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James Doyle Sell Mining Collection

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AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

March 5, 1973

TO: W. L. Kurtz

FROM: J. D. Sell

Attached is a list and map (File No. 2229) of geologic material used in up-dating the Index to Geologic Mapping in Arizona by Leona Boardman (1957).

This up-dates the similar list and map submitted February 18, 1970. As before, all theses have not been checked for inclusion on this list and map.

James D. Sell

JDS:lb
Attach.

cc: Drafting

AGS Arizona Geological Society Publications:

GUIDEBOOK II:

II-1. Waterman Mountains (McClymons, p. 66). 1:24,370

II-2. Clifton (Wilson, p. 98). 1:152,000

II-3. Empire Mountains (Galbraith, p. 128). 1:54,000

II-4. Dragoon Quadrangle (Cooper, p. 140). 1:169,170

II-5. San Xavier Reservation (Heindl, p. 152). 1:125,000

II-6. Waterman-Silver Bell Mountains (McClymonds, p. 212). 1:101,380

II-7. Baboquivari, Roskruge, South Comobabi and Artesa Mountains (Galbraith, p. 256) 1:215,400

GUIDEBOOK III:

III-1. Ray (Metz, p. 139). 1:24,000

III-2. Pena Blanca-Walker Canyon (Nelson, p. 178). 1:44,350

III-3. Roskruge Mountains (Bikerman, p. 186). 1:125,000

III-4. Del Bac Hills (Percious, p. 200). 1:47,500

III-5. Superior Quadrangle (Peterson, p. 218). 1:79,200

III-6. Goldfield-Superstition Mountains (Sheridan, p. 228). 1:120,000

III-7. Santa Rita-Empire Mountains (Drewes, p. 317). 1:125,000

DIGEST 4:

4-1. Geology of West Saguaro National Monument, McColly, R. A., p. 87, (1961) See T-125. 1:42,200

DIGEST 7:

7-1. Structure of East Hualapai Indian Reservation, Koons, D., p. 97 (1964). 1:465,000

AGS Arizona Geological Society Publications: (Continued)

DIGEST 8:

8-1. Geology of Sierrita Mountains; Lootins, D.J., p. 33 (1966)
See T-174. 1:45,300

8-2. Geology of Cerro Colorado; Smith, R., p. 131 (1966)
See T-86. 1:24,000

8-3. Geology of Cabeza Prieta Game Range; Simmons, H.L., (1966)
No map.

DIGEST 9:

9-1. Dragoon Pass Area; Nevin, A.E. (1971). 1:60,000

MAP

1. Arizona Highway Geologic Map (Cooley, 1967) 1:1,000,000

B United States Geologic Survey Bulletins:

582 Mineral deposits of Santa Rita and Patagonia Mountains (Schrader, 1915) 1:125,000

743 Geology of Oatman Gold District (Ransome, 1923) 1:48,000

782(1) Ore Deposits of Jerome and Bradshaw Mountains (Lindgren, 1926) 1:125,000

782(2) Ore Deposits of Jerome and Bradshaw Mountains (Lindgren, 1926) 1:125,000

1021-N Geology of Clarkdale Quadrangle (Lehner, 1958) 1:48,000

1027-F Copper Deposits of Helvetia District (Creasey, 1955) 1" = 200 ft., etc.

1027-H Geology of the Christmas Copper Mine (Peterson, 1956) 1" = 300 ft., etc.

1027-N Mineral Resources of San Carlos Indian Reservation (Bromfield, 1956) 1:250,000

1081-D Stratigraphy, House Rock Valley (Wells, 1960) 1:62,500

1103 Geology Monument Valley (Wilkind, 1963) 1:62,500

1112-C Geology of Pima Mining District (Cooper, 1960) 1:31,680

1121-H Paleozoic and Cenozoic rocks Alpine-Nutriose Area (Wrucke, 1961) 1:198,000

1137 Geology Lees Ferry (Phoenix, 1963) 1:24,000

1141-E Cenozoic Geology of Mammoth Quadrangle (Heindl, 1963) 1:63,360

1141-H Geology of Pinal Ranch Quadrangle (Peterson, 1963) 1:24,000

1161-E Geology of Christmas Quadrangle (Willden, 1964) 1:62,500

1177 Geology of Verde Valley Region (Twentier, 1963) 1:62,500

1194-G Mesozoic Formation in Vekol Mountains (Heindl, 1965) 1:125,000

1194-H Mesozoic Formation in Comobabi and Roskruge Mountains (Heindl, 1965) 1:540,000

B United States Geologic Survey Bulletins: (Continued)

1194-I Mesozoic(?) Rocks in Baboquivari Mountains (Heindl, 1965) 1:125,000

1194-M Low Mesozoic Extrusive Rocks (Hayes, 1965) 1:422,400

1202-A Geology Kayenta & Chilchinbito Quadrangles (Beaumont, 1965) 1:62,500

1218 General Geology of Mammoth Quadrangle (Creasey, 1967) 1:48,000

1230-F Geology of Sycamore Canyon Area (Huff, 1966) 1:48,000

1230-H Mineral Resources of Mount Baldy Area (Finnell, 1967) 1:75,000

1230-J Mineral Resources of Pine Mountain Area (Canney, 1967) 1:31,680

1261-E Blue Range, Arizona and New Mexico (Ratte, 1969) 1:62,500

1324-C Precamb. Stratigraphy, Prescott-Jerome Area (Anderson, 1971) 1:288,000

1336 Precambrian Geology of the Northern Bradshaw Mountains (Anderson, 1972) 1:24,000 (Plates 1 and 2). Supersedes OF-2 and M-228.

1345 Precambrian Rocks in Cordes Area (SW1/4 Mayer Quad) (Anderson, 1972) 1:24,000

1354-C Big Sandy Formation (late Pliocene) (Sheppard, 1972) 1:171,243

1385-A. Chiricahua Wilderness Area (Drewes et al, 1973) 1:62,500

CR Company Reports, w/maps

1. Aa-16A.3.0 Reconnaissance Geology of the Casa Grande Mountains (Luning, R.H. 12/21/64) 1:62,500, no map number.

2. Aa-16A.3.20A Geological Reconnaissance of the Haley Hills and Palo Verde Mountain (Luning, R.H. 12/18/64) 1:62,500, no map number.

3. Aa-16A.2.0 Blackwater and Poston Butte (Blucher, A.G. 6/7/60) 1:62,500 (Map No. 1457)

4. Aa-16A.3.20A Table Top Region (Sell, J.D. 9/8/64) 1:62,500 (Map No. 1632)

5. Aa-0.0.16 Globe-Superior Region (Blucher, A.G. 12/15/58) 1:62,500 (Maps 1407-1408)

6. Aa-13.19D.0 Sand Tank Region (Sell, J.D. 7/26/65) 1:62,500 (Map 1761)

7. Aa-16.0.0 Sierrita Mountains (Blucher, A.G., 11/14/60) 1:62,500 (Maps 1474-1475)

8. Aa-13A.3.2 Gold Bug District (Beck, D.B. 6/24/66) 1:2,000 (Maps 1874-1875)

9. Aa-16.1.0 Ajo District (Kinnison, J.E. 8/25/61)
A) 1:125,000 (Map 1493)
B) 1:62,500 (Map 1494)

10. Aa-16.1.3J Copper Mountain and Ajo Valley (Kinnison, J.E. 7/26/66) 1:62,500 (Map 1883)

11. Aa-16.19.0 Silver Bell District. Map 1166 - 1:62,500 Geology
Map 1230 - 1:62,500 Alteration
Map 1757 - 1:6,000

12. Aa-16.16.3C Cholla Flat-Twin Buttes (Kinnison, J.E. 4/12/61) 1:31,250 (Map 1525). Also see Map 1298 (1:62,500)

13. Aa-19.19.0 Southern Santa Rita Mountains (Alteration) (Blucher, G.A. 8/27/58) 1:31,250 (Map 1400)

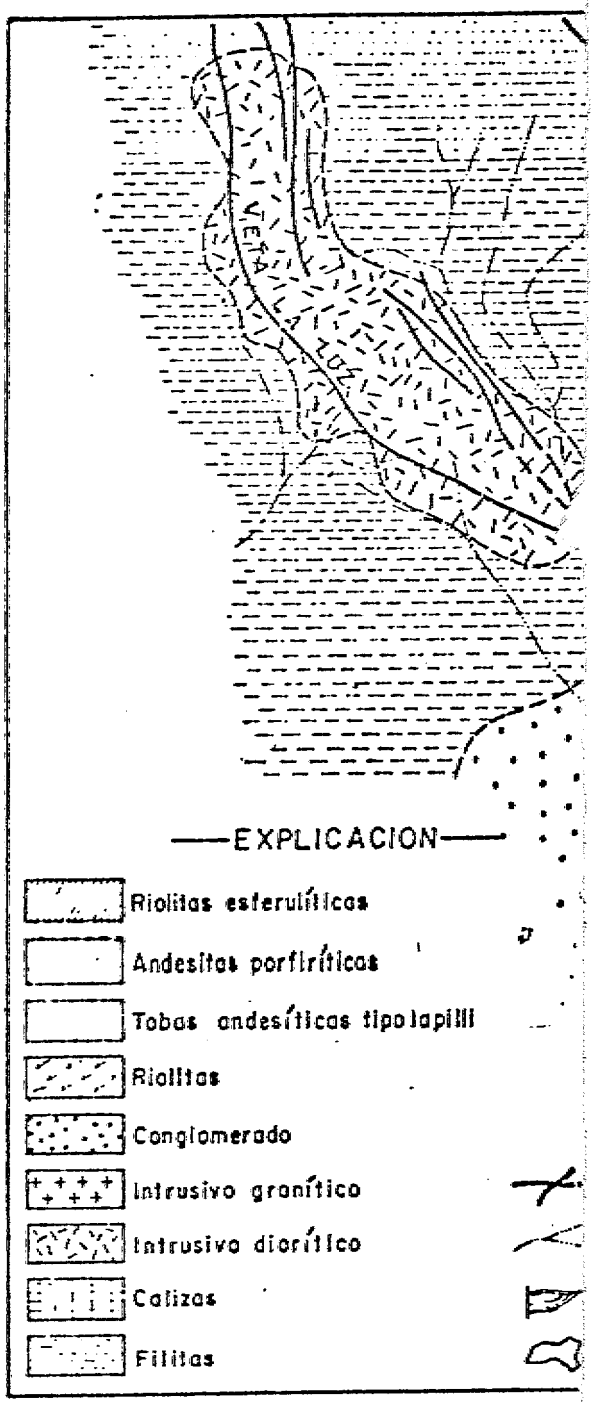
14. Aa-19.18.0A Geology of Harshaw District (Reinhart, J.W. 2/18/52) 1:24,000 (Map 2106) 1:60,000 (Map 995)

15. Aa-16A.16.16 Exploration, Potential Picacho District (Red Rock Quadrangle) (Briscoe, J.A. 9/20/67) 1:62,500 (Map 1980)

The Eagle Pass detachment, southeastern Arizona: Product of mid-Miocene listric (?) normal faulting in the southern Basin & Range, by George H. Davis and James J. Hardy, Jr.
Geol. Soc. of Amer. Bulletin, Part I, v. 92, p. 747-762, 14 figs, 1 table, October 1981.

Area mapped by Steve Davis, ASARCO Report

" v. 2, p. 53-54.
Geology v. 7, p. 120-124.
" v. 8, p. 190-194.


VETA LA LOZ
EXPLICACION
Riolitas esferulíticas
Andesitas porfiríticas
Tobas andesíticas tipolapilli
Riolitas
Conglomerado
Intrusivo granítico
Intrusivo diorítico
Calizas
Filitas

CR Company Reports, w/maps: (Continued)

16.	Aa-16.1.0B	South Amole District (Kinnison, J.E. 5/18/60) 1:62,500 (Map 1459) See also Map 1298 (1:62,500)
17.	Aa-7A.12.0 Aa-7A.19.12 Aa-7A.0.0	Safford (Lone Star District) (Richard, K. E. 5/27/59) Report, 1:62,500 (Map 896). Also see Blue Crystal Claims 1:11,700
18.	Aa-16A.3.19B	Sacaton Reconnaissance (Blucher, G.A. 7/7/61) 1:31,250 (Map 1490)
19.	Aa-16A.13.0A	Reconnaissance South and West of Ray (Bogue, R.G. 4/49) 1:62,500 (Map 776)
20.	Aa-16A.3.19C	Sacaton-Santa Cruz (Kinnison, J.E. 5/14/68) Map - no number
21.		Sacaton Reconnaissance (Beck, D.B. - unpublished (See Balla's map)
22.	Aa-16A.3.3D	Chuichu Area (Kinnison, J.E. 7/13/61) 1:250,000 (Map 1507)
23.	Aa-16.0.16	Noipa Kam Area (Sell, J.D. 8/21/69) 1:24,000 (Map 2198)
24.	Aa-19.16.0	Southwestern Patagonia (Blucher, A.G. 12/2/57) 1:125,000 (Map 1388) 1:125,000 (Map 995, Index 1:48,000 (Map 1386) to mapping) 1:125,000 (Map 1401 1:21,700 (Map 968) (KM) Kerr-McGee:Geology of Patagonia Mountains 1:24,000 (Map T-6-84)
25.	Aa-16A.6.16A	Price Prospect (Saegart, W.E. 4/20/61) 1:31,250 (Map 1483)
26.	Aa-25.20.3	Copper Basin (Tiger District) (Boltz, K.L. 10/24/66) Plate 2, 1:54,000
27.	Aa-13.23C.7	White Tank Mountains (Jansen, L.J. 4/21/69) 1:12,000 (Map 2165)
28.	Aa	Ray-San Manuel Zone (Blucher work sheet) 1:62,500 (Maps 1495-1496)
29.	Aa-3.20A.0	Willcox Project (Teviston District) (Stauffer, M.R. 1/10/66) 1:62,500 (Map 1841)
30.	Aa-7A.7B.7	Southern Pinaleno Mountains (Beck, D.B. 9.12/64) 1:62,500 (Map 1634-1635)

CR Company Reports, w/maps: (Continued)

31.	Aa-3.20B.19A	Stockton Hill (Devere, B.J. 11/15/65) 1:24,000 (Map 1824)
32.	Aa-13A.7C.7	Greenwood Peak (Saegart, W.E. 4/12/66) 1:31,250 Sketch Map (Wojcik, J.R. 9/29/66) 1:9,600 (Map 1882)
33.	Aa-13A.2.22	Virgin River Area (Watson, B.M. 8/10/67) 1:12,000 (Map 1955)
34.	Aa-13.7.16	Painted Rock (Kinnison, J.E. 3/19/69) 1:3,000 (Map 2061) (two additional maps without numbers)
35.	Aa-16.0.16	Papago Central Project (Karvinen, R.D. 6/19/69) A. Greenback 1:12,000 (Map 2158-B) B. North Santa Rosa 1:12,000 (Map 2156) C. South Slate Mountains 1:12,000 (Map 2168)
36.	Aa-16.17.0	Quijotoa District (Courtright, J.H. 5/26/50) 1:125,000 (Map 887) Map 916 for mines visited and reported on.
37.	Aa-16.19.20A	Sheridan District (Blucher, A.G. 7/10/57) 1:31,250 (no map number)
38.	Aa-16A.3.19C	Santa Cruz Summary (Wojcik, J.R. 2/3/66) 1:24,000 (Map 1855)
39.	Aa-16A.3.19E	Santa Rosa Project (Wojcik, J.R., 11/16/67) 1:62,500 (no map number)
40.	Aa-3.3.0	Paradise Prospect (Devere, B.J. 2/24/67) 1:24,000 (Map 1934)
41.	Aa-3.0.0	Fort Bowie Prospect (Devere, B.J. 10/7/66) 1:12,000 (Map 1902)
42.	Aa-3-23A.0	Whetstone Prospect (Von Fay, S. 1/10/67) 1:9,600 (Maps 1913 & 1917-1920)
43.	Aa-25.2.0A	Big Bug Creek Prospect (Beck, D.B. 11/10/66) 1:31,680 (Map 1922)
44.	Aa-25.2E.6	Francis Young Prospect (Kinnison, J.E. 9/23/65) 1:125,000 (No map number)
45.	Aa-25.3.0B	Copper Basin District (Yavapai County) Various reports.

