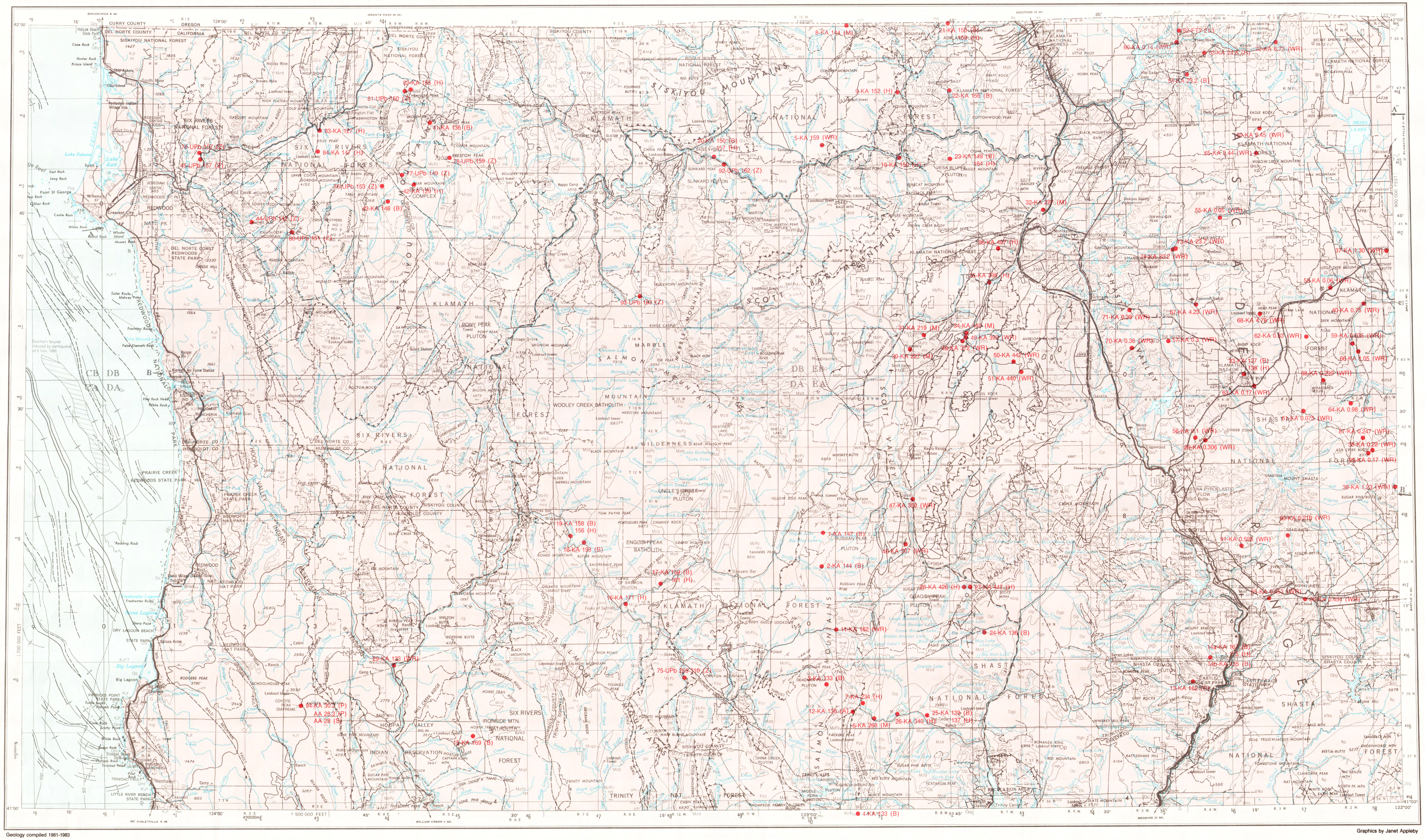
STATE OF CALIFORNIA—GEORGE DEUKMEJIAN, GOVERNOR
THE RESOURCES AGENCY—GORDON K. VAN VLECK, SECRETARY
DEPARTMENT OF CONSERVATION—RANDALL M. WARD, DIRECTOR



Geology compiled 1981-1983

Graphics by Janet Appleby

ABBREVIATED EXPLANATION

Approximate stratigraphic relationships only; see Geologic Map Explanation for more accurate age designations and unit descriptions.

