineral Survey Map 24-D.
32. Wilson, M. T., and Thomas, H. E., 1964, Hydrology and hydrogeology of Navajo Lake, Kane County, Utah: U. S. Geological Survey Professional Paper 417-C, pl. 1.
33. Zeller, H. D., 1973a, Geologic map and coal resources of the Death Ridge quadrangle, Garfield and Kane Counties, Utah: U. S. Geological Survey Map C-58.
34. Zeller, H. D., 1973b, Geologic map and coal resources of the Carcass Canyon quadrangle, Garfield and Kane Counties, Utah: U. S. Geological Survey Map C-56.
35. Zeller, H.D., and Stephens, E.V., 1973, Geologic map and coal resources of the Seep Flat quadrangle, Garfield and Kane Counties, Utah: U. S. Geological Survey Map C-65.
36. Unpublished mapping by compilers.





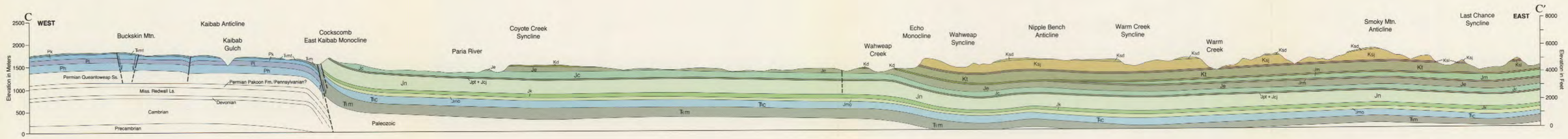
MAP SYMBOLS

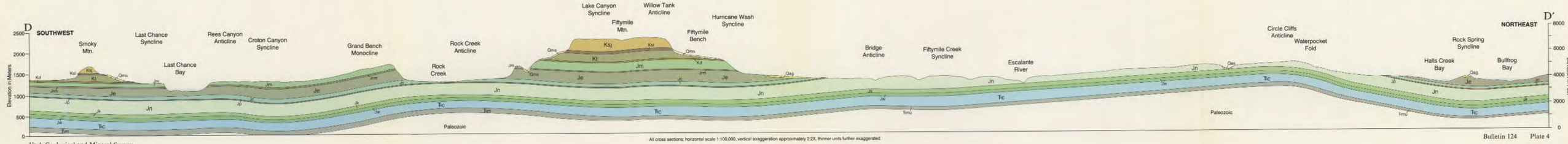
CONTACT
Dashed where inferred

FAULT
Dashed where inferred; dotted where covered; bar and ball on downthrown side