CR Company Reports, w/maps: (Continued)

46.	Aa-25.20-16	Pine Flat Prospect (Beck, D.B. 8/8/66) 1:9600 (No map number)
47.	SO-6-7	Frontera Prospect (Sell, J.D. 6/25/68) 1:13,400 (Map 2089)
48.	Aa-3.19.0	Swisshelm District (McLean, H.J. 4/12/50) 1:12,000 (Map 889-890) Also: Rasor, C.A. 3/11/48; 1:6,000 (Map 730) Also: Knochel, C.P. 4/24/46; 1:3,600 (Map 14-165)
49.	Aa-3.20B.0	Turquoise District (Payne, A.L. 3/11/52) 1:12,000 (No map number)
	Aa-3.20B.0	Also: Reinhart, J.W. 2/27/50; 1:12,000 (Map 859)
	Aa-3.20B.0	also: Richard, K.W. 8/11/52; 1:4,800 (Map 1038) and District Map 1:24,000 (Map 1039)
	Aa-3.20B.19	Also: Shannon Mine (Field, T.F. 11/13/19) Surface Map (no number) 1:1,200 (9/55)
	Aa-3.20B.20	Also: Tejon Mine (Pollock, J.P., 3/20/47) 1:2,400 (Map 693)
50.	Aa-13.0.0	Copper Prospect, Wickenburg District (Cummings, R.B. 2/23/68). Index Map to drill holes. NOTE: Same folder contains PD's Red-Man Geologic maps of two areas. 1:4,800 (1966-67)
51.	Aa-16.0.16	Reconnaissance in the Papago Indian Reservation (Kurtz, W.L. 9/1/66) A. 1:62,500 (Map 2151) B. 1:62,500 (Map 2152)
52.	Aa-7A.0.0	Markham Wash Intrusive (Hoskins, W.G. 1/4/66) 1:18,000 (No map number)
53.	Aa-7A.1.0	Aravaipa District (Reinhart, J.W. 10/1/52) 3-volume set, numerous maps of district geology at 1:12,000. Geologic outline map 1:60,000 (Map 1048)
54.	Aa-16.19.19F	West Silver Bell Mountains (King, J.R. 12/2/70) 1:24,000 (Map 2374)
55.	(Drafting Files)	Superstition Mountains Area, 1:24,000; ASARCO maps 2502a thru 2502g; compilation of TS-1,2,3 & 4
56.	Aa-19.16.19E	Patagonia Mountains (Graybeal, F.T. 2/15/72) 1:62,500 (Map 2532)
57.	Aa-16A.2.18	Red Hills (Price) Area (King, J.R. 10/25/72) 1:12,000 (Map 2540)

CR Company Reports, w/maps: (Continued)

58.	(Library)	Casa Grande-Florence area (Balla, J.C. 3/1/72) 1:125,000 (Map 2545 - PhD dissertation map)
59.	Aa-25.8.8A	Hassayampa Project (Briscoe, J.A. 3/31/72) 1:6,000 (Map in file only)
60.	Aa-16.0.16	Geology of the Papago Indian Reservation (Stebbins Mineral Surveys 7/1/64) (Maps of various areas)
61.	Aa-16A.3.19D	Sacaton Mountains, Pinal County, Arizona Geology Map (Balla, J.C. May, 1971) 1:2000 ?
62.		East Roskruge Mountains, Pima County, Arizona (French, B.E., April 1974) 1: 24,000 (map 2743a,b

F United States Geologic Surveys Folio

111 Globe Quadrangle (Ransome, 1904) 1:62,500 (See P-342)

112 Bisbee Quadrangle (Ransome, 1904) 1:62,500 (See I-418)

126 Bradshaw Mountains Quadrangle (Jagger, 1905) 1:62,500

129 Clifton Quadrangle (Lindgren, 1905) 1:62,500

217 Ray Quadrangle (Ransome, 1923) 1:62,500

I USGS Miscellaneous Geologic Investigation Series:

175 Paleotectonic Maps of Devonian Section (McKee, 1956) 1:5,000,000
360 Paleotectonic Maps of Triassic Section (McKee, 1959) 1:5,000,000
345 Geology Shiprock Quadrangle (O'Sullivan, 1963) 1:250,000

352 Geology of Leupp Quadrangle (Irwin, 1962) 1:62,500

418 Geologic Map of Southern Part Mule Mountains (Hayes, 1964) 1:48,000

442 Geologic Map of Duncan-Canador Peak Quadrangle (Morrison, 1965) 1:48,000

450 Paleotectonic Maps of Permian Section (McKee, 1967) 1:5,000,000
470 Geologic Map of Benson Quadrangle (Creasey, 1967) 1:48,000

499 Reconnaissance Geology of the Ash Fork Quadrangle (Krieger, 1967) 1:62,500

500 Reconnaissance Geology of Picacho Butte Quadrangle (Krieger, 1967) 1:62,500

501 Reconnaissance Geology of Turkey Canyon Quadrangle (Krieger, 1967) 1:62,500

502 Reconnaissance Geology of Camp Wood Quadrangle (Krieger, 1967) 1:62,500

503 Reconnaissance Geology of Simmons Quadrangle (Krieger, 1967) 1:62,500

504 Reconnaissance Geology of Iron Springs Quadrangle (Krieger, 1967) 1:62,500

505 Reconnaissance Geology of Sheridan Mountain Quadrangle (Krieger, 1967) 1:62,500

509 Geologic Map of Huachuca-Mustang Mountain (Hayes, 1968) 1:48,000
Also: USGS WSP 1819-D

613 Geol. of the Sahuarita Quadrangle (Drewes, 1971) 1:48,000

614 Geol. of the Mount Wrightson Quadrangle (Drewes, 1971) 1:48,000

745 Geol of Twin Buttes Quadrangle (Cooper, 1973) 1:48,000.

* See reverse side

532-C Geologic Map – Strip Across N. Arizona from 112°W to 124°W. 35N to 39N. (Carlson & Wilden, 1968) 1:1,000,000

533-C Geologic Map - Strip Across N. Arizona from 100°W to 112 W. 35 N to 39 N. (Carlson and Wilden, 1968) 1:1,000,000

537. Radiometric Age Date – Strip Across N. Arizona. 109W to 115W. 35N to 39N. (Marvin, 1968) 1:7,500,000.

843, 844, 845. See Addendum sheet.

I-744 Geology, Structure, & Uranium Deposits of the Escalante Quad, Utah & Ariz
(Hackman & Wyant, 1973) 1:250,000

I-762 Geologic Map of Nogales & Lochiel Quadrangles. (Simons, 1974) 1:48,000

I-832 Geologic Map of Happy Valley Quadrangle (Drewes, 1971) 1:48,000

I-953 Geologic Map of Eastern San Francisco volcanic field (Moore & Wolfe, 1976) 1:50,000

I-981 Geology, Structure, & Uranium Deposits of the Colby 1°x2° Quad., Ariz & N.Mex
(Hackman & Olson, 1977) 1:250,000.

I-997 Rincon Valley (Drewes, 1977) 1:48,000.

I-629 Geol & structure & uranium deposits Cortez Quad, Colo & Utah (Hazzard, 1972) 1:250,000

I-744 Geol & Escalante Quad, Utah-Ariz (Hackman & Wyant, 1973) 1:250,000

I USGS Miscellaneous Geologic Investigation Series: (Continued)

The following maps, at the scale of 1:250,000, have been compiled covering parts of the Phoenix, Mesa, Ajo, Tucson, and Nogales AMS 1°x2° Quad. Sheets:

I-843-A Index and Description of Flood-Prone Area Maps in the Tucson-Phoenix Area (E.S. Davidson).

I-844-A Map of Land Status in the Tucson Area (USDA and AWC, 1973)

-B Map of Irrigated Land in the Tucson Area (USDA and AWC, 1973)

-C Map Showing Distribution and Estimated Thickness of Alluvial Deposits in the Tucson Area (M. E. Codey, 1973).

-D Map Showing Depth to Water in Wells in the Tucson Area, (W.R. Osterkamp, 1973)

-E Ground-Water Recharge in the Tucson Area (W.R. Osterkamp, 1973)

-F Map Showing Distribution of Recoverable Ground Water in the Tucson Area (W.R. Osterkamp, 1973)

-G Map Showing Potential for Copper Deposits in Eastern 3/4 of the Nogales 2° Quad. (S.C.Creasey, et al., 1973); Also See OF-23 for E 1/2 of Tucson 2° Quad (1974).

I-845-A Map of Land Status in the Phoenix Area - 1973 (USDLM, USDA, and AWC, 1973)

-B Map of Irrigated Land in the Phoenix Area (USGS, USDA, and AWC, 1973)

-C Map Showing Distribution and Estimated Thickness of Alluvial Deposits in the Phoenix Area (M.E. Cooley, 1973)

M USGS Mineral Investigation Field Studies Maps

81 Preliminary Geology of Pinal Ranch Quadrangle (Peterson, 1961) 1:24,000 (See B-1141-H)

213 Reconnaissance Geologic Map of SE Cochise County (Cooper, 1959) 1:125,000

228 Preliminary Geologic Map NW1/4 Mayer Quadrangle, (Anderson, 1959) 1:24,000 (Superseded by B-1366, Plate 2).

231 Reconnaissance Map of Wilcox, Fisher Hills, Cochise and Dos Cabezas Quadrangles (Cooper, 1960) 1:62,500

238 Reconnaissance Geology of San Pedro-Aravaipa Valleys (Creasey, 1961) 1:125,000

253 Preliminary Geologic Map West Superior (7-1/2) Quadrangle (Peterson, 1962) 1:12,000 (See Q-818)

538 Reconnaissance Geologic Map of West Side of Sierrita Mountains (Palo Alto quadrangle) (Drewes and Cooper, 1973) 1:24,000

678. Reconnaissance Geologic Map of the Arivaca quadrangle (15-minute) (Keith & Theodore, 1975) 1:63,360

747. Reconnaissance Geologic Map of the Mount Lemmon quadrangle (15-minute). (Banks, 1976) 1:62,500. (also see OF-76-262.)

769. Reconnaissance Geologic Map of the San Vicente and Coconaqui Butte 15-minute quadrangles (Keith, 1974) 1:62,500.

778. Reconnaissance Geologic Map of the Picacho Mtns (Gyeand, 1976) 1:62,500

864. Reconnaissance Geologic Map of Tortolita Mtns (15') (Banks et al, 1977) 1:62,500

909. Geology of 96 Hills NW, NE, SE, & SW quads (15') (Gyeand et al, 1977) 1:62,500

Cover

M-931 Reconn Geol of Vokal Mtns Quad. (15') (Rodda, et al, 1978) 1:62,500

M-934 Reconn Geol of Selim Reef Quad (15') (~~Berg~~ Blacet, et al, 1978) 1:62,500

M-935 Reconn Geol of Santa Rosa Mtns Quad (15') (Bergquist, et al, 1978) 1:62,500

M-937. Reconn Geol of Quartzite Mtns Quad (15') (Rytuba, et al, 1978) 1:62,500

M-939. Reconn. Geol of Jackson Mtns Quad (15') (Blacet & Miller, 1978) 1:62,500

OF USGS Open File Reports

1. Preliminary Geologic Map SW1/4 Mayer Quadrangle (Anderson, 1967) 1:24,000 (See B-1345)

2. Preliminary Geologic Map NE1/4 Mount Union Quadrangle (Anderson, 1962) 1:24,000 (Superceded by B-1334, Plate 1)

3. Geologic Map SE1/4 Mount Union Quadrangle (Blacet, 1964) 1:24,000

4. Preliminary Geologic Map of Crozier Peak Quadrangle (Krieger, 1969) 1:24,000 (Superceded by Q-1107).

5. Preliminary Geologic Map of Winkelman Quadrangle (Krieger, 1969) 1:24,000 (Superceded by Q-1106).

6. Preliminary Geologic Map of Black Mountain Quadrangle (Krieger, 1969) 1:24,000 (Superceded by Q-1108)

7. Preliminary Geologic Map of Putnam Wash Quadrangle (Krieger, 1969) 1:24,000 (Superceded by Q-1109)

8. Preliminary Geologic Map of Mount Wrightson Quadrangle (Drewes, 1966) 1:48,000 (See I-614)

9. Preliminary Geologic Map of Sahuarita Quadrangle (Drewes, 1968) 1:48,000 (See I-613)

10. Geologic Map of Tucson Quadrangle (Moore, 1949) 1:62,500

11. Geologic Map of Quartzite Quadrangle (Miller, 1968) 1:48,000 (See Q-841)

12. Mineral Deposits of the Gila River Indian Reservation (Wilson, 1963) 1:125,000 (See ABM-179)

13. Geology of Gila Bend Basin (Babcock, 1948) 1:145,700

14. Geology of Verde River Valley (McDonald, 1946) 1:125,000

15. Geology of Deer Valley (Bluhm, 1949) 1:79,200

16. Geology of Ranegras Plain (Metzger, 1954) 1:190,000

17. Geology of Papago Indian Reservation (Heindl) 1:136,808 (ASARCO files)

18. Geol. Map of Twin Buttes Quadrangle (Cooper, 1970) 1:48,000 (Superceded by I-745).

OF USGS Open File Reports: (Continued)

19. Geology of Empire Mtns. (Finnell, 1971) 1:48,000

20. Geology of Nogales Quadrangle (Simons, 1971) 1:48,000
(Superceded by I-742)

21. Geology of Lochiel Quadrangle (Simons, 1971) 1:48,000
(Superceded by I-742).

22. Geology of Happy Valley Quadrangle (Drewes, 1972) 1:48,000
(Superceded by I-832)

23. Preliminary Map showing Potential for Copper Deposits in the East Half of the Tucson 1X2° Quad., Arizona (U.S.G.S., 1974) 1:250,000.
(Superceded by OF-27)

24. Preliminary Geologic Map of Teapot Mtn Quad (Creasey, 1974) 1:24,000 (O.F. Report 75-314).

25. Middle Tertiary Plutonism in the Santa Catalina and Tortolita Mountains, Az. (See Map M-747) (M-814) Creasey et al., 1976) 1" = 4 miles.

26. Preliminary reconn. geol. of the Bellota Ranch quad. (Creasey et al, 1975) (OF 75-295) 1:31,250

27. Preliminary map showing potential for copper deposits in the Tucson 1°x2° Quad. (USGS et al, 1974) (OF 74-458) 1:250,000

28. Preliminary Geol. Map of Garnet Mtn Quad, (Blacet, 1975) (OF75-93) 1:24,000

29. Preliminary Geol. Map of Mineral Mtn Quad (7½'), ~~1978~~ (Theodore, et al, 1978) (OF-78-468) 1:24,000

P USGS Professional Paper

12 Geology of Globe Copper District (Ransome, 1903) 1:62,500

21 Geology and Ore Deposits of Bisbee Quadrangle (Ransome, 1904) 1:62,500

43 Copper Deposits of Clifton-Morenci (Lindgren, 1905) 1:62,500

76 San Franciscan Volcanic Field (Robinson, 1913) 1:96,000

115 Copper Deposits of Ray-Miami (Ransome, 1919) 1:125,000

209 Ajo Mining District (Gilluly, 1946) 1:62,500
See U. of A. Bulletin 141

278 Geology and Ore Deposits of Bagdad (Anderson, 1955) 1:20,000

281 General Geology of Central Cochise County (Gilluly, 1956) 1:62,500

308 Geology and Ore Deposits of Jerome Area (Anderson, 1958) 1:24,000 (See GSA 82-10)

342 Geology and Ore Deposits of Globe-Miami (Peterson, 1962) 1:24,000

374-E Reconnaissance Geology of Lake Mead-Davis Dam (Longwell, 1963) 1:125,000

416 Geology and Ore Deposits of Dragoon Quadrangle (Cooper, 1964) 1:31,680

461 Geology of Klondyke Quadrangle (Simons, 1964) 1:62,500

467 Geology of Prescott-Paulden Quadrangle (Krieger, 1965) 1:48,000 (See P-750-B, p. 157, Tertiary Volcanic Rocks (Krieger, 1971) 1:413,217) (See GSA 82-10) (See B-1324-C)

471 Geology of San Manuel Area (Creasey, 1965) 1:24,000

521-A Regional Hydrogeology of Navajo-Hopi Indian Reservation (Cooley, 1969) 1:125,000

521-B Stratigraphy of Chinle-Moenkopi of Navajo-Hopi Indian Reservation (Repenning, 1969) 1:500,000

521-C Paleozoic Rocks of Navajo-Hopi Indian Reservation (Irwin, et al, 1971) 1:500,000

*486- See next pg.