CENOZOIC

QUATERNARY — Holocene

- t — Dredge and mine tailings
- Q — Alluvium
- Qls — Landslide deposits
- Qs — Dune and beach sand
- Ql — Lake deposits
- Qu — Shelf, slope, and basin deposits *(Offshore)*
- Qt — Terrace deposits

QUATERNARY — Pleistocene

- Qg — Glacial deposits *(Outwash and morainal)*
- Qmt — Marine terrace deposits
- Qc — Fluvial deposits *(Gravel, sand, and silt)*
- Qby — Battery Formation *(Marine and continental; blue sandstone and clay)*

TERTIARY — Pliocene

- QT — Undifferentiated Plio-Pleistocene marine and non-marine deposits
- Psg — St. George Formation *(Marine; bluish-gray siltstone and shale)*
- Pum — Marine mudstone undifferentiated *(Offshore)*

TERTIARY — Miocene

- Tg — Tertiary gravels *("Auriferous")*
- Tc — Tertiary continental deposits *(Conglomerate and sandstone)*
- Mwi — Wimer Formation *(Marine; friable yellow siltstone, sandstone, and conglomerate)*
- Kh — Hornbrook Formation *(Marine; massive arkosic sandstone, conglomerate, and shale)*

High Cascade Volcanics

- Qv — Volcanic rocks *(a-andesite; b-basalt d-dacite; p-pyroclastic deposits pb-Black Butte pyroclastic flow ps-Shastina pyroclastic flow)*; ✲ - Cinder cone or volcano
- Qvs — Volcanic rocks of Shasta Valley *(a-andesite; p-pyroclastic deposits)*
- Pv — Volcanic rocks *(a-andesite; b-basalt)*; ✲ - Cinder cone or volcano

- Tv — Western Cascade Volcanics *(a-andesite with some basalt and dacite; p-andesite tuff breccia; t-rhyolite tuff; i-andesite and basalt intrusions and plugs; r-rhyolite domes)*

MESOZOIC

CRETACEOUS

- KJf — Franciscan Complex* *(ss-sandstone, shale, conglomerate; ch-chert; gs-greenstone and locally chert; mg-metagraywacke; sfm-South Fork Mountain Schist; rc-schist of Redwood Creek; ♦ -blueschist blocks)* (ss, ch, gs, mg, sfm, rc)
  *Horizontal pattern denotes melange terrane
- um — Ultramafic rocks -partly to completely serpentinized

JURASSIC — WESTERN JURASSIC BELT

- Jg — Galice Formation *(Marine; slate, metagraywacke, and greenstone)*
- Jv — Volcanic rocks *(Pillow lava and breccia)*
- Jgd — Gabbro, diorite, and related rocks
- Jum — Ultramafic rocks—partially to completely serpentinized
- Jcm — Condrey Mountain Schist

PLUTONIC ROCKS

- Mzg — Granitic rocks
- Mzd — Dioritic rocks
- Mzgb — Ultramafic-gabbroic rocks

WESTERN PALEOZOIC AND TRIASSIC BELT

MzPz - Undifferentiated
rct - Rattlesnake Creek terrane
hft - Hayfork terrane
nft - North Fork terrane

- MzPzs — Stuart Fork Formation *(Phyllitic quartzite with some blueschist)*

MzPz (rct, hft, nft):

- ms - metasedimentary rocks
- mvs - metavolcaniclastic sedimentary rocks
- mv - metavolcanic rocks
- cg - conglomerate and sedimentary breccia
- ch - chert
- ls - limestone and marble
- gb - gabbro
- um - serpentinite and metaserpentinite
- sch - amphibolite and greenschist
- bs - blueschist
- ♦ - blueschist blocks

EASTERN KLAMATH BELT

- Jp — Potem Formation *(Marine; argillite and tuffaceous sandstone)*
- Jbg — Bagley Andesite
- Ja — Arvison Formation *(Volcaniclastic and pyroclastic rocks)*
- Ŧmd — Modin Formation *(Andesitic volcaniclastic and pyroclastic rocks)*
- Ŧp — Pit Formation *(Marine; shale and siltstone; includes Brock Shale and Hosselkus Limestone)*
- PŦb — Bollibokka Group *(Dekkas and Nosoni Formations, undifferentiated); (Andesite, mudstone, and tuff)*
- Pml — McCloud Limestone
- Cb — Baird Formation *(Pyroclastic rocks and keratophyre)*
- Cbg — Bragdon Formation *(Marine; shale, graywacke, and minor conglomerate)*
- Dkn — Kennett Formation *(Marine; siliceous shale and tuff; ls = crystalline limestone)*
- Dc — Copley Greenstone
- DSg — Gazelle Formation *(Marine; sandstone, shale, chert, conglomerate, and limestone)*
- Smc — Moffett Creek Formation *(Sheared sandstone and shale)*
- SOd — Duzel Formation *(Marine; phyllite, graywacke, chert, and limestone)*
- Oam? — Antelope Mountain Quartzite
- Ov, Ogb, Op — Ov-Mafic volcanic rocks and diabase; Ogb-Gabbroic and dioritic rocks *(Minor pyroxenite)*; Op-Trinity peridotite *(Partially serpentinized)*