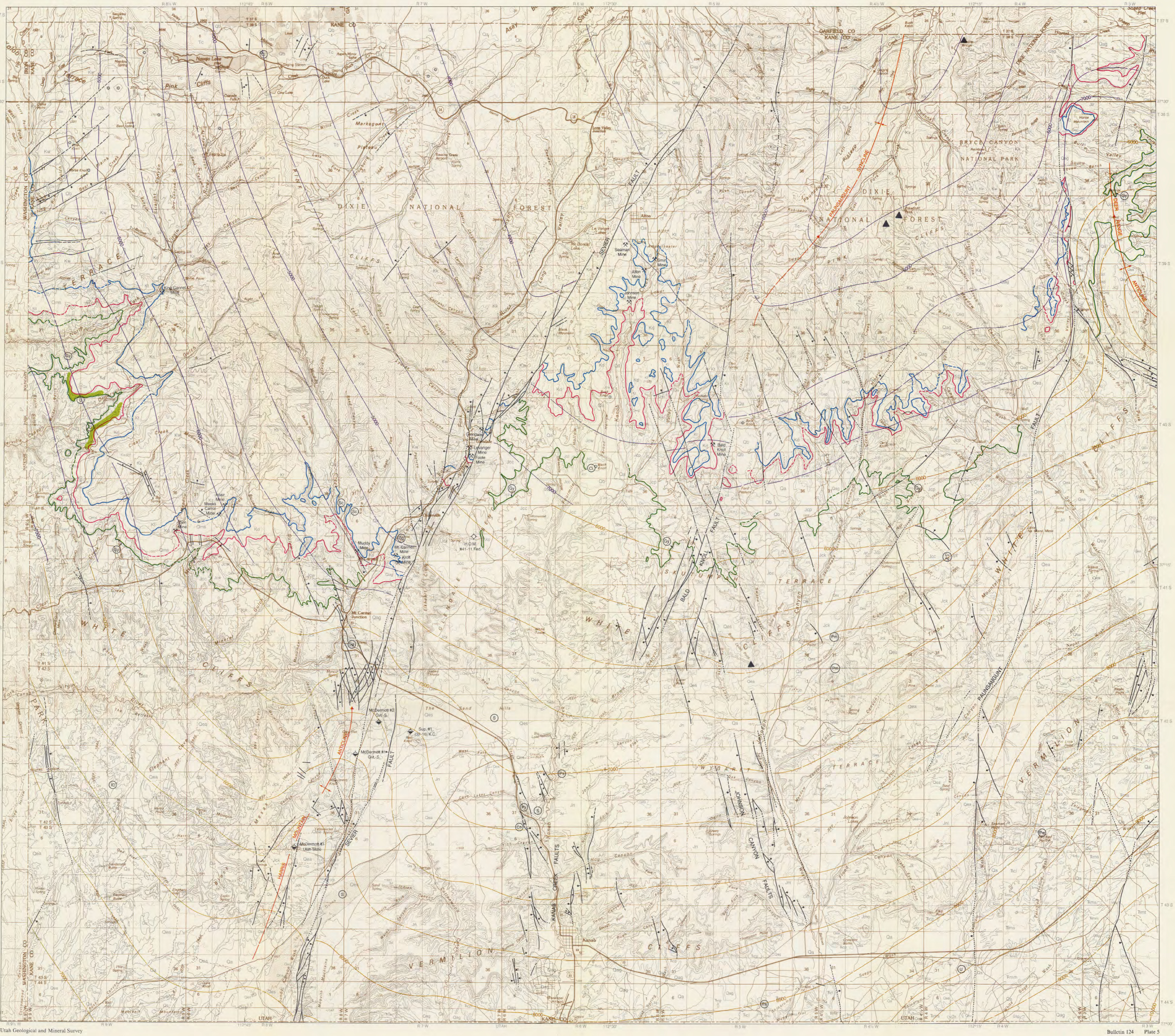
BASALTIC CINDER CONE

Arrows show direction of movement

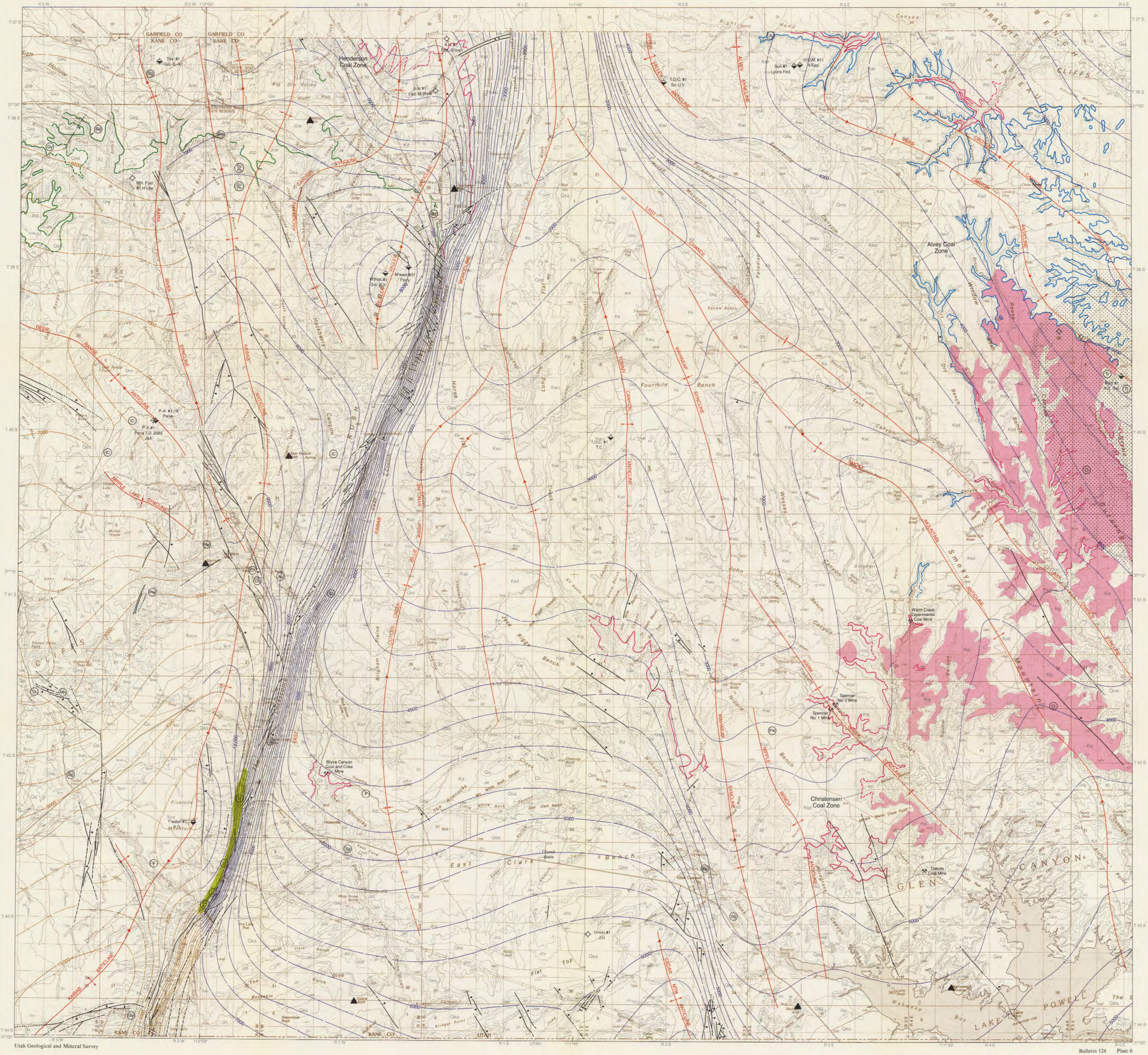