515. Paleotectonic Investigations of the Permian System. Chapter d. Arizona and Western New Mexico. (McKee, 1947) 1:5,000,000. Tept to accompany I-450.

chrysotom: USGS PP 595, pl. 2

P USGS Professional Paper: (Continued)

521-D Hydrogeology of the Cenozoic-Igneous Rocks of Navajo-Hopi Reservation (Akers, et al, 1971) Plate 1, 1:500,000; Plate 2, 1:125,000 (Hopi Volc. Field)

521-E Stratigraphy of Cretaceous Rocks of Navajo-Hopi Indian Reservation (O'Sullivan, 1972) 1:500,000

655-D Geology of Gila River Project (Weist, 1971) 1:24,000

658-A Mesozoic Stratigraphy of the Mule and Huachuca Mountains (Hayes, 1970) No Maps.

658-B Cretaceous Paleogeography of Southeastern Arizona (Hayes, 1970) No Maps.

658-C Mesozoic Stratigraphy of the Santa Rita Mountains (Drewes, 1971) Figs. 3, 11, 18, 28 & 34 of detailed areas.

658-D Mesozoic Stratigraphy of the Sierrita Mtns. (Cooper, 1971) Figs. 4, 5, & 6 of detailed areas.

658-E Mesozoic Stratigraphy of the Patagonia Mtns. (Simons, 1972) 1:103,445

690. Stratigraphy & Origin of the Chinle (Triassic). (Stewart, 1972)

691. Stratigraphy & Origin of the Moenkopi (Triassic). (Stewart, 1972).

746. Cenozoic Rocks of the Santa Rita Mtns (Drewes, 1972). (Age-dates & discussion) some maps at various scales).

748. Structural Geology of the Santa Rita Mtns (Drewes, 1972)
(Plate 1. Tectonic Map of Sahuarita and Mt. Wrightson Quads; 1:95,040)
(Plate 2. Geol Map of Montosa Canyon-Glove Mine Area; 1:12,000)
(Plate 3. Geol Map of Adobe Canyon-Sawmill Canyon fault zone, 1:12,000)
(Plate 4. Geol Map of Rosemont-Helvetia Area; 1:12,000)

794. Large-Magnitude Late Tertiary Strike-Slip Faulting North of Lake Mead, Nevada (Anderson, 1973) 1:62,500.

486-G Geohydrology of Parker-Blythe-Cibola Area (Metzger, 1973), Plate 1; 1:125,000

486-H. Geohydrology of the Yuma Area. (Olmsted, 1973) Plate 3, 1:125,000.

486-J. Geohydrology of the Needles Area (Metzger, 1973) Plate 1, 1:125,000.

486-K. Geohydrologic Reconnaissance of the Imperial Valley, California (Olmsted, 1975) Plate 1, 1:250,000

PCV Porphyry Copper Volume (University of Arizona)

1. Ajo (Dixon, O. 125) 5" = 6 miles
2. San Manuel (Thomas, p. 135) 1" = 850 feet
3. Miami (Olmstead, p. 149) 1:24,000
4. Silver Bell (Richard, p. 159) 1" = 2750 feet
5. Ray (Metz, p. 176) 1" = 1700 feet
6. Bisbee (Bryant, p. 195) 1" = 2750 feet
7. Morenci (Moolick, p. 230) 1" = 2500 feet
8. Safford (Robinson, p. 254) 1" = 4800 feet
9. Esperanza (Lynch, p. 270) 1" = 1050 feet

Q USGS Geologic Quadrangle Maps

41. Geology of Globe Quadrangle (Peterson, 1954) 1:24,000

128. Geology of Haunted Canyon Quadrangle (Peterson, 1960) 1:24,000

162. Geology of Cameron Quadrangle (Akers, 1962) 1:62,500

350. Geologic Map of Big Maria Mountain, NE Quadrangle (Hamilton, 1964) 1:24,000

544. Geology of Chediski Quadrangle (Finnell, 1966) 1:62,500

545. Geology of Cibeque Quadrangle (Finnell, 1966) 1:62,500

668. Geology of Brandenburg Quadrangle (Krieger, 1968) 1:24,000

669. Geology of Holy Joe Peak Quadrangle (Krieger, 1968) 1:24,000

670. Geology of Lookout Mountain Quadrangle (Krieger, 1968) 1:24,000

671. Geology of Saddle Mountain Quadrangle (Krieger, 1968) 1:24,000

715. Geologic Map of Mingus Mountain Quadrangle (Anderson, 1967) 1:62,500

818. Geologic Map of Superior Quadrangle (Peterson, 1969) 1:24,000

841. Geologic Map of Quartzite Quadrangle (Metler, 1970) 1:62,500

973. Geologic Map of Showlow Quadrangle (McKay, 1972) 1:62,500

996. Geologic Map of Mayer Quadrangle (Anderson, 1972) 1:62,500

997. Geologic Map of Mount Union Quadrangle (Anderson, 1972) 1:62,500

1014. Geologic Map of Laguna 7½' Quadrangle (Olmsted, 1972) 1:24,000

1021. Geologic Map of Sonora Quadrangle (Cornwall, 1971) 1:24,000

1106. Geologic Map of Weinbaman Quadrangle (Krieger, 1974) 1:24,000

1107. Geologic Map of Crozier Peak Quadrangle (Krieger, 1974) 1:24,000

1108 Geologic Map of Black Mountain Quadrangle (Krieger, 1974) 1:24,000

1109 Geologic Map of Putnam Wash Quadrangle (Krieger, 1974) 1:24,000

1188. Geologic Map of Kearny Quadrangle (Cornwall, 1974) 1:24,000

1206. Geologic Map of Grayback Quadrangle (Cornwall, 1975) 1:24,000

over

Q-1391. Geologic Map of Hayden Quad. (Banks & Krieger, 1977) 1:24,000
Q-1394 Geologic Map of Black Canyon (15') quad. (Anderson, 1978) 1:62,500
Q-1395 Geologic Map of Boulder City (15') quad. (Anderson 1977) 1:62,500

Q-1442. Geologic Map of El Capitan Quad (Cornwall & Krieger, 1977) 1:24,000

T Thesis Map from SGE Supplement

University of Arizona

11 Geology of Quijotoa Mountains (Gebhardt, R.C., M.S. 1931, No. 10) ?

31 Geology of Northern Slate Mountains (Hogue, W.G., M.S., 1940, No. 44) 1:6,000

39 Geology of Potts Canyon (Wardwell, H.R., M.S., 1941, No. 64) 1:7,200

44 Geology of North Canelo Hills (Feth, J.H., PhD, 1947, No. 13) 1:31,680

82 Structure of Oracle Granite (Banergie, E.F., PhD, 1957, No. 57) ?

84 Geologic Reconnaissance of Cienega Valley (Brennan, D., PhD, 1957, No. 53) 1:31,680 (Company Map No. 1402)

86 Geology of Cerro Colorado (Jones, R.D., M.S. 1957)

88 Geology of West Cobabi District (MacKallor, J.A., M.S. 1957, No. 55) 1:126,720

89 Structure of South Waterman Mountain (McClymonds, N.E., M.S., 1957, No. 34) 1:6,000

99 Geology of South Amole District (Kinnison, J.E., M.S., 1958, No. 29) Company files. 1:62,500

100 Geology of Northwest Mohave County (Moore, R.T., M.S., 1958, No. 22) 1:125,000 (Superseded by ABM-186).

102 Geology of South Comobabi Mountains (Bryner, L., PhD, 1958, No. 98) 1:31,680

119 Geology of North Tumacacori Foothills (Cunningham, J.E., PhD, 1964)

122 Geology of Jackrabbit Area (Hammer, D.F., M.S., 1961, No. 171) 1:3,600

125 Geology of the Saguaro National Monument Area (McColly, R.A., M.S., 1961)

131 Geology of Owl Head District (Barter, C.F., M.S., 1962, No. ?) Company Files. 1:62,500
also see MF-844.

T Thesis Map from SGE Supplement: (Continued)

University of Arizona

151 Geology of Tres Alamos Dam Site (Montgomery, G.L., M.S., 1963, No. ?) ?

152 Pena Blanca-Walker Canyon (Nelson, F.J., M.S., 1963, No. ?) ?

168 Structure of East Silver Bell (Watson, B.N., PhD, 1964, No. 192) 1:8,000

170 Geology of West Granite Wash Mountain (Ciancanelli, E.V., M.S., 1965, No. 92) 1:4,800

174 Structure of East Sierrita Mountains (Looten, D.J., PhD, 1965, No. 246) 1:12,000

177 Metamorphism in Rincon Mountains (Miles, C.H., PhD, 1965, No. 358) 1:6,000

184 Geology of Roskruge Range (Bikerman, M., PhD, 1966) (Damon 1965 AEC files) 1:112,000

191 Geology of North Plomosa Mountains (Jemett, J.P., PhD, 1966, No. 67) 1:12,000

197 Structure of Tucson Basin (Pashley, E.F., PhD, 1966, No. 261) Scale ?

198 Structure of Fraquite Peak, (Reed, R.D., M.S., 1966)

201 Geology of Mineral Mountain Quadrangle (Schmidt, E.A., M.S., 1966, No. 48) ? (Partially superceded by OF-29) ~~OF~~

203 Geology of Las Guijas District, (Shiekh, A.M., M.S., 1966)

207-A Geology of El Tiro Hills, West of Silver Bell (Clarke, C.W., M.S., 1966, No. 43) Company files. 1:12,000

207 Geology of Picacho Peak (Briscoe, J.A., M.S., 1967, No. 69) 1:10,560

209 Geology of East Canelo Hills (Cetinay, H.T., M.S., 1967)

210 Geology of Sahuaro Lake (Durand, H.S., M.S., 1967, No. 26) 1:10,560

216 Geology of Esperanza Mine and Vicinity (Lynch, D.W., M.S., 1967, No. ?) 1:6,000

218 Geology of SE Canelo Hills, (Denney, P.P., M.S., 1968)

T Thesis Map from SGE Supplement: (Continued)

University of Arizona

220 Geochemical Investigation of the Del Bac Hills Volcanics, (Percious, J.K., M.S., 1968)

222 Structure of East Catalina Forerange (Peterson, R.C., PhD, 1968, No. 285) 1:62,500

230 Geochronology of Older Precambrian (Livingston, D.E., PhD, 1969, No. ?) 1:31,700

2?? Geologic History of Ash-flow Sequence in SE Arizona (Marjaniemi, D., PhD, 1969, No. ?) ?

246 Petrographic Study of Silver King Stock (Puckett, J.D., Jr., M.S., 1970, No. 259) Fig. 2, 1:4,404

275 Structural Investigations of Northern Tortilla Mtns. (Schmidt, E.A., PhD, 1971, No. ?) Fig. 5, 1:12,000

? Geology of Saginaw Hill (Frank, T.R., M.S., 1970, No. 385) Scale ?

? Geologic Reconn of Wheelerwash (Vinich, J.S., M.S., 1974, no.) Figs. 2, 7 & 8, 1:12,000.

? The Stockton Pass fault: An Element of the Texas Lineament (Swan, M.M., M.S. 1976, no.) Fig. 4, 1:24,000

OTHERS - T-

0-5 Geology of Vekol Mountains (Carpenter, R.H., PhD, 1947) Stanford, 1:1,217 (Xerox copy in ASARCO files)

0-10 Structure of South Plomosa Mountains (Miller, F.K., PhD, 1966) Stanford

0-11 Structural Study of Virgin and Beaverdam Mountains (Moore, R.T., PhD, 1966) Stanford (Superseded by ABm-186)

0-14 Geology of Springerville-Saint Johns Area (Sirrine, G.V., PhD, 1958) University of Texas

0-50 Geology of Tascuela Area, Sierrita Mtns. (Thoms, J.A., PhD, 1966) Univ. of Michigan, 1:9,600 (Microfilm copy - ASARCO Library)

TN - Thesis Map from New Mexico School of Mines (Socorro)

1. Geology of Northern Tortilla Mountains (Zelinski, W.P., M.S., 1972) 1:62,500 (Copy of map in Drafting Department files)

TS - Thesis Map from Arizona State University (Tempe)

1. Petrography and Petrology of the Volcanic Rocks in the Goldfield Mountains, Arizona (Foder, R.V., M.S., 1968, No.) 1:24,000

2. The Geology of the Volcanic Sequence Associated with the Black Mesa Caldera, Arizona (Stuckless, J.S., M.S., 1969, No.)

3. The Geology of Superstition Mountains (Stuckless, J.S., PhD, 1971 (Stanford)) 1:48,000

4. The Geology of the Volcanic Sequence in the Horse Mesa Area (Malone, G.B., M.S. 1972, No.) 1:24,000

(See CR-55 for total compilation.)

(See GSA 82-11)

W - USGS Water Supply Paper

1354 Geology of Douglas Basin (Coates, 1955) 1:253,440

1360-D Bill Williams River Valley (Wolcott, 1956) 1:62,500

1475-C Geology along South Rim of Grand Canyon (Metzger, 1961) 1:125,000

1475-H Chiricahua National Monument (Johnson, 1962) 1:15,840

1475-J Geology of Waputki - Sunset Crater Area (Cosner, 1962) 1:63,360

1539-S Geology of Snowflake-Hay Hollow Area (Johnson, 1962) 1:125,000

1561 Water Resources in Sycamore Creek (Thomsen, 1968) 1:125,000

1576-A Geology of Hualapai Indian Reservation (Twenter, 1962) 1:250,000

1576-B Geology of Red Lake Area (Akers, 1962) 1:31,680

1589 Geology of Lower Bonita Creek (Heindl, 1961) 1:48,000

1619-H Geology of Headwaters of Gila River Drainage (Feth, 1963) 1:500,000. 109° - 112'30'W and 33°30'N (very rough map)

1647-A Geology Gila Bend Indian Reservation (Heindl, 1963) 1:97,477

1665 Geology of McMullen Valley (Kam, 1964) 1:126,720

1669-I Inner Valley of San Pedro River (Page, 1963) 1:48,000

1771 Geology of Central Apache County (Akers, 1964) 1:125,000

1819-D Water Resources of Fort Huachuca Reservation (Brown, 1966) 1:62,500

1858 Use of Water in Cottonwood Wash (Bowie, 1968) 1:12,000

1861 Sycamore Creek (Thomsen, 1968) 1:125,000 & 1:24,000

1899-H Hualapai and Sacramento Valleys (Gillespie, 1971) 1:125,000

1939-E Geohydrology of Tucson Basin (Alexander, 1973) 1:62,500 (Plate 1), 1:250,000 (Plate 5).

WRR - Water Resources Report; Arizona State Land Department

3 Geology of Harquahala Plains Area (Metzger, 1957) 1:125,000 (See WRR-45)

4 Geology of Palomas Plain-Dendora Valley Area (Armstrong, 1958) 1:125,000

8 Geology of McMullen Valley (Kam, 1961) 1:250,000 (See W-1665)

23 Geohydrology of Dateland - Hyder Area (Weist, 1965) 1:187,000

35 Groundwater in Paradise Valley (Ortega, 1968) 1:158,400

45 Groundwater in the Harquahala Plains (Davis, 1971) 1:87,756

Series superseded by Arizona Water Commission Bulletins:
WCB- Water Commission Bulletin; Arizona Water Commission
WCB-8. Ground-water Lower Hassayampa (Stulik, 1974), 1:62,500.
WCB-10 Ground-water, Southern Navajo County (Mann, 1976), 1:250,000

MISCELLANEOUS PUBLICATIONS

AAPG - AAPG Bulletin

32-1 Geology of Northern Canelo Hills (Feth, 1948) 1:36,000

AIME TRANSACTIONS

Vol. 235 General Geology of Courtland-Gleeson Area, (McRae, O.M., 1966) p. 133-138, with discussion by Jones on p. 446-450.
NOTE: AIME Preprint 651320 is same article, McRae, O.M., 10/7/65) Figure 2; 1:36,000

Preprint 71-I-330 Vekol Hills & Dragoon information (Eyde, 1971)

Preprint 72-I-47 Ore genesis in the Morenci-Metcalf District (Langton, 1972)

ABM Arizona Bureau of Mines Bulletin

123 Geology of Courtland-Gleeson District (Wilson, E.D. 1927) Plate 1, 1:24,400 (See Also AIME Transaction 235 and K.E. Richard's Turquoise Map No. 1039.)