PALEOZOIC

TRIASSIC, PERMIAN, CARBONIFEROUS, DEVONIAN, SILURIAN, ORDOVICIAN

CENTRAL METAMORPHIC BELT
(Devonian or older)

- Pza — Abrams Mica Schist *(Grouse Ridge Formation)*
- Pzs — Salmon Hornblende Schist

MAP SYMBOLS

Contact
Observed or approximately located; queried where gradational or inferred.

Fault
Solid where well located; dashed where approximately located or inferred; dotted where concealed by younger rocks or water; queried where continuation or existence is uncertain. U, upthrown side; D, downthrown side (relative or apparent).

Thrust fault—barbs on the upper plate. Generally dips less than 45°, but locally may have been subsequently steepened. Dashed where approximately located or inferred; dotted where concealed by younger rocks or water; queried where continuation or existence is uncertain.

Anticlinal fold

Synclinal fold

Strike and dip of beds

Strike and dip of foliation

♦ Blueschist blocks

Joints
(Prominent joints in granitic rocks of Castle Crags.)

EXPLANATION

method** mineral***
1-KA 144 (B) ●
location no.* age (m.y.) Sample location

*See accompanying tables in separate pamphlet.

**method
KA = Potassium/Argon;
FT = Fission-track;
UPb = Uranium/Lead;
AA = ^{40}Argon/^{39}Argon

***mineral or material
A = Actinolite; B = Biotite;
H = Hornblende; M = Muscovite;
WR = Whole Rock; Z = Zircon.
P = Phlogopite; S = Sulfide;

BASE MAP

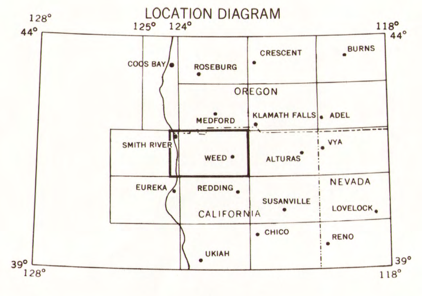
Prepared by the U.S. Army Topographic Command (KCBM), Washington, D.C. Compiled in 1957 from United States Quadrangles 1:48,000, 1:50,000, 1:62,500, 1951-54. Map field checked, 1958. Revised in 1976 by the U.S. Geological Survey from aerial photographs taken 1975.

Area west of 124° taken from Crescent City NK 10-7 Map (Revised 1977).

Bathymetry and shoreline compiled by the National Ocean Survey (NOS).

Minor corrections and additions to culture by California Division of Mines & Geology, 1983.

LOCATION DIAGRAM



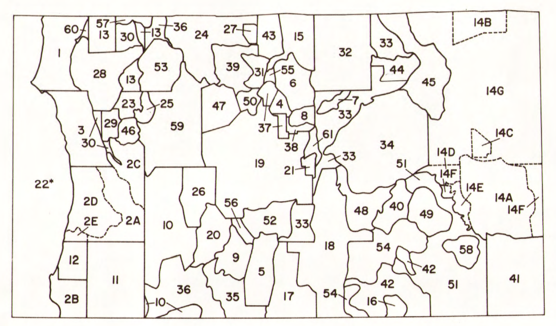
Scale 1:250,000

5 0 5 10 15 20 Statute Miles
5 0 5 10 15 20 25 30 Kilometers
5 0 5 10 15 Nautical Miles

TRANSVERSE MERCATOR PROJECTION

BLACK NUMBERED LINES INDICATE THE 10,000 METER UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 10

MAGNETIC DECLINATION FOR 1975 IS 18½° (330 MILS) WESTERLY OVER THE ENTIRE AREA



ABBREVIATED INDEX TO GEOLOGIC SOURCE DATA
(Complete Index on Sheet 3)