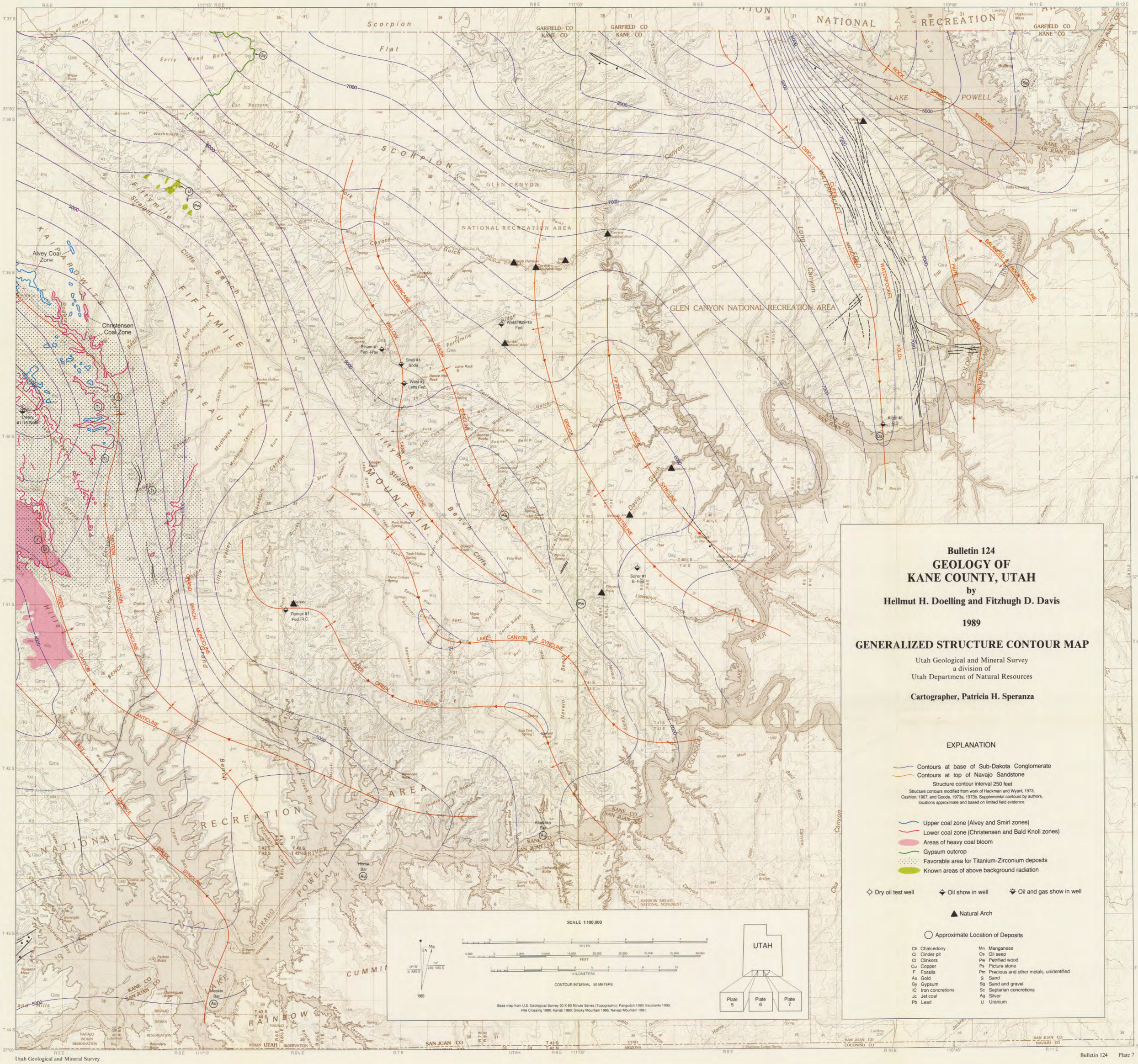
All cross sections; horizontal scale 1:100,000, vertical exaggeration approximately 2.2X, thinner units further exaggerated.