131 Geology of Oatman-Katherine District (Larsen, C., 1931) Plate 2, 1:100,000

134 Geology of Southern Yuma County (Wilson, E.D., 1933) Plate 9, 1:14,400

143 Geology and Ore Deposits of Tombstone (Butler, B.S., 1938) Plate III, 1:23,900 (District) Plate IV, 1:6,000 (Central Area)

174 Guidebook 1 - U.S. Highway 666 (Wilson, E.D., 1965)

176 Guidebook 2 - Arizona Highways 77 & 177 (Peirce, H.W., 1967)

177 Mineral Deposits - Fort Apache Indian Reservation (Moore, R.T., 1968) Plate 2, 1:250,000

179 Mineral Deposits - Gila River Indian Reservation (Wilson, E.D., 1969) Plate 2, 1:250,000

183 Guidebook 3 - Arizona Highways 85, 86, & 386 (Keith, S.B., 1971)

184 Guidebook 4 - Arizona Highways 87, 88, & 188 (Royse, C.F., 1971)

186 Geology of the Virgin & Beaverdam Mtns., Arizona (Moore, R.G., 1972) 1:62,500 (See T-100; and T-0-11).

SP-1 Late Cenozoic Geology of the White Mountains, Arizona (Merrill, R.K., & Péwé, T.L., 1977) 1:48000 (Special Paper No. 1)

C-20 Geology of the Sacramento Peak Area, Western Hassayampa Mtns. (Varga, R.J., 1977) 1:31,250 (Circular No. 20)

EG Economic Geology Bulletin

56-5 Breccia Pipes in Copper Basin (Johnson, W.P. and Lowell, J.D., 1961, p. 916-940) 1:70,400

MAP Geologic Map of Arizona (Wilson, 1969) 1:500,000

MAP Residual Aeromagnetic Map of Arizona (Sauck, 1970) 1:500,000

MAP Arizona Highway Geologic Map (Cooley, 1967) 1:1,000,000 (See AGS Map).

MAP Residual Aeromagnetic Map of Arizona (Sauck, 1970) 1:1,000,000

MAP Gravity Map of Arizona (Sumner 1972) 1:1000,000

ASU - Arizona State University

Peive

1 Colorado River Guidebook: Lees Ferry to Phantom Ranch (Peive, T.L., 1969) 1:62,500 (Same as BYU-15-5) (Private printing by author)

2 Superstition Wilderness Guidebook: Geology and Trails (Sheridan, M.F., 1971) 1:62,500 (Same area as AGS III-6, ABM-184 and CR-55) (Private printing by author)

3. Guidebook to the Geology of Meteor Crater, Az. (Shoemaker & Kieffer, 1978) 1:12,500 (Center for Meteorite Studies Publication No. 17).

BYU - Brigham Young University, Geology Studies

15-2 Guidebook to the Colorado River, Part 2: Phantom Ranch to Lake Mead (Hamblin, W.K. and Rigby, J.K., 1969) 1:62,500, photogeology strip map along river.

15-5 Guidebook to the Colorado River, Part 1: Lee's Ferry to Phantom Ranch (Hamblin, W.K. and Rigby, J.K., 1960) 1:62,500, photogeology strip map along river.

GSA - Geological Society of America Bulletins

47-9 Geology of Boulder Reservoir Floor (Longwell, 1936) 1:110,000

50-5 Geology of the Tucson Mountains (Brown, 1939) 1:62,500

50-7 Precambrian in Central Arizona (Wilson, 1939) Plate 10, 1:80,000; Plate 11, 1:62,500

56-2 Geology of Uinkaret Plateau (Koons, 1945) 1:108,612

64-4 Geology of Chloride Quadrangle (Thomas, 1953) 1:126,720

68-10 Geology of Cochise Head-Vanar Quadrangle (Sabin, 1957) 1:62,500

69-12(1) Geology of East 1/2 Diamond Butte Quadrangle (Gastil, 1958) 1:31,680

82-1 Tertiary rocks of SE Nevada (Anderson, 1971) 1:62,500

82-3 Thrust and Strike Slip Faults in Plomona Mountains (Nutter, 1971) 1:241,371

82-10 Tertiary Volcanics of North Central Arizona (McKee, 1971) 1:333,474

82-11 Tertiary Volcanic Stratigraphy in the Goldfield and Superstition Mountains (Stuckless, 1971) 1:45,913

84-4 Late Precambrian Chuar Group, Grand Canyon (Ford & Breed, 1973) 1: 28,945.

84-2 Cenozoic volcanic geology, etc. (Crowe, 1978) 1" = 2.05 km.

71M. (Map). Reconnaissance Geologic Map of the State of Baja California, Mexico (Gastil, 1971) 1:250,000

GCN - Grand Canyon Natural History Society

1 Geologic Map of Bright Angel Quadrangle (Maxson, 1966) 1:48,000 (Superseded by GCN-4)

2 Geologic Map of East Section Grand Canyon (Maxson, 1967) 1:62,500 (Superseded by GCN-4)

3 Geologic Map of Central and West Sections Grand Canyon (Maxson, 1969) 1:62,500 (Superseded by GCN-4), in part.

4. Geologic Map of the Grand Canyon National Park (Breed, et al, 1974) 1:62,500

Nevada Bureau of Mines

NBMB-62 Geology of Clark County (Longwell, 1965) 1:250,000

NBM-69 Relation of Metal Mining District W.U.S. (Jerome, 1967)

NMGB - New Mexico Geological Society Guidebook

4 Southwestern New Mexico (Fourth Field Conference) Maps 3-4 and 3-5, 1:126,720

13 Mogollon Rim (Thirteenth Field Conference) Various maps of Globe-Miami-Superior Area

PLATEAU - Museum of Northern Arizona - Flagstaff

20-4 Geology of Eastern Hualapai Reservation (Koons, D., 1948) 1:674,000

24-4 Geology of Aubrey Valley (Blissenbach, E., 1952) 1:316,800

33-4 Riverview Mine (Chenoweth, W.L., 1961) 1:169,000

43-2 Guidebook to Geology of San Francisco Peaks (Péwé, T.L., 1970) 1:40,877

UGS - Utah Geological Society Guidebook

23 The Western Grand Canyon District (Hamblin, W.K., editor, 1970) 1:253,440, fault map and photo-geology (1:62,500) in strip along Hurricane Fault

Rocky Mountain Association of Geologists

Geologic atlas of the Rocky Mountain Region, covering all Septems (Various authors, 1972) 1:5,000,000.

Note: Other 1:5,000,000 maps & reports include I-175, I-300, I-450, P-515.

United States Department of the Interior

GEOLOGICAL SURVEY

National Mapping Division
345 Middlefield Road
Menlo Park, CA 94025

March 16, 1984

Memorandum

To: Customers of National Cartographic Information Center-Western

From: Chief, National Cartographic Information Center-Western

Subject: Price Change - Map Separates

We have been advised by our headquarters office that the price of map separates will be increased April 1, 1984. Western Mapping Center will honor any orders dated before March 31, 1984 with the old price schedule. A copy of the new price schedule is enclosed.

If you have any questions concerning this price increase or any other cartographic materials please call me at (415) 323-8111, extension 2426, or FTS 467-2426.

William J. Johnson, Jr.

cc: J. D. Sell
V. M. Kellogg/D. A. Melhado
M. E. Kavanagh

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SW Exploration

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- Purple - All new map features determined from aerial photography (water tint and/or urban area are optional).
- Red - Road classification, fence lines, and land office lines in applicable States (urban area tint is optional).
- Brown - Contours and contour numbers.
- Green - Woodland, orchards.
- Bathymetry - Underwater contours in offshore areas by National Ocean Survey.

These feature groups can be combined as composites to meet the customer's requirements.

For 1:250,000-scale maps (average size 30- by 36-inch):

Single-Film Copy of any Feature Group	$40
2 Feature Group Composite	$49
3 Feature Group Composite	$58
Planimetric Composite (average of 5 plates)	$67
Topographic Composite (average of 7 plates)	$76
Complete Composite (average of 10 plates)	$85
Topographic Bathymetric Composite (average 14 plates) . . .	$112

For 1:100,000-scale and 7.5- by 15-minute 1:25,000-scale maps (average size 30- by 48-inch):

Single-Film Copy of any Feature Group	$46
2 Feature Group Composite	$55
3 Feature Group Composite	$64
4 Feature Group Composite	$73
Planimetric Composite (average of 6 plates)	$78
Topographic Composite (average of 7 plates)	$82
Complete Composite (average of 8 plates).	$86
Topographic Bathymetry Composite (average of 14 plates) . .	$118

Odd-size maps, i.e. State Base 1:500,000-scale maps, will be billed at $5 per square foot with each additional exposure $5.

SPECIAL MAILING CHARGES

Additional charges for special mailing will be:

- Overseas Airmail	$1 per pound
- Registered and Certified Mail	$5
- United Parcel Service (UPS)	$10
- Federal Express	$20
- Air Freight	COD only (mailing charges only)

COPY OF NONSTANDARD MATERIALS AND OTHER PHOTO SERVICES

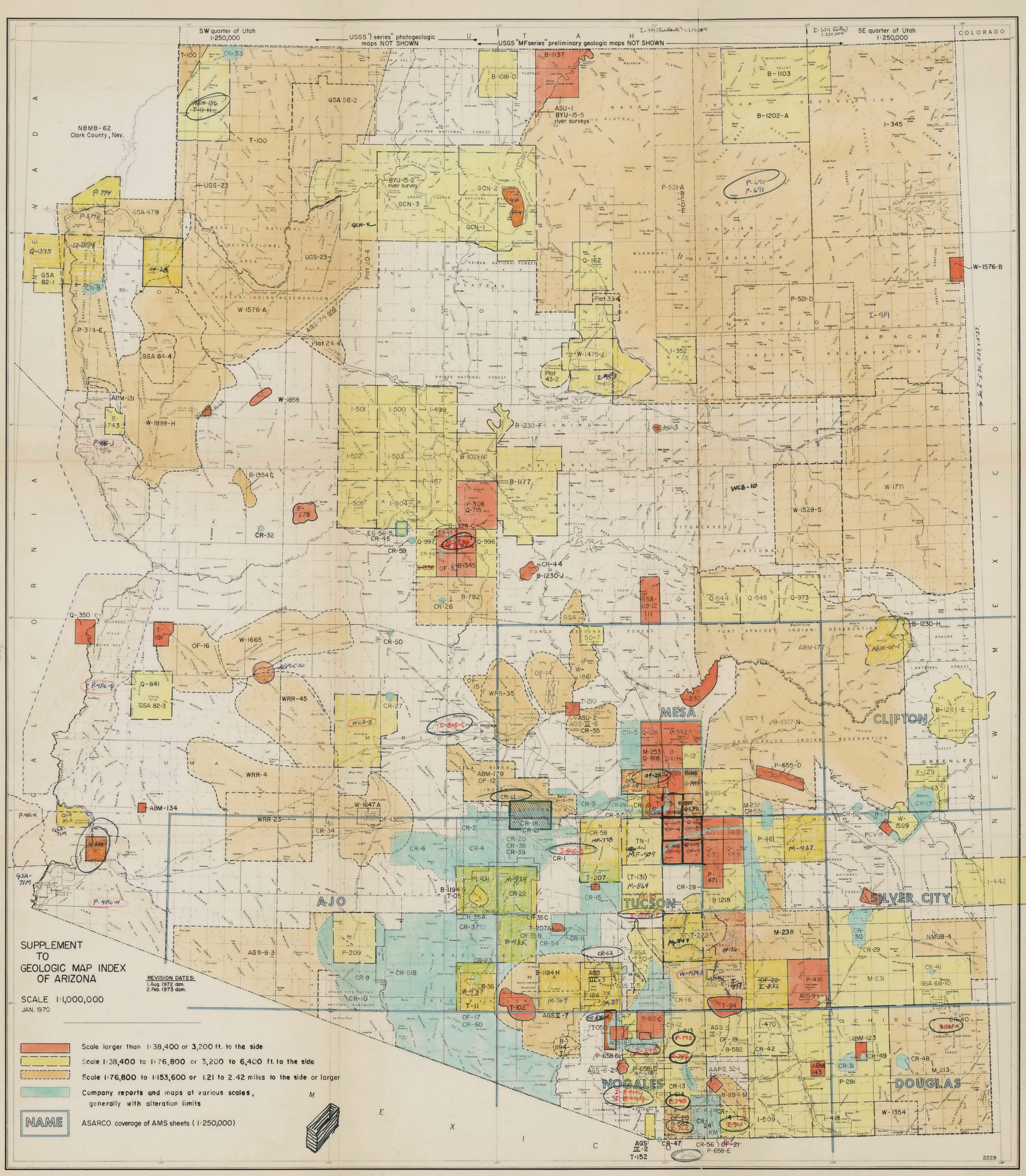
The following prices are for copies of nonstandard materials and other photo services which are made from map manuscript copy, National Atlas separates, Land Use and Land Cover separates, and other related materials. The prices listed are for a single exposure; each additional exposure is $5.

Size	Film Contact	Scribe Guides Color Proofs*	Peel Coats Etch Guides	Silver Emul. Paper Print	Diazo Prints	Diazo Foil	Film Camera
24"x30"	$40.00	$45.00	$60.00	$20.00	$3.00	$12.50	$36.00
24"x36"	42.00	50.00	70.00	22.00	3.50	19.00	45.00
30"x42"	45.00	60.00	85.00	27.00	4.00	25.00	60.00
30"x46"	47.00	65.00	90.00	29.00	4.50	N/A	65.00
30"x48"	50.00	70.00	100.00	31.00	4.50	N/A	70.00
$/square foot	5.00	7.00	11.00	N/A	50	2.50	7.00
$/added exposure	5.00	5.00	5.00	N/A	N/A	N/A	N/A
$/added color	N/A	4.00	N/A	N/A	N/A	N/A	N/A

COPY OF CONTINUOUS TONE AND SCREENED ORTHOPHOTO PRODUCTS

All orthophotoquads are produced on the 7.5-minute format and fit on 24x30 material. Contours can be added to the orthophoto image when 7.5-minute materials are available. This requires an additional film positive and an additional exposure to produce, so add $50 to the listed price if contours are required.

*Cromolin color proofs in which each color is color toned, photoexposed, and plastic laminated are available for an additional $75 per proof.


SW quarter of Utah 1:250,000
USGS "I series" photogeologic maps NOT SHOWN
U T A H
USGS "MF series" preliminary geologic maps NOT SHOWN
SE quarter of Utah 1:250,000
COLORADO
NEVADA
CALIFORNIA
NEW MEXICO
ARIZONA
NBMB-62 Clark County, Nev.
SUPPLEMENT TO GEOLOGIC MAP INDEX OF ARIZONA
SCALE 1:1,000,000
JAN. 1970
REVISION DATES:
1. Aug. 1972 dam.
2. Feb. 1973 dam.
Scale larger than 1:38,400 or 3,200 ft. to the side
Scale 1:38,400 to 1:76,800 or 3,200 to 6,400 ft. to the side
Scale 1:76,800 to 1:153,600 or 1.21 to 2.42 miles to the side or larger
Company reports and maps at various scales, generally with alteration limits
NAME
ASARCO coverage of AMS sheets (1:250,000)
MEXICO
2229

AD126ME
(Tucson)

SUPPLY PURCHASES

Employee: _____ Month: _____

Receipt No.	Office or Project	Cost Center and Expense No.	Amount	
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TOTAL			$	

If the above figures are in other than U. S. Dollars, enter currency _____ and exchange rate. Use separate sheet for each currency involved.