1. Aalto, K.R., 1981
Back, W., 1957
Davenport, C.W., 1982
Rice, S.J., 1951-1952
2. Aalto, K.R., Cashman, P.H., Cashman, S.M., and Kelsey, H.M., 1981
2A. Aalto, K.R., 1981
2B. Aalto, K.R., Cashman, P.H., Rodriquez, Z., Fox, C., Stephens, T.A., and Kelsey, H.M., 1981
2C. Cashman, S.M., and Cashman, P.H., 1982
2D. Kelsey, H.M., 1981
2E. Cashman, S.M., and Cashman, P.H., 1981
3. Aalto, K.R., and Harper, G.D., 1982
4. Allen, C.M., 1981
5. Ando, C.J., 1979
6. Barrows, A.G., Jr., 1969
7. Borns, D.J., 1980
8. Burton, W.C., 1982
9. Cashman, P.H., 1978
10. Cashman, P.H., and Cashman, S.M., 1981
11. Cashman, S.M., Cashman, P.H., Aalto, K.R., and Kelsey, H.M., 1982
12. Cashman, P.H., Cashman, S.M., and Kelsey, H.M., 1982
13. Cater, F.W., Jr., and Wells, F.G., 1953
14. Chesterman, C.W., 1982
14A. Christiansen, R.L., Kleinhampl, F.L., Blakely, R.J., Tuchek, E.T., Johnson, F.L., and Conyac, M.D., 1977
14B. Hammond, P.E., 1983
14C. Holliday, J., 1982
14D. Mack, S., 1960
14E. Miller, C.D., 1978
14F. Southern Pacific Company, 1957-1960
14G. Williams, H., 1949
15. Coleman, R.G., Helper, M.D., and Donato, M.M., 1983
Helper, M., 1981
16. Curtis, G.D., 1980
17. Davis, G.A., 1968
18. Davis, G.A., Holdaway, M.J., Lipman, P.W., and Romey, W.D., 1965
19. Donato, M.M., Barnes, C.G., Coleman, R.G., Ernst, W.G., and Kays, M.A., 1982
20. Donato, M.M., Barnes, C.G., and Gray, G.G., 1983
21. Dorais, M.J., 1982
22.* Field, M.E., Clarke, S.H., Jr., and White, M.E., 1980
23. Frishman, D., 1980
24. Gless, J.D., and Prchal, M.A., 1981
25. Gorman, C.M., 1982
26. Gray, G.G., 1981
27. Grover, T.W., 1984
28. Harper, G.D., 1980
California Nickel Corporation, 1983
29. Harper, G.D., 1982
30. Harper, G.D., 1982
Harper, G.D., 1982
31. Hill, L.B., 1984
32. Hotz, P.E., 1967
33. Hotz, P.E., 1971
34. Hotz, P.E., 1978
35. Hotz, P.E., Greene, R.C., Close, T.J., and Evans, R.K., 1982
36. Irwin, W.P., 1960
37. Jennings, C.W., and de la Fuente, J., 1982
38. Jennings, C.W., and Kelley, F.R., 1982
39. Klein, C.W., 1975
40. Lindsley-Griffin, N., 1982
41. Lydon, P.A., 1981
42. Lydon, P.A., 1982
43. Medaris, L.G., 1966
44. Mortimer, N., 1984
45. Nilsen, T.H., Barats, G.M., Elliott, M.A., and Jones, D.L., 1983
46. Norman, E.S., 1981
47. Petersen, S.W., 1981
48. Potter, A.W., Hotz, P.E., and Rohr, D.M., 1977
49. Quick, J.E., 1981
50. Rawson, S.A., 1981
51. Saucedo, G.J., and Wagner, D.L., 1981
52. Seyfert, C.K., Jr., 1965
53. Snoke, A.W., 1972
54. Southern Pacific Company, 1957-1960
55. Stanford Geological Survey, 1959
56. Sydnor, R.H., 1983
57. Vail, S.G., 1977
58. Vennum, W.R., 1971
59. Wagner, D.L., 1981
Cornelius, R.R., 1984
60. Wells, F.G., 1946
61. Welsh, J.L., 1982
*Clarke, S.H., Jr., 1987

LOCATION MAP OF ROCK SAMPLES DATED RADIOMETRICALLY, WEED QUADRANGLE, CALIFORNIA, 1:250,000

Compilation by
F.R. Kelley, D.L. Wagner and G.J. Saucedo
Published 1987