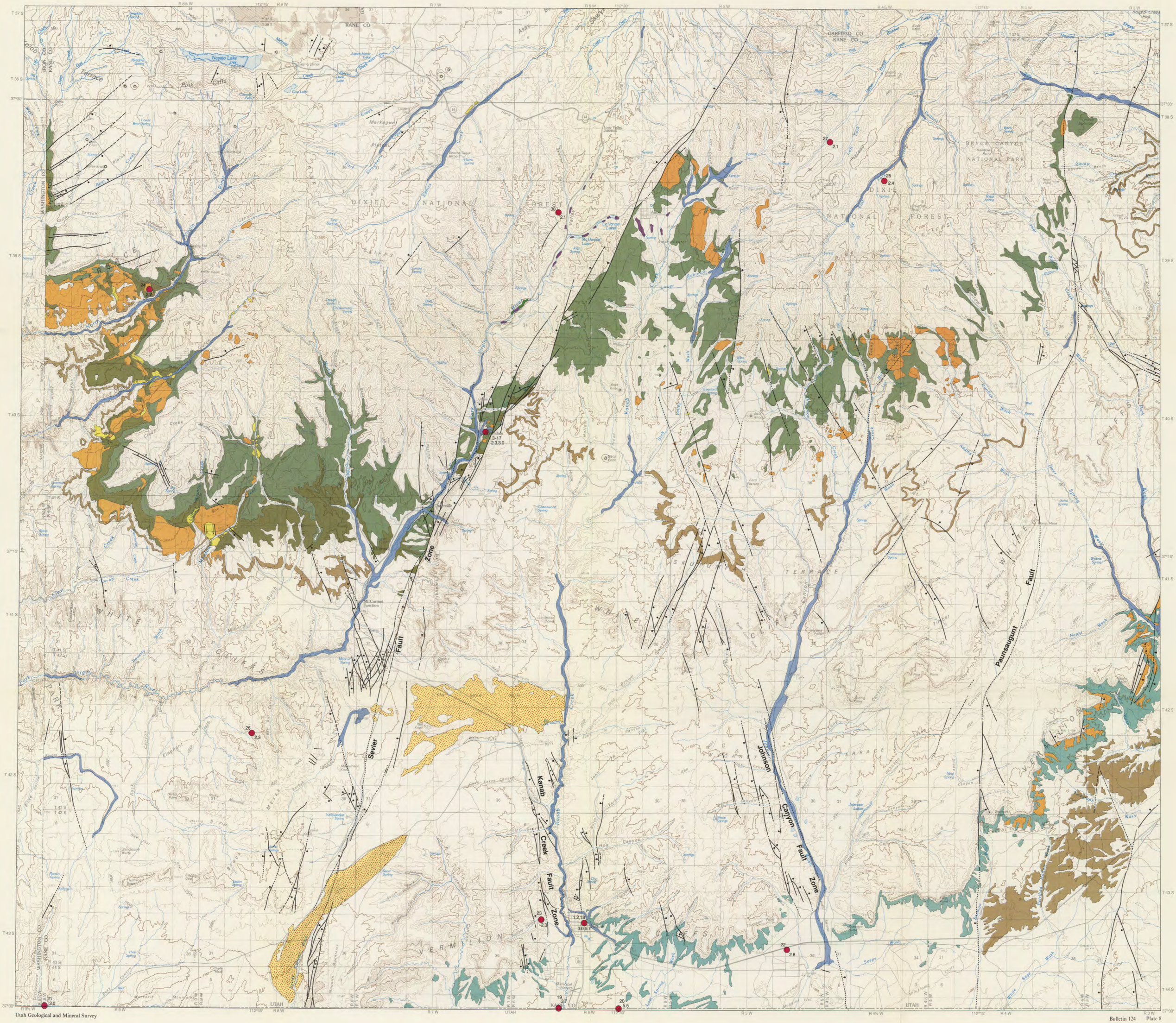


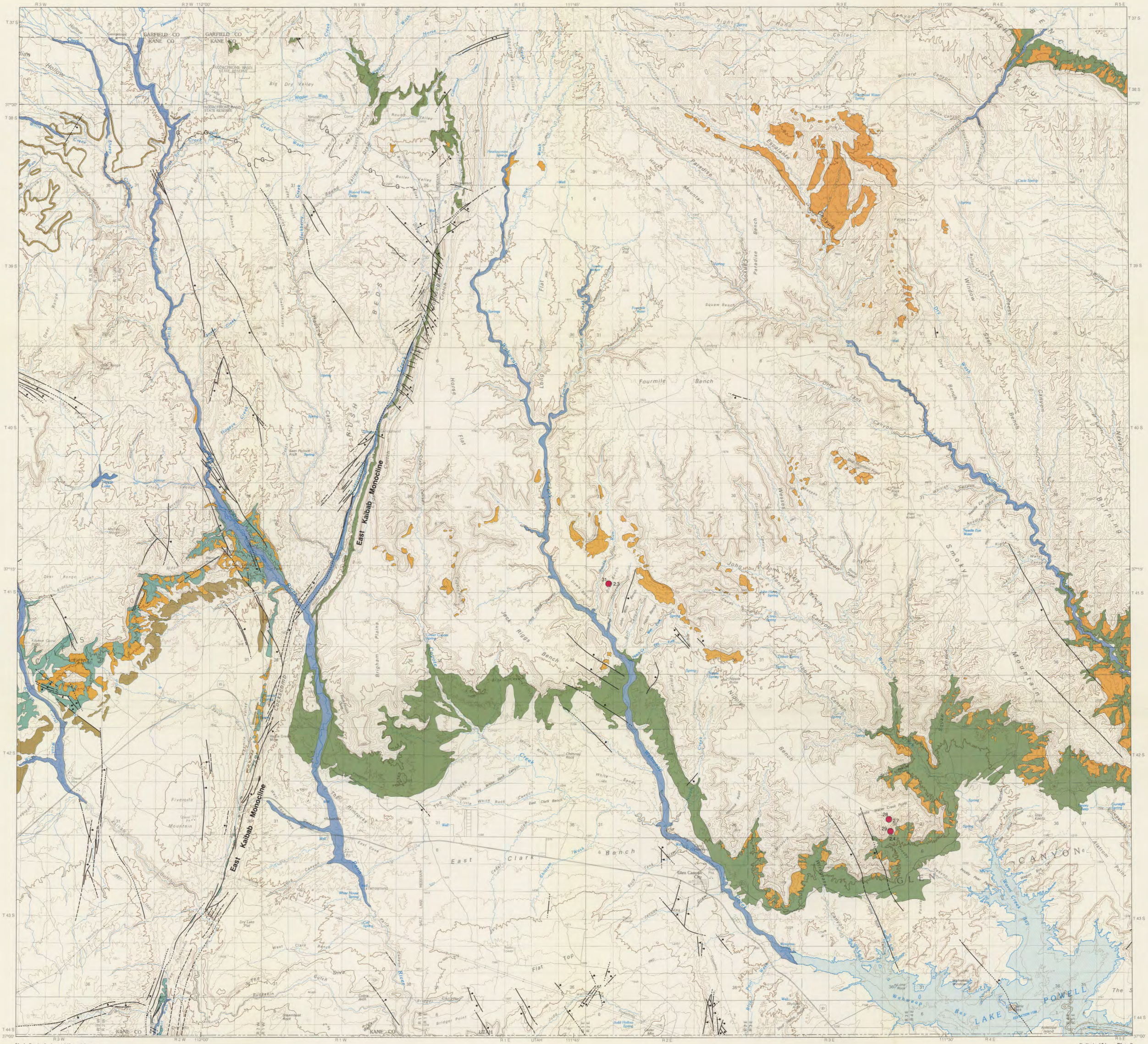
Utah Geological and Mineral Survey