* For General Exploration, Tucson Office, enter Office No. 499-01

Date: _____ Signed _____ Approved _____

.E _____ PROJECT _____ 26th _____ THRU 25th _____, 19 ____ CONTRACTOR _____

CRIPTION: _____

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TOTAL _____

Gordon Haxel
November 30, 1978

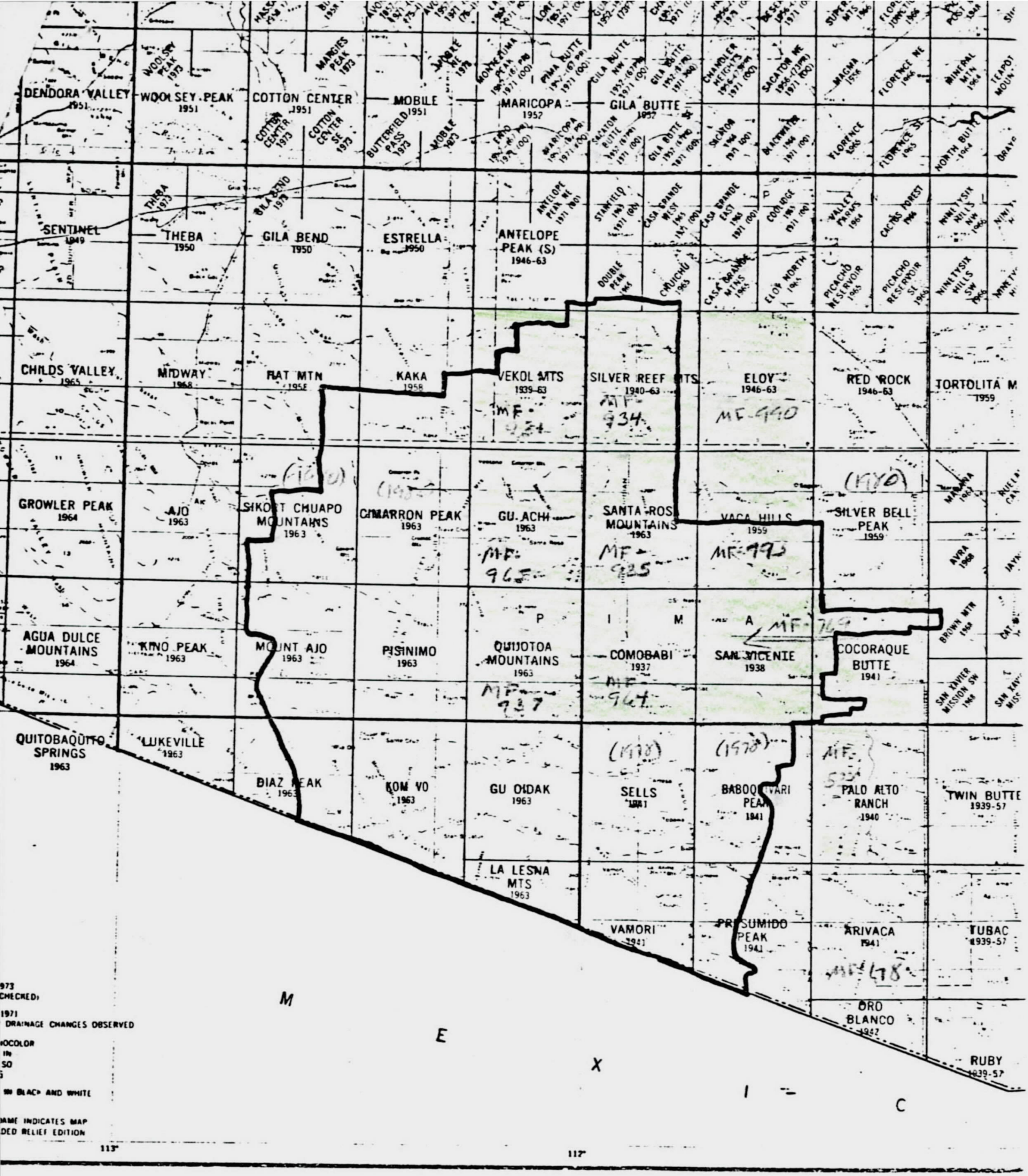
PAPAGO GEOLOGIC MAPS

Papago Project

Number	Quadrangle (15′)	Authors	Publication date
MF-931	Vekol Mtns	Dockter, Keith	1978
MF-934	Silver Reef Mtns	Blacet, Bergquist, Miller	1978
MF-935	Santa Rosa Mtns	Bergquist, Blacet, Miller	1978
MF-937	Quijotoa Mtns	Rytuba, Till, Blair, Haxel	1978
MF-964	Comobabi	Haxel, Briskey, Rytuba, Bergquist, Blacet, Miller	1978
MF-965	Gu Achi	Briskey, Haxel, Peterson, Theodore	1978
MF-	Sells	May, Haxel	(1979)
(OF-) MF-	Baboquivari Peak	Haxel, May	(1979)
MF-	Cimarron Peak	Peterson	(1980)
MF-	Sikort Chuapo Mtns	Peterson	(1980)

Other projects (including some nearby areas)

Number	Quadrangle (15′)	Authors	Publication date
MF-793	Vaca Hills	Banks, Dockter	1976
MF-769	San Vicente + Cocoraque Butte	Keith	1976
MF-538	east side Palo Alto Ranch	Drewes, Cooper	1973
MF-678	Arivaca	Keith, Theodore	1975
MF-990	Eloy	Bergquist, Banks, Blacet	1978
MF-	Silver Bell Peak	Ashley, Keith	(1980)



973
CHECKED
1971
DRAINAGE CHANGES OBSERVED
HOCOLOR
IN
SO
G
BLACK AND WHITE
NAME INDICATES MAP
DED RELIEF EDITION

Scale 1:1,000,000

AD126ME
(Tucson)

SUPPLY PURCHASES

Employee: _____ Month: _____

Receipt No.	Office or Project	Cost Center and Expense No.	Amount	
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TOTAL			$	

If the above figures are in other than U. S. Dollars, enter currency _____ and exchange rate. Use separate sheet for each currency involved.

* For General Exploration, Tucson Office, enter Office No. 499-01

Date: _____ Signed _____ Approved _____

TRAVEL AND OTHER REIMBURSABLE EXPENSE

FORM AD 126 - ASARCO
(REV. 1.63)
PRINTED IN U.S.A.

EXPENSES OF ..... FOR ..... 19 .....
NAME MONTH

DAY *	TRANSPORTATION Auto, Rail, Air, etc. Code	Amount	Taxi, Bus, etc.	ITINERARY Starting point, destination, hotel name, business purpose. (Show mileage if personal car used)	HOTEL	MEALS	MISC. Telephone, Telegrams, Postage, etc. Detail	Amount	ENTERTAINMENT, BUSINESS MEETINGS AND MEALS. ETC. Firm and individuals, place and business purpose (Additional space on reverse side)	Amount
1										
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DISTRIBUTION OF EXPENSES

A/c ..... $ .....
A/c ....
A/c ....
A/c ..... _____
TOTAL ..... $ _____

DETAIL OF ADVANCES

Cash (.....Office) $ .....
Cash (.....Office) .....
Transportation ....
Personal Mileage ..... @ ..... _____
(CO. OWNED CAR)
TOTAL ..... $ _____

GRAND TOTAL EXPENSES $ .....
LESS ADVANCES ..... _____
DIFFERENCE ..... $ _____

DUE TO EMPLOYEE ☐ DUE TO COMPANY ☐
(Indicate disposition of balance on reverse side)

* CODE: A - Air; B - Excess Baggage; R - Rail; C - Personal car; H - Rented car; K - Company car: P - Parking; T - Tolls

CORRECT _____ APPROVED _____

DISPOSITION OF BALANCE OF EXPENSES AND ADVANCES:	Amount
Send check to at	
Deposit check in _____ Bank of for credit to	
Herewith is my check to cover excess of advances over expenses	
Pay me in cash	
Credit my account at Plant or Office	

CASH RECEIVED

EXPENSE ACCOUNT INSTRUCTIONS

1. This form shall be used by all persons traveling or incurring expense on Company business. It must be promptly submitted for approval and settlement at the end of each month. A COPY SHOULD BE RETAINED BY THE INDIVIDUAL FOR PERSONAL INCOME TAX PURPOSES.

2. Expense accounts must be approved by Plant Manager, Superintendent, Department Head, or other properly designated authority.

3. Receipts must be attached to this statement for all principal items of expense, such as hotel bill, transportation ticket stubs, gasoline charge slips, auto rentals, regardless of amount; and for business meals, meetings, entertainment, etc., in excess of $25.00 exclusive of gratuities.

4. Expense incurred in operation of a Company-owned car shall be reported in total in the Transportation column supported by detailed automobile expense report Form FMD-19. Mileage charge for personal use of a Company-owned car shall be shown under "Advances".

5. Transportation and other items of expense paid directly by the Company shall be reported as expense and as advances.

6. The column for "Meals" should be used for expense of the employee while traveling on Company business. Meals at business meetings, entertainment, etc., shall be reported in the Entertainment, Business Meetings and Meals column. Tips shall normally be included with the related expense.

7. Dues to business or professional organizations shall be reported in the miscellaneous column.

DATE	DETAIL OF BUSINESS MEALS, MEETINGS, ENTERTAINMENT, ETC.	AMOUNT

AUTOMOBILE MILEAGE RECORD

_____
Unit

Vehicle:_____ License No. _____ Month:_____

Speedometer Mileage: 1st of Month:_____ End of Month:_____

Date Trip Started	Completed	Speed-ometer Start	Mileage End	Miles Driven	Trip	Charge to	Driver

Note: If cash expenditures applicable to this vehicle are incurred by an employee whose expense account is cleared through an office other than Tucson, a notation should be made on the reverse side showing date, nature and amount of such expenditures.

AD126ME
(Tucson)

SUPPLY PURCHASES

Employee: _____ Month: _____

Receipt No.	Office or Project	Cost Center and Expense No.	Amount	
1			$	
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TOTAL			$	

If the above figures are in other than U. S. Dollars, enter currency _____ and exchange rate. Use separate sheet for each currency involved.

* For General Exploration, Tucson Office, enter Office No. 499-01

Date: _____ Signed _____ Approved _____

PETROGRAPHIC ANALYSIS

Section No.

Rock Name

Megascopic description

Microscopic description

Minerals

Textures

PETROGRAPHIC ANALYSIS

Section No.

Rock Name

Megascopic description

Microscopic description

Minerals

Textures

PETROGRAPHIC ANALYSIS

Section No.

Rock Name

Megascopic description

Microscopic description

Minerals

Textures

PETROGRAPHIC ANALYSIS

Section No.

Rock Name

Megascopic description

Microscopic description

Minerals

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AD126ME
(Tucson)

SUPPLY PURCHASES

Employee: _____ Month: _____

Receipt No.	Office or Project	Cost Center and Expense No.	Amount	
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TOTAL			$	

If the above figures are in other than U. S. Dollars, enter currency _____ and exchange rate. Use separate sheet for each currency involved.

* For General Exploration, Tucson Office, enter Office No. 499-01

Date: _____ Signed _____ Approved _____

LOCATION NOTICE

LODE MINING CLAIM

This mining claim, the name of which is the LD NO. 1 mining claim, was located by the undersigned American Smelting and Refining Co. on the 6th day of June, 1973.

This claim is 1500 feet long and 600 feet wide, and the point of mineral discovery is 50 feet from the North end and 1450 feet from the South end of this claim.

The general course of this claim is from North to South.

This claim is situated and located in the Pioneer Mining District, in Pinal County, State of Arizona, and its location monument is situated at a point which bears S. 57° 40' W., 2600 feet from the scribed stone marking the cor. of secs. 13, 14, 23, and 24, T. 1 S., R. 13 E., G. & S.R.M. It is situated in the E½ sec. 23 and is bound on the north end by the south line of patented land in N½ NE¼ sec. 23.

Dated and posted on the ground the day and year first above written.

Witness: Norman W. Winters
Thomas E. Smith

James D. Sell
Agent for ASARCO

LOCATION NOTICE

LODE MINING CLAIM

This mining claim, the name of which is the LD NO. 22 mining claim, was located by the undersigned American Smelting and Refining Co. on the 6th day of June, 1973.

This claim is 1100 feet long and 150 feet wide, and the point of discovery is 550 feet from the north end and 550 feet from the south end of this claim.

The general course of this claim is from north to south.

This claim is situated and located in the Pioneer Mining District, in Pinal County, State of Arizona, and its location monument is situated at a point which bears S. 59° 30' W., 1775 feet from the scribed stone marking the cor. of secs. 13 and 24, T. 1 S., R. 13 E., and secs. 18 and 19, T. 1 S., R. 14 E., G. & S.R.M., and is situated in the NE¼ sec. 24. It is bounded on its west side-line by the east side-line of the LD NO. 17 lode; its east side-line is bounded by the west end-lines of the Fairview No. 1 and Fairview No. 2 lodes; its south end-line coincides with a portion of the north end-line of the OS No. 21 lode claim.

Dated and posted on the ground the day and year first above written.

Witness: Norman W. Wisner
Loren E. Brunner

James W. Sell
Agent for ASARCO

LOCATION NOTICE

LODE MINING CLAIM

This mining claim, the name of which is the PINK ELEPHANT mining claim, was located by the undersigned Arizona Smelting and Refining Co. on the 6th day of June, 1973.

This claim is 1500 feet long and 250 feet wide, and the point of discovery is 50 feet from the north end and 1450 feet from the south end of this claim.

The general course of this claim is from North to South.

This claim is situated and located in the Pioneer Mining District, in Pinal County, State of Arizona, and its location monument is situated at a point which bears S. 2° 15' W., 1460 feet from the scribed stone marking the cor. of secs. 13 and 24, T. 1 S., R. 13 E., and secs. 18 and 19, T. 1 S., R. 14 E., G. & S.R.M., and is situated in the E½ sec. 24. It overlaps the easterly side-line of the OS No. 23 lode and the westerly side-line of the WHITE ELEPHANT lode; its south end-center monument is common with the SE Cor. of said OS No. 23 lode and the SW Cor. of said WHITE ELEPHANT lode; and its north end-line coincides with a portion of the southerly side-line of the Fairview No. 1 lode, its NE cor. being identical with the SE cor. of said Fairview No. 1 lode.

Dated and posted on the ground the day and year first above written.

Witness: Norman W. Wheeler
Loren E. Bunnig

James D. Lee
Agent for ASARCO

APPENDIX 13

CORRECTION FOR DIP IN DIRECTIONS NOT PERPENDICULAR TO STRIKE[1]

Angle of full dip	Angle between strike and direction of section							
	80°	75°	70°	65°	60°	55°	50°	45°
10°	9° 51′	9° 40′	9° 24′	9° 5′	8° 41′	8° 13′	7° 41′	7° 6′
15°	14° 47′	14° 31′	14° 8′	13° 39′	13° 34′	12° 28′	11° 36′	10° 4′
20°	19° 43′	19° 23′	18° 53′	18° 15′	17° 30′	16° 36′	15° 35′	14° 25′
25°	24° 48′	24° 15′	23° 39′	22° 55′	22° 0′	20° 54′	19° 39′	18° 15′
30°	29° 37′	29° 9′	28° 29′	27° 37′	26° 34′	25° 18′	23° 51′	22° 12′
35°	34° 36′	34° 4′	33° 21′	32° 24′	31° 13′	29° 50′	28° 12′	26° 20′
40°	39° 34′	39° 2′	38° 15′	37° 15′	36° 0′	34° 30′	32° 44′	30° 41′
45°	44° 34′	44° 1′	43° 13′	42° 11′	40° 54′	39° 19′	37° 27′	35° 16′
50°	49° 34′	49° 1′	48° 14′	47° 12′	45° 54′	44° 17′	42° 23′	40° 7′
55°	54° 35′	54° 4′	53° 19′	52° 18′	51° 3′	49° 29′	47° 35′	45° 17′
60°	59° 37′	59° 8′	58° 26′	57° 30′	56° 19′	54° 49′	53° 0′	50° 46′
65°	64° 40′	64° 14′	63° 36′	62° 46′	61° 42′	60° 21′	58° 40′	56° 36′
70°	69° 43′	69° 21′	68° 49′	68° 7′	67° 12′	66° 8′	64° 35′	62° 46′
75°	74° 47′	74° 30′	74° 5′	73° 32′	72° 48′	71° 53′	70° 43′	69° 14′
80°	79° 51′	79° 39′	79° 22′	78° 59′	78° 29′	77° 51′	77° 2′	76° 0′
85°	84° 56′	84° 50′	84° 41′	84° 29′	84° 14′	83° 54′	83° 29′	82° 57′
89°	88° 59′	88° 58′	88° 56′	88° 54′	88° 51′	88° 47′	88° 42′	88° 35′

Angle of full dip	Angle between strike and direction of section								
	40°	35°	30°	25°	20°	15°	10°	5°	1°
10°	6° 28′	5° 46′	5° 2′	4° 15′	3° 27′	2° 37′	1° 45′	0° 53′	0° 10′
15°	9° 46′	8° 44′	7° 38′	6° 28′	5° 14′	3° 33′	2° 40′	1° 20′	0° 16′
20°	13° 10′	11° 48′	10° 19′	8° 45′	7° 6′	5° 23′	3° 37′	1° 49′	0° 22′
25°	16° 41′	14° 58′	13° 7′	11° 9′	9° 3′	6° 53′	4° 37′	2° 20′	0° 28′
30°	20° 21′	18° 19′	16° 6′	13° 43′	11° 10′	8° 30′	5° 44′	2° 53′	0° 35′
35°	24° 14′	21° 53′	19° 18′	16° 29′	13° 28′	10° 16′	6° 56′	3° 30′	0° 42′
40°	28° 20′	25° 42′	22° 45′	19° 31′	16° 0′	12° 15′	8° 17′	4° 11′	0° 50′
45°	32° 44′	29° 50′	26° 33′	22° 55′	18° 53′	14° 30′	9° 51′	4° 59′	1° 0′
50°	37° 27′	34° 21′	30° 47′	26° 44′	22° 11′	17° 9′	11° 41′	5° 56′	1° 11′
55°	42° 33′	39° 20′	35° 32′	31° 7′	26° 2′	20° 17′	13° 55′	7° 6′	1° 26′
60°	48° 4′	44° 47′	40° 54′	36° 14′	30° 29′	24° 8′	16° 44′	8° 35′	1° 44′
65°	54° 2′	50° 53′	46° 59′	42° 11′	36° 15′	29° 2′	20° 25′	10° 35′	2° 9′
70°	60° 29′	57° 36′	53° 57′	49° 16′	43° 13′	35° 25′	25° 30′	13° 28′	2° 45′
75°	67° 22′	64° 58′	61° 49′	57° 37′	51° 55′	44° 1′	32° 57′	18° 1′	3° 44′
80°	74° 40′	73° 15′	70° 54′	67° 21′	62° 43′	55° 44′	44° 33′	26° 18′	5° 31′
85°	82° 15′	81° 20′	80° 5′	78° 19′	75° 39′	71° 20′	63° 15′	44° 54′	11° 17′
89°	88° 27′	88° 15′	88° 0′	87° 38′	87° 5′	86° 9′	84° 15′	78° 41′	44° 15′

[1] This table has been adapted from Appendix I, on p. 128, in Dr. A. R. Dwerryhouse's "Geological and Topographical Maps," published by Messrs. Edward Arnold, London.