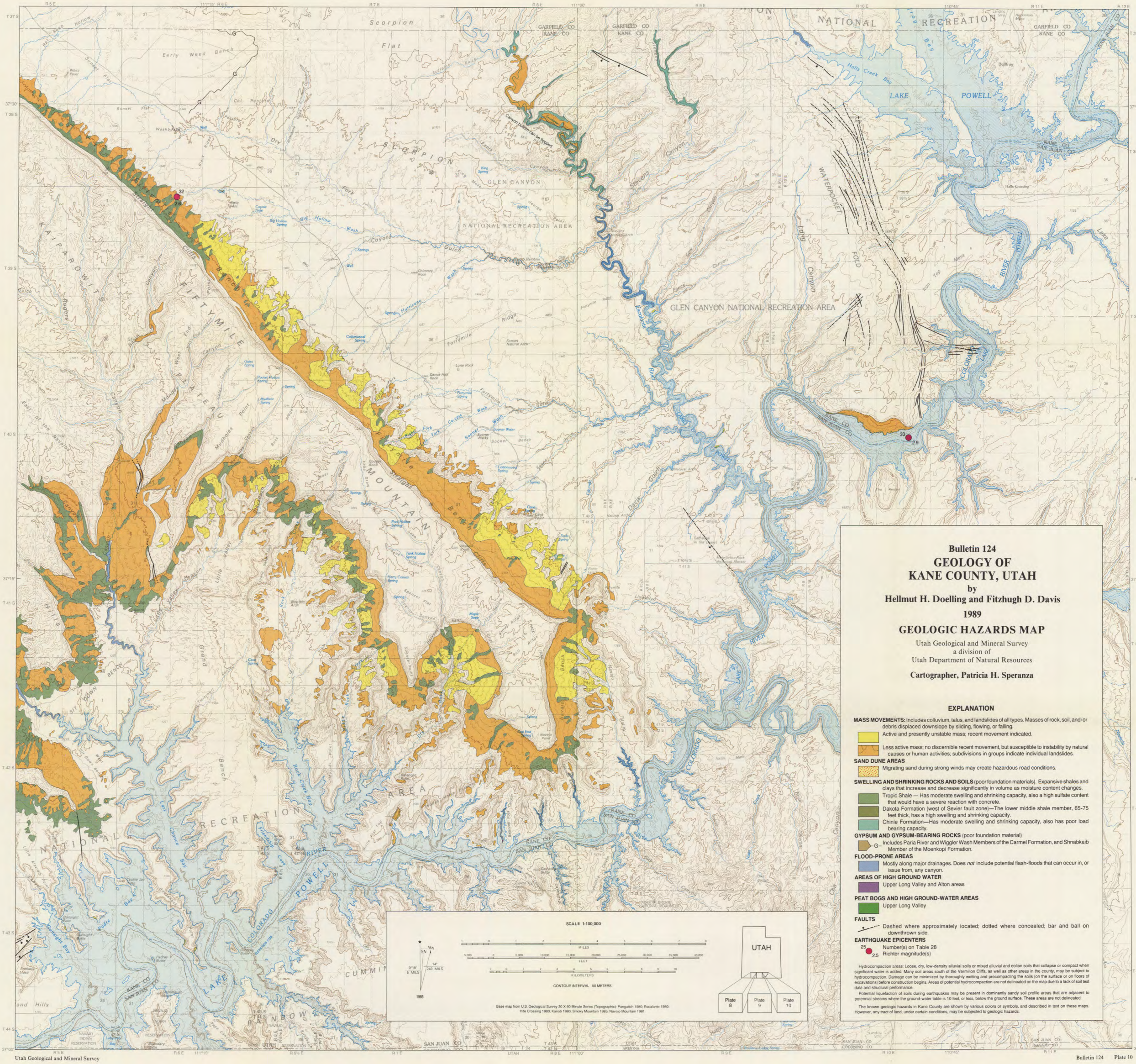


Henderson Coal Zone
Alvey Coal Zone
Christensen Coal Zone
Warm Creek Experimental Coal Mine
Spencer No. 2 Mine
Spencer No. 1 Mine
Bryce Canyon Coal and Coke Mine
Dakota Coal Mine
GARFIELD CO
KANE CO
UTAH