APPENDIX 14

PROTRACTOR FOR CORRECTION

Professor W. S. Tangier Smith has described a p
used in place of the foregoing table (Appendix 1
degrees of true dip are represented by the vertical l
along the chord connecting the two ends of the arc;
are represented on the arc; and the angle between t
bed or surface and the direction in which the dip
is shown by the converging lines marked on the rig

To illustrate the use of this protractor, assume
30° from the horizontal and that we want to find
in a direction 60° from its strike. Find the poi
inclined line marked 60° at the right of the diagr
marked 30° for *true dip*. Through this intersecti
of the protractor (center of the arc at lower right co
which will then intersect the arc at approximately
component or *apparent dip* required.

To find the true dip, reverse this procedure. P
the center of the arc and on the angle for apparent
Assume that this apparent dip is 15° and that the
direction at 25° to the strike. Note on which vert
cuts the diagonal for 25°. Here it is approximatel
indicating a true dip of about 32°.

Compare these figures with the values in th

[1] Copyrighted by Professor Smith. See Bibliog
1925.

APPENDIX 13

DIP IN DIRECTIONS NOT PERPENDICULAR TO STRIKE[1]

Angle between strike and direction of section	70°	65°	60°	55°	50°	45°
0′	9° 24′	9° 5′	8° 41′	8° 13′	7° 41′	7° [illegible]
1′	14° 8′	13° 39′	13° 34′	12° 28′	11° 36′	10° 4[illegible]
3′	18° 53′	18° 15′	17° 30′	16° 36′	15° 35′	14° 2[illegible]
5′	23° 39′	22° 55′	22° 0′	20° 54′	19° 39′	18° 1[illegible]
9′	28° 29′	27° 37′	26° 34′	25° 18′	23° 51′	22° 1[illegible]
4′	33° 21′	32° 24′	31° 13′	29° 50′	28° 12′	26° 2[illegible]
2′	38° 15′	37° 15′	36° 0′	34° 30′	32° 44′	30° 41′
1′	43° 13′	42° 11′	40° 54′	39° 19′	37° 27′	35° 16′
1′	48° 14′	47° 12′	45° 54′	44° 17′	42° 23′	40° 7′
4′	53° 19′	52° 18′	51° 3′	49° 29′	47° 35′	45° 17′
8′	58° 26′	57° 30′	56° 19′	54° 49′	53° 0′	50° 46′
4′	63° 36′	62° 46′	61° 42′	60° 21′	58° 40′	56° 36′
1′	68° 49′	68° 7′	67° 12′	66° 8′	64° 35′	62° 46′
0′	74° 5′	73° 32′	72° 48′	71° 53′	70° 43′	69° 14′
9′	79° 22′	78° 59′	78° 29′	77° 51′	77° 2′	76° 0′
0′	84° 41′	84° 29′	84° 14′	83° 54′	83° 29′	82° 57′
8′	88° 56′	88° 54′	88° 51′	88° 47′	88° 42′	88° 35′

Angle between strike and direction of section	30°	25°	20°	15°	10°	5°	1°
[illegible]	5° 2′	4° 15′	3° 27′	2° 37′	1° 45′	0° 53′	0° 10′
[illegible]	7° 38′	6° 28′	5° 14′	3° 33′	2° 40′	1° 20′	0° 16′
[illegible]	10° 19′	8° 45′	7° 6′	5° 23′	3° 37′	1° 49′	0° 22′
[illegible]	13° 7′	11° 9′	9° 3′	6° 53′	4° 37′	2° 20′	0° 28′
[illegible]	16° 6′	13° 43′	11° 10′	8° 30′	5° 44′	2° 53′	0° 35′
[illegible]	19° 18′	16° 29′	13° 28′	10° 16′	6° 56′	3° 30′	0° 42′
[illegible]	22° 45′	19° 31′	16° 0′	12° 15′	8° 17′	4° 11′	0° 50′
[illegible]	26° 33′	22° 55′	18° 53′	14° 30′	9° 51′	4° 59′	1° 0′
[illegible]	30° 47′	26° 44′	22° 11′	17° 9′	11° 41′	5° 56′	1° 11′
[illegible]	35° 32′	31° 7′	26° 2′	20° 17′	13° 55′	7° 6′	1° 26′
[illegible]	40° 54′	36° 14′	30° 29′	24° 8′	16° 44′	8° 35′	1° 44′
[illegible]	46° 59′	42° 11′	36° 15′	29° 2′	20° 25′	10° 35′	2° 9′
[illegible]	53° 57′	49° 16′	43° 13′	35° 25′	25° 30′	13° 28′	2° 45′
[illegible]	61° 49′	57° 37′	51° 55′	44° 1′	32° 57′	18° 1′	3° 44′
[illegible]	70° 34′	67° 21′	62° 43′	55° 44′	44° 33′	26° 18′	5° 31′
[illegible]	80° 5′	78° 19′	75° 39′	71° 20′	63° 15′	44° 54′	11° 17′
[illegible]	88° 0′	87° 38′	87° 5′	86° 9′	84° 15′	78° 41′	44° 15′

[illegible]apted from Appendix 1, on p. 128, in Dr. A. R. Dwerryhouse's [illegible]ical Maps," published by Messrs. Edward Arnold, London.

APPENDIX 14

PROTRACTOR FOR CORRECTION OF DIP

Professor W. S. Tangier Smith has described a protractor[1] which can be used in place of the foregoing table (Appendix 13). In this protractor, degrees of true dip are represented by the vertical lines (Fig. 633), marked along the chord connecting the two ends of the arc; degrees of apparent dip are represented on the arc; and the angle between the strike of the inclined bed or surface and the direction in which the dip component is measured is shown by the converging lines marked on the right of the diagram.

To illustrate the use of this protractor, assume that a layer is dipping 30° from the horizontal and that we want to find its inclination measured in a direction 60° from its strike. Find the point of intersection of the inclined line marked 60° at the right of the diagram and the vertical line marked 30° for *true dip*. Through this intersection point and the vertex of the protractor (center of the arc at lower right corner) lay a straight-edge, which will then intersect the arc at approximately 26°35′, which is the dip component or *apparent dip* required.

To find the true dip, reverse this procedure. Place the straight-edge on the center of the arc and on the angle for apparent dip as shown on the arc. Assume that this apparent dip is 15° and that the angle of inclination is in a direction at 25° to the strike. Note on which vertical line the straight-edge cuts the diagonal for 25°. Here it is approximately on the 32° vertical, thus indicating a true dip of about 32°.

Compare these figures with the values in the foregoing table.

[1] Copyrighted by Professor Smith. See Bibliog., SMITH, W. S. TANGIER, 1925.

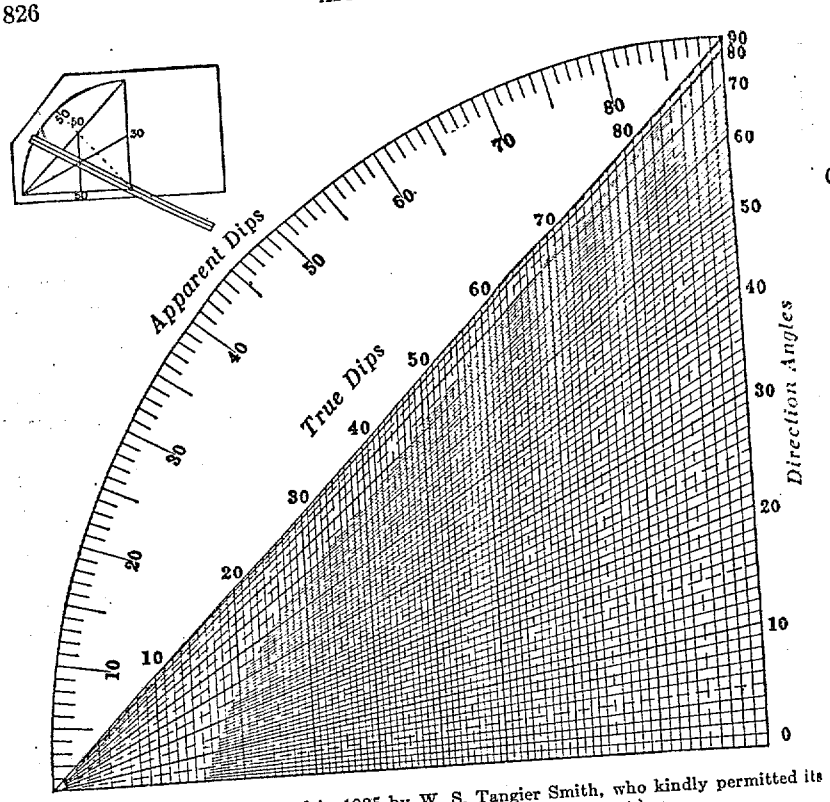

FIG. 633. Chart copyrighted in 1925 by W. S. Tangier Smith, who kindly permitted its reproduction here. (For use of chart, see text.)

GRAPHIC DETERMINATION OF DIP COMPONEN ARE MEASURED IN FEET PER MILE

The accompanying graph may be used to find the incli or of any relatively flat surface or layer, in directions n strike, when dips are low and are recorded in *feet per m*

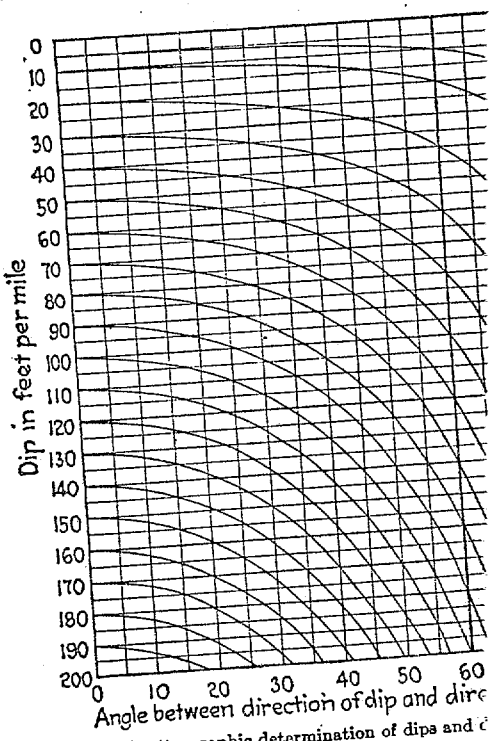

FIG. 634.[1] Curves for the graphic determination of dips and c measured in feet per mile. (Angles recorded at base c

[1] Prepared by F. H. Lahee and printed in *Economic* 263, 1919.

Set light @ 5°

if stay black in x nicols - then sulfide if clouds - hole

Carlsbad twin - plagioclase, also shows zoning.
orthoclase - light tinting brown, may have simple
pleochroism - perthites.
qtz - grey - lilac extinction.

1 small bubble in bubble, general % of inclusion
2 gas rich large bubble
3 gas, small, w/ daughter.

MAP INDEX ARIZONA

J. D. SELL

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

GEOLOGIC MAP INDEX OF ARIZONA

Compiled by
Willard L. McIntosh and Margaret F. Eister
1975

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Correspondence pertaining to possible omissions or errors in the contents of this index should be addressed to the Geologic Inquiries Group, U.S. Geological Survey, National Center, Reston, Virginia 22092.

1. Dutton, C.E., 1882, Tertiary history of the Grand Canyon district: U.S. Geol. Survey Mon. 2. Sheets 7 and 8, 1:63,360.

2. Jagger, T.A., Jr., and Palache, Charles, 1905, Description of the Bradshaw Mountains quadrangle, Arizona: U.S. Geol. Survey Geol. Atlas, Folio 126. 1:125,000.

3. Lindgren, Waldemar, 1905, The copper deposits of the Clifton-Morenci district, Arizona: U.S. Geol. Survey Prof. Paper 43. Pl. 1, 1:62,500, also detailed maps.

4. Lindgren, Waldemar, 1905, Description of the Clifton quadrangle, Arizona: U.S. Geol. Survey Geol. Atlas, Folio 129, 1:62,500.

5. Reber, L.E., Jr., 1916, The mineralization at Clifton-Morenci: Econ. Geology, v. 11. Fig. 28, 1:221,760.

6. Butler, B.S., and Wilson, E.D., 1938, Some Arizona ore deposits: Arizona Bur. Mines Bull. 145. Pl. 16, 1:24,000.

7. Hewett, D.F., and others, 1936, Mineral resources of the region around Boulder Dam: U.S. Geol. Survey Bull. 871. Fig. 47, 1:5,400.

8. Lee, W.T., 1905, Underground waters of Salt River Valley, Arizona: U.S. Geol. Survey Water-Supply Paper 136. Pl. 7, 1:96,000, and detailed maps.

9. Lee, W.T., 1908, Geologic reconnaissance of a part of western Arizona: U.S. Geol. Survey Bull. 352. Fig. 10, 1:55,440.

10. Schrader, F.C., 1909, Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Arizona: U.S. Geol. Survey Bull. 397. Pl. 1, 1:250,000.

11. Veatch, A.C., 1911, Coal deposits near Pinedale, Navajo County, Arizona: U.S. Geol. Survey Bull. 431. Pl. 12, 1:48,000.

12. Bancroft, Howland, 1911, Reconnaissance of the ore deposits in northern Yuma County Arizona: U.S. Geol. Survey Bull. 451. Fig. 5, 1:24,000.

13. Stewart, C.A., 1912, The geology and ore deposits of the Silverbell mining district, Arizona: Am. Inst. Min. Eng. Bull., v. 65, (See Trans., v. 43, 1913). Fig. 1, 1:24,000.

14. Kerr, P.F., 1951, Alteration features at Silver Bell: Geol. Soc. America, Bull., v. 62, no. 5. Pl. 1, 1:24,000.

15. Robinson, H.H., 1913, The San Francisco volcanic field, Arizona: U.S. Geol. Survey Prof. Paper 76. Pl. 5, 1:96,000, also other maps.

16. Sharp, R.P., 1942, Multiple Pleistocene glaciation on San Francisco Mountain, Arizona: Jour. Geology, v. 50, no. 5. Fig. 1, 1:80,000.

17. Feth, J.H., 1953, A geologic and geophysical reconnaissance of the Doney Park-Black Bill Park area, Arizona, with reference to ground water: U.S. Geol. Survey Circ. 233. Pl. 1, 1:93,750.

18. Noble, L.F., 1914, The Shinumo quadrangle, Grand Canyon district, Arizona: U.S. Geol. Survey Bull. 549. Pl. 1, 1:48,000.

19. Schrader, F.C., and Hill, J.M., 1915, Mineral deposits of the Santa Rita and Patagonia Mountains, Arizona: U.S. Geol. Survey Bull. 582. Pl. 2, 1:125,000, also detailed maps.

20. Hill, J.M., 1910, Notes on the placer deposits of Greaterville, Arizona: U.S. Geol. Survey Bull. 430. Fig. 1, 1:80,000.

21. Jones, E.L., Jr., 1916, Gold deposits near Quartzsite, Arizona: U.S. Geol. Survey Bull. 620. Pl. 4, 1:187,500.

22. Meinzer, O.E., and Ellis, A.J., 1916, Ground water in Paradise Valley, Arizona: U.S. Geol. Survey Water-Supply Paper 375. Pl. 3, 1:187,500.

23. Ransome, F.L., 1919, The copper deposits of Ray and Miami, Arizona: U.S. Geol. Survey Prof. Paper 115. Pl. 2, 1:125,000, also detailed maps.