Bulletin 124
GEOLOGY OF
KANE COUNTY, UTAH
by
Hellmut H. Doelling and Fitzhugh D. Davis
1989
GENERALIZED STRUCTURE CONTOUR MAP
Utah Geological and Mineral Survey
a division of
Utah Department of Natural Resources
Cartographer, Patricia H. Speranza
EXPLANATION
Contours at base of Sub-Dakota Conglomerate
Contours at top of Navajo Sandstone
Structure contour interval 250 feet
Structure contours modified from work of Hackman and Wyant, 1973, Cashion, 1967, and Goode, 1973a, 1973b. Supplemental contours by authors, locations approximate and based on limited field evidence.
Upper coal zone (Alvey and Smirl zones)
Lower coal zone (Christensen and Bald Knoll zones)
Areas of heavy coal bloom
Gypsum outcrop
Favorable area for Titanium-Zirconium deposits
Known areas of above background radiation
Dry oil test well
Oil show in well
Oil and gas show in well
Natural Arch
Approximate Location of Deposits
Ch Chalcedony
Ci Cinder pit
Cl Clinkers
Cu Copper
F Fossils
Au Gold
Gy Gypsum
IC Iron concretions
Jc Jet coal
Pb Lead
Mn Manganese
Os Oil seep
Pw Petrified wood
Ps Picture stone
Pm Precious and other metals, unidentified
S Sand
Sg Sand and gravel
Sc Septarian concretions
Ag Silver
U Uranium
SCALE 1:100,000
MILES
FEET
KILOMETERS
CONTOUR INTERVAL 50 METERS
Base map from U.S. Geological Survey 30 X 60 Minute Series (Topographic): Panguitch 1980; Escalante 1980; Hite Crossing 1980; Kanab 1980; Smoky Mountain 1985; Navajo Mountain 1981.
UTAH
Plate 5
Plate 6
Plate 7
GLEN CANYON NATIONAL RECREATION AREA
LAKE POWELL
Alvey Coal Zone
Christensen Coal Zone
Scorpion Flat
SCORPION
FIFTYMILE MOUNTAIN
KAIPAROWITS PLATEAU
Fiftymile Bench
Straight Cliffs
Long Canyon
Davis Gulch
Lake Canyon
Navajo Valley
Rock Creek Bay
Last Chance Bay
Gunsight Bay
Rainbow Bridge National Monument
Cummings Mesa
Horse Bar
Meskin Bar
Klondike Bar
Romex #1 Fed.-R.C.
Soyer #1 B.-Fed.
Webb #28-13 Fed.
Sholl #1 Soda
West #1 Letts Fed.
Koch #1 F.D.
Cathedral in the Desert
Hole-in-the-Rock Bridge
Sunset Natural Arch
Stevens Natural Arch
Coyote Natural Bridge
Balanced Rock
Cathedral Butte
Carrot Top Arch
Gunsight Butte
Padre Butte
Dominguez Butte
Romana Mesa
Navajo Point
Llewellyn Point
Fiftymile Point
Bullfrog
Hoskinnini Mesa
Halls Crossing
Hite Crossing
Lake Powell
Colorado River
Kane Co
San Juan Co
Garfield Co
Navajo Indian Reservation
Utah
Arizona
Coconino Co
Navajo Co


Sevier Fault Zone
Kanab Creek Fault Zone
Johnson Canyon Fault Zone
Paunsaugunt Fault
DIXIE NATIONAL FOREST
BRYCE CANYON NATIONAL PARK
KANE CO
GARFIELD CO
WASHINGTON CO
IRON CO
UTAH
Navajo Lake
Pink Cliffs
Markagunt Plateau
Mt. Carmel Junction
Glendale
Orderville
Kanab
Johnson Lakes
Pink Cliffs Terrace
Vermilion Cliffs
White Cliffs
Skutumpah Terrace
Paunsaugunt Plateau
Sevier Plateau
Virgin River
Kanab Creek
Johnson Wash
Pine Knot Lake
Duck Lake
Cow Lake
Asay Benches
Sawtooth Canyon
Tropic
Cannonville
Henrieville
Escalante
Hatch
Panguitch
Bryce Canyon Airport
Cedar City
Hurricane
Rockville
Springdale
Zion National Park
Mt. Dutton
Cedar Breaks National Monument
Pine Knot Lake
Duck Lake
Cow Lake
Navajo Lake
Bryce Canyon Airport
Cedar City Municipal Airport
Kanab Municipal Airport
Hurricane Municipal Airport
Springdale Airport
Panguitch Municipal Airport
Escalante Municipal Airport
Tropic Municipal Airport
Henrieville Airport
Cannonville Airport
Orderville Airport
Hatch Airport
Rockville Airport
Mt. Dutton
Cedar Breaks National Monument
Zion National Park
Pine Knot Lake
Duck Lake
Cow Lake
Navajo Lake
Bryce Canyon Airport
Cedar City Municipal Airport
Kanab Municipal Airport
Hurricane Municipal Airport
Springdale Airport
Panguitch Municipal Airport
Escalante Municipal Airport
Tropic Municipal Airport
Henrieville Airport
Cannonville Airport
Orderville Airport
Hatch Airport
Rockville Airport
Mt. Dutton
Cedar Breaks National Monument
Zion National Park
21
3.0
19
3.7
20
5.5
1,2,18
30,5,7
23
2.3
22
2.8
26
2.3
24
2.8
3-17
2,3,3,0
30
2.1
27
2.1
25
2.4