24. Ransome, F.L., 1903, Geology of the Globe Copper district, Arizona: U.S. Geol. Survey Prof. Paper 12. Pl. 1, 1:62,500, also mine maps.

25. Ransome, F.L., 1905, Description of the Globe quadrangle, Arizona: U.S. Geol. Survey Geol. Atlas, Folio 111, 1:62,500.

26. Ransome, F.L., 1923, Description of the Ray quadrangle, Arizona: U.S. Geol. Survey Geol. Atlas, Folio 217, 1:62,500.

27. Ross, C.P., 1925, Ore deposits of the Saddle Mountain and Banner mining districts, Arizona: U.S. Geol. Survey Bull. 771. Pls. 1 and 17, 1:62,500, also detailed map.

28. Darton, N.H., 1925, Resume of Arizona geology: Arizona Bur. Mines Bull. 119. Pl. 72, 1:125,000.

29. Darton, N.H., 1933, Guidebook of the western United States--Part F, the Southern Pacific Lines, New Orleans to Los Angeles: U.S. Geol. Survey Bull. 845. Fig. 54, 1:220,000.

30. Hazen, G.E., and Turner, S.F., 1946, Geology and ground-water resources of the upper Pinal Creek area, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:56,000, (NC).

31. Kiersch, G.A., 1949, Structural control and mineralization at the Seventy-Nine Mine, Gila County, Arizona: Econ. Geology, v. 44, no. 1. Fig. 1, 1:14,400.

32. Weathers, G., 1954, Uranium occurence at the King No. 1 Claim, Gila County: U.S. AEC RME-2016 (Pt. 1), 1:62,500.

33. Coates, D.R., 1955, Memorandum on the geology and ground-water resources of Dripping Springs basin, Gila and Pinal Counties, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:62,500, (NC).

34. Ross, C.P., 1925, Geology and ore deposits of the Aravaipa and Stanley mining districts, Graham County, Arizona: U.S. Geol. Survey Bull. 763. Pl. 1, 1:125,000, also detailed maps.

35. Bryan, Kirk, 1925, The Papago country, Arizona--a geographic, geologic, and hydrologic reconnaissance, with a guide to desert watering places: U.S. Geol. Survey Water-Supply Paper 499. Fig. 23, 1:4,800.

36. Lindgren, Waldemar, 1926, Ore deposits of the Jerome and Bradshaw Mountains quadrangles, Arizona: U.S. Geol. Survey Bull. 782. Pls. 1 and 2, 1:125,000.

37. Provot, F.A., 1916, Jerome mining district geology: Eng. and Min. Jour., v. 102. Fig. 1, 1:62,500.

38. Fearing, J.L., Jr., 1926, Some notes on the geology of the Jerome district, Arizona: Econ. Geology, v. 21, no. 8. Fig. 1, 1:9,000.

39. Lausen, Carl, 1930, The pre-Cambrian Greenstone complex of the Jerome quadrangle: Jour. Geology, v. 38, no. 2. Fig. 1, 1:150,000.

40. Butler, B.S., and Wilson, E.D., 1938, Some Arizona ore deposits: Arizona Bur. Mines Bull. 145, Geol. Ser. 12. Pl. 8, 1:125,000, also detailed map.

41. Creasey, S.C., 1952, Geology of the Iron King Mine, Yavapai County, Arizona: Econ. Geology, v. 47, no. 1. Fig. 3, 1:6,400.

42. Anderson, C.A., 1951, Older Precambrian structure in Arizona: Geol. Soc. America Bull., v. 62, no. 11. Fig. 4, 1:187,500.

43. Arizona Bureau of Mines, 1933, Arizona gold placers and placering: Arizona Bur. Mines Bull. 135 (Reprinted as Bull. 168, 1961). Fig. 5, 1:125,000.

44. Lausen, Carl, and Gardner, E.D., 1927, Quicksilver resources of Arizona: Arizona Bur. Mines Bull. 122. Fig. 2, 1:250,000, also detailed map.

45. Wilson, E.D., 1927, Geology and ore deposits of the Courtland-Gleeson region: Arizona Bur. Mines Bull. 123. Pl. 1, 1:24,000.

46. Ransome, F.L., 1913, The Turquoise copper-mining district, Arizona: U.S. Geol. Survey Bull. 530. Fig. 17, 1:18,000.

47. Wilson, E.D., 1928, Asbestos deposits of Arizona: Arizona Bur. Mines Bull. 126. Fig. 4, 1:27,000, also a mine map.

48. Longwell, C.R., 1928, Geology of the Muddy Mountains, Nev., with a section through the Virgin Range to the Grand Wash Cliffs, Arizona: U.S. Geol. Survey Bull. 798. Pl. 1, 1:250,000.

49. Lausen, Carl, 1931, Geology and ore deposits of the Oatman and Katherine districts, Arizona: Arizona Bur. Mines Geol. Ser. 6, Bull. 131. Pl. 1, 1:42,240, Pl. 2, 1:100,000.

50. Ransome, F.L., 1923, Geology of the Oatman gold district, Arizona: U.S. Geol. Survey Bull. 743. Pl. 1, 1:48,000.

51. Wilson, E.D., 1933, Geology and mineral deposits of southern Yuma County, Arizona: Arizona Bur. Mines Bull. 134. Pl. 5, 1:24,000, Pl. 9, 1:14,400, Pl. 16, 1:7,000, Fig. 2, 1:1,000, Fig. 7, 1:62,500.

52. Arizona Bureau of Mines, 1933, Arizona gold placers and placering: Arizona Bur. Mines Bull. 135 (Reprinted as Bull. 168, 1961). Fig. 4, 1:250,000.

53. Jones, E.L., Jr., 1915, A reconnaissance in the Kofa Mountains, Arizona: U.S. Geol. Survey Bull. 620. Pl. 5, 1:125,000.

54. Feth, J.H., 1950, Structural reconnaissance of the Red Rock quadrangle: U.S. Geol. Survey open-file rept.. Fig. 1, 1:62,500.

55. Longwell, C.R., 1936, Geology of the Boulder Reservoir floor: Geol. Soc. America Bull., v. 47, no. 9. Pls. 2 and 3, 1:110,000.

56. Nickell, F.A., 1942, Development and use of engineering geology: Am. Assoc. Petroleum Geologists Bull., v. 26, no. 12, Fig. 3, 1:22,000, also a detailed map.

57. U.S. Bureau of Reclamation, 1950, Boulder Canyon project, geological investigations, final report, Pt. 3: U.S. Bur. Reclamation Bull. 1. Fig. 34, 1:14,400, also detailed map.

58. Gilluly, James, 1937, Geology and ore deposits of the Ajo quadrangle: Arizona Bur. Mines Bull. 141, Geol. Ser. 9, Pl. 1, 1:62,500, also detailed map.

59. Gilluly, James, 1942, The mineralization of the Ajo copper district, Arizona: Econ. Geology, v. 37, no. 4. Fig. 2, 1:42,000.

60. Gilluly, James, 1946, The Ajo mining district, Arizona: U.S. Geol. Survey Prof. Paper 209. Pl. 3, 1:62,500, also detailed map.

61. Gilluly, James, 1937, Physiography of the Ajo region, Arizona: Geol. Soc. America Bull., v. 48, no. 3. Fig. 6, 1:31,680.

62. Romslo, T.M., and Robinson, C.S., 1952, Copper Giant deposits, Pima County, Arizona: U.S. Bur. Mines Rept. Inv. 4850. Fig. 2, 1:1,800.

63. Reiche, Parry, 1937, Toreva-block, a distincitive landslide type: Jour. Geology, v. 45, no. 5. Fig. 3, 1:12,000, Fig. 6, 1:16,000.

64. Wilson, E.D., 1939, Pre-Cambrian Mazatzal revolution in central Arizona: Geol. Soc. America Bull., v. 50, no. 7. Pl. 12, 1:125,000, also other maps.

65. Lausen, Carl, and Wilson, E.D., 1925, Gold and copper deposits near Payson: Arizona Bur. Mines Bull. 120. Pl. 1, 1:187,500.

66. Brown, Witt, 1939, Tucson Mountains, an Arizona basin range type: Geol. Soc. America Bull., v. 50, no. 5. Pl. 1, 1:62,500.

67. Jenkins, O.P., and Wilson, E.D., 1920, A geological reconnaissance of the Tucson and Amole Mountains: Arizona Univ. Bull. 106. Pl. 1, 1:16,000.

68. Mintz, Yale, 1942, Slate Mountain volcano-laccolith: Plateau, v. 14, no. 3. 1:24,000.

69. Short, M.N., and others, 1943, Geology and ore deposits of the Superior mining area, Arizona: Arizona Bur. Mines Bull. 151, Geol. Ser. 16. Pl. 1, 1:12.000, also mine maps.

70. Ransome, F.L., 1914, Copper deposits near Superior, Arizona: U.S. Geol. Survey Bull. 540. Fig. 13, 1:13,500.

71. Arizona Geological Society, 1952, Guidebook for field trip excursions in southern Arizona, Geological Society America, Cordilleran Section Meeting, Tucson, April 10-14, 1952: Arizona Geol. Soc. Guidebook. Fig. 39, 1:62,500.

72. Read, C.B., Sample, R.D., and Sullwood, H.H., Jr., 1943, Copper deposits of the White Mesa mining district, Coconino County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:7,200, also detailed maps, (NC; Arizona Bur. Mines).

73. Hadley, J.B., and Sullwood, H.H., Jr., 1944, Copper and zinc deposits in the Reward area, Casa Grande mining district, Pinal County, Arizona: U.S. Geol. Survey Prelim. Map. Pl. 2, 1:6,000, also detailed maps.

74. Denton, T.C., and Haury, P.S., 1946, Exploration of the Reward (Vekol) zinc deposit, Pinal County, Arizona: U.S. Bur. Mines Rept. Inv. 3975. Fig. 2, 1:7,500.

75. Hobbs, S.W., 1944, Tungsten deposits in the Boriana district and the Aquarius Range, Mohave County, Arizona: U.S. Geol. Survey Bull. 940-I. Pl. 43, 1:9,600, Fig. 28, 1:7,200.

76. Lasky, S.G., and Webber, B.N., 1944, Manganese deposits in the Artillery Mountains region, Mohave County, Arizona: U.S. Geol. Survey Bull. 936-R. Pl. 62, 1:31,680, also a detailed map.

77. Lasky, S.G., and Webber, B.N., 1949, Manganese resources of the Artillery Mountains region, Arizona: U.S. Geol. Survey Bull. 961. Pl. 1, 1:31,680, also a detailed map.

78. Wolcott, H.N., Skibitzke, H.E., and Halpenny, L.C., 1956, Water resources of Bill Williams River valley near Alamo, Arizona: U.S. Geol. Survey Water-Supply Paper 1360-D. Pl. 21, 1:62,500.

79. Gilluly, James, 1945, Emplacement of the Uncle Sam porphyry, Tombstone, Arizona: Am. Jour. Sci., v. 243, no. 12. Fig. 2, 1:220,000.

80. Jones, E.L., Jr., and Ransome, F.L., 1920, Deposits of manganese ore in Arizona: U.S. Geol. Survey Bull. 710. Pl. 5, 1:40,000.

81. Darton, N.H., 1925, Resume of Arizona geology: Arizona Bur. Mines Bull. 119. Fig. 99, 1:78,125.

82. Butler, B.S., Wilson, E.D., and Rasor, C.A., 1938, Geology and ore deposits of the Tombstone district: Arizona Bur. Mines Bull. 143, Geol. Ser. 10. Pl. 4, 1:6,000.

83. Babenroth, D.L., and Stahler, A.N., 1945, Geomorphology and structure of the east Kaibab monocline, Arizona and Utah: Geol. Soc. America Bull., v. 56, no. 2. Pl. 1, 1:160,000.

84. Koons, E.D., 1945, Geology of the Uinkaret plateau, northern Arizona: Geol. Soc. America Bull., v. 56, no. 2. Pl. 1, 1:108,612.

85. Mcdonald, H.R., and Padgett, H.D., Jr., 1946, Geology and ground-water resources of the Verde River Valley near Fort Mcdowell: U.S. Geol. Survey open-file rept.. Pl. 2, 1:125,000, (NC).

86. Turner, S.F., and others, 1946, Ground-water resources and problems of the Safford Basin, Arizona: U.S. Geol. Survey open-file rept.. Pl. 2, 1:250,000, (NC).

87. Knechtel, M.M., 1938, Geology and ground-water resources of the valley of the Gila River and San Simon Creek, Graham County, Arizona: U.S. Geol. Survey Water-Supply Paper 796-F. Pl. 46, 1:96,000.

88. Halpenny, L.C., and Cushman, R.L., 1947, Ground-water resources and problems of the Cactus Flat-Artesia area, San Simon Basin, Arizona: U.S. Geol. Survey open-file rept.. Pl. 2, 1:94,000, (NC).

89. Halpenny, L.C., and others, 1946, Ground-water resources of the Duncan Basin, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:95,000, (NC).

90. Phelps, H.D., 1946, Exploration of the Copper Butte Mine, Mineral Creek mining district, Pinal County, Arizona: U.S. Bur. Mines Rept. Inv. 3914. Fig. 6, 1:3,000.

91. Mcdonald, H.R., Wolcott, H.M., and Bluhm, F.I., 1947, Geology and ground-water resources of Paradise Valley, Maricopa County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:210,000, (NC).

92. Babcock, H.M., and Brown, S.C., 1947, Ground-water resources of Peoples Valley, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:60,000.

93. Trace, R.D., 1947, Fourth of July and Luckie No. 1 and No. 2 flourspar veins near Duncan, Greenlee County: U.S. Geol. Survey Prelim. Map

94. Foth, J.H., 1948, Permian stratigraphy and structure, northern Canelo Hills: Am. Assoc. Petroleum Geologists Bull., v. 32, no. 1. Fig. 1, 1:36,000.

95. Babcock, H.M., and Kendall, K.K., 1948, Geology and ground-water resources of the Gila Bend Basin, Maricopa County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:148,000, (NC).

96. Brown, S.C., and Halpenny, L.C., Water-supply investigations at Tuba City, Navajo Indian Reservation: U.S. Geol. Survey Prelim. Rept.. Pl. 1, 1:31,680.

97. Romslo, T.M., 1948, Antler copper-zinc deposit, Mohave County, Arizona: U.S. Bur. Mines Rept. Inv. 4214. Fig. 2, 1:2,400.

98. Halpenny, L.C., and Brown, S.C., 1948, Water-supply investigations at Chinle, Navajo Indian Reservation: U.S. Geol. Survey open-file rept.. 1:62,500, (NC).

99. Babcock, H.M., and Brown, S.C., 1948, Water supply of Date Creek area, Yavapai County, Arizona: Arizona State Land Dept. Pl. 1, 1:31,680.

100. Halpenny, L.C., and Brown, S.C., 1949, Water-supply investigations of Fort Defiance area, Navajo Indian Reservation, Apache County, Arizona: U.S. Geol. Survey open-file rept.. 1:31,680, (NC).

101. Moore, B.N., and others, 1949, Geology of the Tucson quadrangle, Arizona: U.S. Geol. Survey open-file map. 1:125,000.

102. Arizona Geological Society, 1952, Guidebook for field trip excursions in southern Arizona, Geological Society America, Cordilleran Section Meeting, Tucson, April 10-14, 1952: Arizona Geol. Soc. Guidebook. Fig. 12, 1:250,000.

103. Keyes, C.R., 1930, Colossal Cave in Arizona: Pan-Am. Geologist v. 53, no. 5. Pl. 17, 1:48,000.

104. Romslo, T.M., 1950, Investigations of the Lake Shore copper deposits, Pinal County: U.S. Bur. Mines Rept. Inv. 4706. Fig. 3, 1:840.

105. Gregory, H.E., 1950, Geology and geography of the Zion Park region, Utah and Arizona: U.S. Geol. Survey Prof. Paper 220. Pl. 2, 1:125,000.

106. Whitcomb, H.A., and Halpenny, L.C., 1950, Water-supply investigations of the Burell Park-Sawmill area, Navajo Indian Reservation, Apache County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:31,680, (NC).

107. Gregory, H.E., 1917, Geology of the Navajo country--A reconnaissance of parts of Arizona, New Mexico and Utah: U.S. Geol. Survey Prof. Paper 98. Fig. 2, 1:42,240.

108. Metzger, D.G., 1951, Geology and ground-water resources of the northern part of the Ranegras Plain, Yuma County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:62,500, (NC).