GARFIELD CO
KANE CO
KODACHROME BASIN STATE RESERVE
Big Dry Valley
Round Valley
Butler Valley
Escalante Canyon
Paradise Bench
Horse Mountain
Fourmile Bench
Squaw Bench
Smoky Mountain
Jack Riggs Bench
Brigham Plains
East Kaibab Monocline
Cockscomb
The Rimrocks
East Clark Bench
Glen Canyon City
GLEN CANYON
LAKE POWELL
Wahweap Bay
Flat Top
Fivemile Mountain
KANE CO
UTAH
R3W
R2W
112°00'
R1W
R1E
111°45'
R2E
R3E
111°30'
R4E
R5E
T37S
T38S
T39S
T40S
T41S
T42S
T43S
T44S
37°30'
37°15'
37°00'


Bulletin 124
GEOLOGY OF
KANE COUNTY, UTAH
by
Hellmut H. Doelling and Fitzhugh D. Davis
1989
GEOLOGIC HAZARDS MAP
Utah Geological and Mineral Survey
a division of
Utah Department of Natural Resources
Cartographer, Patricia H. Speranza
EXPLANATION
MASS MOVEMENTS: Includes colluvium, talus, and landslides of all types. Masses of rock, soil, and/or debris displaced downslope by sliding, flowing, or falling.
Active and presently unstable mass; recent movement indicated.
Less active mass; no discernible recent movement, but susceptible to instability by natural causes or human activities; subdivisions in groups indicate individual landslides.
SAND DUNE AREAS
Migrating sand during strong winds may create hazardous road conditions.
SWELLING AND SHRINKING ROCKS AND SOILS (poor foundation materials). Expansive shales and clays that increase and decrease significantly in volume as moisture content changes.
Tropic Shale — Has moderate swelling and shrinking capacity, also a high sulfate content that would have a severe reaction with concrete.
Dakota Formation (west of Sevier fault zone)—The lower middle shale member, 65-75 feet thick, has a high swelling and shrinking capacity.
Chinle Formation—Has moderate swelling and shrinking capacity, also has poor load bearing capacity.
GYPSUM AND GYPSUM-BEARING ROCKS (poor foundation material)
G Includes Paria River and Wiggler Wash Members of the Carmel Formation, and Shnabkaib Member of the Moenkopi Formation.
FLOOD-PRONE AREAS
Mostly along major drainages. Does not include potential flash-floods that can occur in, or issue from, any canyon.
AREAS OF HIGH GROUND WATER
Upper Long Valley and Alton areas
PEAT BOGS AND HIGH GROUND-WATER AREAS
Upper Long Valley
FAULTS
Dashed where approximately located; dotted where concealed; bar and ball on downthrown side.
EARTHQUAKE EPICENTERS
25 Number(s) on Table 28
2.5 Richter magnitude(s)
Hydrocompaction areas: Loose, dry, low-density alluvial soils or mixed alluvial and eolian soils that collapse or compact when significant water is added. Many soil areas south of the Vermilion Cliffs, as well as other areas in the county, may be subject to hydrocompaction. Damage can be minimized by thoroughly wetting and precompacting the soils (on the surface or on floors of excavations) before construction begins. Areas of potential hydrocompaction are not delineated on the map due to a lack of soil test data and structural performance.
Potential liquefaction of soils during earthquakes may be present in dominantly sandy soil profile areas that are adjacent to perennial streams where the ground-water table is 10 feet, or less, below the ground surface. These areas are not delineated.
The known geologic hazards in Kane County are shown by various colors or symbols, and described in text on these maps. However, any tract of land, under certain conditions, may be subjected to geologic hazards.
SCALE 1:100,000
MILES
FEET
KILOMETERS
CONTOUR INTERVAL 50 METERS
Base map from U.S. Geological Survey 30 X 60 Minute Series (Topographic): Panguitch 1980; Escalante 1980; Hite Crossing 1980; Kanab 1980; Smoky Mountain 1985; Navajo Mountain 1981
UTAH
Plate 8
Plate 9
Plate 10
GLEN CANYON NATIONAL RECREATION AREA
LAKE POWELL
COLORADO RIVER
KAIPAROWITS PLATEAU
FIFTYMILE MOUNTAIN
Scorpion Flat
GARFIELD CO
KANE CO
SAN JUAN CO