109. Bancroft, Howland, 1911, Reconnaissance of the ore deposits in northern Yuma County, Arizona: U.S. Geol. Survey Bull. 451. Fig. 14, 1:18,000.

110. Longwell, C.R., 1951, Megabreccia developed downslope from large faults: Am. Jour. Sci., v. 249, no. 5. Fig. 2, 1:125,000.

111. Campbell, Ian, and Schenk, E.T., 1950, Camptonite dikes near Boulder Dam, Arizona: Am. Mineralogist, v. 35, nos. 9-10. Fig. 1, 1:18,000, also a detailed map.

112. Cooper, J.R., and Huff, L.C., 1951, Geological investigations and geochemical prospecting experiment at Johnson, Arizona: Econ. Geology, v. 46, no. 7. Fig. 2, 1:7,500.

113. Repenning, C.A., and Halpenny, L.C., 1951, Water-supply investigations of Keams Canyon area, Hopi Indian Reservation, Navajo County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:125,000, (NC).

114. Arizona Geological Society, 1952, Guidebook for field trip excursions in southern Arizona, Geological Society America, Cordilleran Section Meeting, Tucson, April 10-14, 1952: Arizona Geol. Soc. Guidebook. Fig. 3, 1:187,500.

115. Fischer, W.A., and Condon, W.H., 1952, Photogeologic map of the Shanto Spring-1 quadrangle, Arizona: U.S. Geol. Survey Rept. TEM-499. 1:24,000.

116. Jahns, R.H., 1952, Pegmatite deposits of the White Picacho district, Maricopa and Yavapai Counties, Arizona: Arizona Bur. Mines Bull. 162, Mineral Technology Ser. 46. Pls. 17, 21, and 24, 1:240.

117. Thomas, B.E., 1953, Geology of the Chloride quadrangle, Arizona: Geol. Soc. America Bull., v. 64, no. 4. Pl. 1, 1:125,000.

118. Haury, P.S., 1947, Examination of zinc-lead mines in the Wallapai mining district, Mohave County, Arizona: U.S. Bur. Mines Rept. Inv. 4101. Fig. 7, 1:400.

119. Dings, M.G., 1951, Wallapai mining district, Cerbat Mountains, Mohave County: U.S. Geol. Survey Bull. 970-E. Pl. 18, 1:24,000.

120. Thomas, B.E., 1949, Ore deposits of the Wallapai district, Arizona: Econ. Geology, v. 44, no. 8. Fig. 2, 1:72,000.

121. Hart, O.M., and Hetland, D.L., 1953, Preliminary report on uranium-bearing deposits in Mohave County: U.S. AEC RME-4026, Fig. 6, 1:1,200, also other detailed maps.

122. Wolcott, H.N., 1953, Memorandum on ground-water resources and geology of Rainbow Valley-Waterman Wash area, Maricopa County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:250,000, (NC).

123. Hart, O.M., and Hetland, D.L., 1953, Preliminary report on uranium-bearing deposits in Mohave County: U.S. AEC RME-4026. Fig. 8, 1:120, Fig. 9, 1:720.

124. New Mexico Geological Society, 1953, Guidebook of southwestern New Mexico, 4th field conference, October 15-18, 1953: New Mexico Geological Society Guidebook. Maps 3-4, 3-5, 3-6, 1:126,720.

125. Yost, C.B., Jr., 1953, Geophysical and geological reconnaissance to determine ground-water resources of Chiu Chiuschu area, Papago Indian Reservation, Arizona: U.S. Geol. Survey open-file rept.. Pl. 2, 1:62,500, (NC).

126. Bromfield, C.S., and Shride, A.F., 1954, Mineral resources of the San Carlos Indian Reservation, Arizona: U.S. Geol. Survey Bull. 1027-N. Pl. 52, 1:250,000, also detailed maps.

127. Schwennesen, A.T., 1921, Geology and water resources of the Gila and San Carlos Valleys in the San Carlos Indian Reservation, Arizona: U.S. Geol. Survey Water-Supply Paper 450. Pl. 2, 1:250,000.

128. Webb, B.P., and Coryell, K.C., 1954, Preliminary regional mapping in the Ruby quadrangle: U.S. AEC RME-2009. Pl. 1, 1:43,000.

129. Feth, J.H., 1954, Preliminary report of investigations of springs in the Mogollon Rim region, Arizona: U.S. Geol. Survey open-file rept.. Pl. 4, 1:75,000.

130. Harshbarger, J.W., and Repenning, C.A., 1954, Water resources of the Chuska Mountains area, Navajo Indian Reservation, Arizona and New Mexico: U.S. Geol. Survey Circ. 308. Pl. 1, 1:125,000.

131. Appledorn, C.R., and Wright, H.E., Jr., 1957, Volcanic structures in the Chuska Mountains, Navajo Reservation, Arizona-New Mexico: Geol. Soc. America Bull., v. 68, no. 4. Figs. 6 and 8, 1:47,500, also other maps.

132. Mcallister, J.F., 1955, Geologic maps of the Ord quicksilver area, Mazatzal Mountains, Arizona: U.S. Geol. Survey open-file rept.. 1:2,400, (NC; Arizona Bur. Mines).

133. Coates, D.R., and Cushman, R.L., 1955, Geology and ground-water resources of the Douglas basin, Arizona: U.S. Geol. Survey Water-Supply Paper 1354. Pl. 1, 1:253,440.

134. Jones, F.S., and Cushman, R.L., 1947, Geology and ground-water resources of the Wilcox Basin, Cochise and Graham Counties, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:250,000, (NC).

135. Bonillas, Y.S., and others, 1916, Geology of the Warren mining district: Am. Inst. Min. Engineers Bull., v. 117, (Trans., v. 55). Pl. 1, 1:250,000.

136. Tenney, J.B., 1933, The Bisbee mining district, in ore deposits of the southwest: Internat. Geol. Cong. 16th Guidebook 14. Pl. 11, 1:187,500.

137. Tenney, J.B., 1935, The copper deposits of Arizona, in copper resources of the world: Internat. Geol. Cong. 16th. Pl. 12, 1:187,500.

138. Meinzer, O.E., and Kelton, F.C., 1913, Geology and water resources of Sulphur Spring Valley, Arizona: U.S. Geol. Survey Water-Supply Paper 320. Pl. 1, 1:250,000.

139. Heindl, L.A., 1955, Ground-water conditions between Oracle and Oracle Junction, Pinal County: U.S. Geol. Survey open-file rept.. Fig. 3, 1:125,000, (NC).

140. Bateman, P.C., and Erickson, M.P., 1944, Maudina and Morningstar tungsten mines, Pinal County, Arizona: U.S. Geol. Survey Prelim. Maps. Sheet 2, 1:480.

141. Heindl, L.A., 1955, Memorandum on geology and ground-water resources in the vicinity of Oracle, Pinal County: U.S. Geol. Survey open-file rept.. Fig. 2, 1:125,000, (NC).

142. Strobell, J.D., Jr., 1956, Geology of the Carrizo Mountains area, in northeastern Arizona and northwestern New Mexico: U.S. Geol. Survey Oil and Gas Inv. Map OM-160. 1:48,000.

143. Emery, W.B., 1916, Igneous geology of Carrizo Mountain: Am. Jour. Sci., 4th ser., v. 42. Fig. 1, 1:250,000.

144. Stokes, W.L., 1951, Carnotite deposits in the Carrizo Mountains area, Navajo Indian Reservation, Apache County, Arizona, and San Juan, County, New Mexico: U.S. Geol. Survey Circ. 111. Pl. 1, 1:125,000.

145. Masters, J.A., 1951, Uranium deposits on southwest rim of Lukachukai Mountains, northeast Arizona: U.S. AEC RMO-911. Pl. 1, 1:78,125.

146. Chenoweth, W.L., 1955, The geology and uranium deposits of the northwest Carrizo area, Apache County, Arizona, in Guidebook, Four Corners Geol. Soc. Field Conference, June 15-17, 1955: Geol. Soc. Guidebook. Fig. 2, 1:125,000, also other maps.

147. Brown, R.H., Harshbarger, J.W., and Thomas, H.E., 1956, Analysis of basic data concerning ground-water in the Yuma area, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:85,000, (NC,Ma,LA,M).

148. Benphill, W.H., 1956, Photogeologic map of the Fredonia NW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-133. 1:24,000.

149. Morris, R.H., 1956, Photogeologic map of the Shinarump NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-139. 1:24,000.

150. Marshall, C.H., 1956, Photogeologic map of the Short Creek SW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-140. 1:24,000.

151. Marshall, C.H., and Pillmore, C.L., 1956, Photogeologic map of the Short Creek NW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-141. 1:24,000.

152. Pillmore, C.L., 1956, Photogeologic map of the Short Creek NE quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-142. 1:24,000.

153. Marshall, C.H., 1956, Photogeologic map of the Lost Spring Mountain SE quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-144. 1:24,000.

154. Marshall, C.H., 1956, Photogeologic map of the Lost Spring Mountain NE quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-145. 1:24,000.

155. Marshall, C.H., 1956, Photogeologic map of the Lost Spring Mountain NW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-146. 1:24,000.

156. Marshall, C.H., 1956, Photogeologic map of the Short Creek SE quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-153. 1:24,000.

157. Marshall, C.H., 1956, Photogeologic map of the Fredonia SW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-160. 1:24,000.

158. Petersen, R.G., 1959, Preliminary geologic map of the Emmett Wash NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-215. 1:24,000.

159. Detterman, J.S., 1956, Photogeologic map of the Emmett Wash NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-190. 1:24,000.

160. Minard, J.P., 1956, Photogeologic map of the Tanner Wash NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-193. 1:24,000.

161. Marshall, C.H., 1956, Photogeologic map of the Jacob Lake NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-194. 1:24,000.

162. Strahler, A.N., 1940, Landslides of the Vermillion and Echo Cliffs: Jour. Geomorphology, v. 3, no. 4. Fig. 3, 1:62,500.

163. Petersen, R.G., and Phoenix, D.A., 1959, Preliminary geologic map of the Paria Plateau NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-214. 1:24,000.

164. Mcqueen, Kathleen, 1956, Photogeologic map of the Paria Plateau NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-228. 1:24,000.

165. Bluhm, F.I., Wolcott, H.N., and Hem, J.D., 1949, Ground-water resources of Deer Valley, Maricopa County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:84,480, (NC).

166. Stewart, L.A., and Haury, P.S., 1947, Arizona asbestos deposits, Gila County: U.S. Bur. Mines Rept. Inv. 4100. Fig. 16, 1:1,800, Fig. 19, 1:1,200, Fig. 23, 1:4,800.

167. Marshall, C.H., 1956, Photogeologic map of the Heaton Knolls NW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-143. 1:24,000.

168. Minard, J.P., 1957, Photogeologic map of the House Rock Spring NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-253. 1:24,000.

169. Morris, R.H., 1957, Photogeologic map of the Fredonia NE quadrangle, Coconino and Mohave Counties, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-247. 1:24,000.

170. Marshall, C.H., 1957, Photogeologic map of the Hurricane Cliffs-2 NE quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-252. 1:24,000.

171. Pomeroy, J.S., 1957, Photogeologic map of the House Rock Spring SW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-254. 1:24,000.

172. Mcqueen, Kathleen, 1957, Photogeologic map of the Shinarump NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-255. 1:24,000.

173. Sabins, F.F., Jr., 1957, Geology of the Cochise Head and western part of the Vanar quadrangles, Arizona: Geol. Soc. America Bull., v. 68, no. 10. Pl. 1, 1:62,500.

174. Enlows, H.E., 1955, Welded tuffs of Chiricahua National Monument: Geol. Soc. America Bull., v. 66, no. 10. Pl. 1, 1:31,680.

175. Sabins, F.F., Jr., 1957, Stratigraphic relations in Chiricahua and Dos Cabezas Mountains: Am. Assoc. Petroleum Geologists Bull., v. 41, no. 3. Fig. 2, 1:215,000.

176. Gillerman, Elliot, 1958, Geology of the central Peloncillo Mountains, Hidalgo County, New Mexico, and Cochise County, Arizona: New Mexico Bur. Mines and Mineral Resources Bull. 57. Pl. 1, 1:48,000.

177. Metzger, D.G., 1957, Geology and ground-water resources of the Harquahala Plains area, Maricopa and Yuma Counties: Arizona State Land Dept. Water Resources Rept. 3. Pl. 1, 1:125,000.

178. Armstrong, C.A., and Yost, C.B., Jr., 1950, Geology and ground-water of the Palomas Plain, Dendora Valley area, Maricopa and Yuma Counties: Arizona State Land Dept. Water Resources Rept. 4. Pl. 1, 1:125,000.

179. Creasey, S.C., Gambell, N.A., and Peterson, D.W., 1974, Preliminary geologic map of the Teapot Mountain quadrangle, Pinal County, Arizona: U.S. Geol Survey open-file 75-314. 1:24,000.

180. Pomeroy, J.S., 1959, Photogeologic map of the Hurricane Cliffs-2 NW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-293. 1:24,000.

181. Cooper, J.R., 1959, Reconnaissance geologic map of southeastern Cochise County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-213. 1:125,000.

182. Cooper, J.R., 1960, Reconnaissance map of the Willcox, Fisher Hills, Cochise, and Dos Cabezas quadrangles, Cochise and Graham Counties, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-231. 1:62,500.

183. Shoemaker, E.M., 1959, Impact mechanics at Meteor Crater: U.S. Geol. Survey open-file rept.. Fig. 1, 1:200,000, also detailed map of crater, (NC).

184. Hager, Dorsey, 1953, Crater Mound (Meteor Crater), a geologic feature: Am. Assoc. Petroleum Geologists Bull., v. 37, no. 4. Fig. 7, 1:12,000.

185. Petersen, R.G., and Wells, J.D., 1961, Preliminary geologic map of the Emmett Wash NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-197. 1:24,000.

186. Minard, J.P., 1956, Photogeologic map of the Emmett Wash NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-192. 1:24,000.

187. Peterson, N.P., 1963, Geology of the Pinal Ranch quadrangle, Arizona: U.S. Geol. Survey Bull. 1141-H. Pl. 1, 1:24,000.

188. Peterson, N.P., 1961, Preliminary geologic map of the Pinal Ranch quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-81. 1:24,000.

189. Creasey, S.C., and others, 1961, Reconnaissance geologic map of parts of the San Pedro and Aravaipa Valleys, south-central Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-230. 1:125,000.

190. Petersen, R.G., 1961, Preliminary geologic map of the Paria Plateau SE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Inv.

191. Marshall, C.H., 1956, Photogeologic map of the Paria Plateau SE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-191. 1:24,000.

192. Simons, F.S., 1964, Geology of the Klondyke quadrangle, Graham and Pinal Counties, Arizona: U.S. Geol. Survey Prof. Paper 461. Pl. 1, 1:62,500.

193. Kuhn, T.H., 1941, Pipe deposits of the Copper Creek area: Econ. Geology, v. 36, no. 5. Fig. 2, 1:28,800.

194. Wells, J.D., 1960, Stratigraphy and structure of House Rock Valley area, Coconino County, Arizona: U.S. Geol. Survey Bull. 1081-D. Pl. 4, 1:62,500.

195. Minard, J.P., 1956, Photogeologic map of the House Rock Spring NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-198. 1:24,000.

196. McQueen, Kathleen, 1956, House Rock Spring SE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-199. 1:24,000.

197. Minard, J.P., 1956, Photogeologic map of the Paria Plateau SW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-171. 1:24,000.

198. Minard, J.P., 1956, Photogeologic map of the Paria Plateau NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-182. 1:24,000.

199. Heindl, L.A., and McCullough, R.A., 1961, Geology and the availability of water in the lower Bonita Creek area, Graham County, Arizona: U.S. Geol. Survey Water-Supply Paper 1589. Pl. 1, 1:48,000.

200. Metzger, D.G., 1961, Geology in relation to availability of water along the south rim, Grand Canyon National Park, Arizona: U.S. Geol. Survey Water-Supply Paper 1475-C. Pl. 13, 1:125,000.

201. Maxson, J.H., 1961, Geologic map of the Bright Angel quadrangle, Grand Canyon National Park, Arizona: Grand Canyon Nat. Hist. Assoc. 1:48,000.

202. Heindl, L.A., and Armstrong, C.A., 1963, Geology and ground-water conditions in the Gila Bend Indian Reservation, Maricopa County, Arizona: U.S. Geol. Survey Water-Supply Paper 1647-A. Fig. 4, 1:100,000.

203. Johnson, P.W., 1962, Availability of additional water for Chiricahua National Monument, Cochise County, Arizona: U.S. Geol. Survey Water-Supply Paper 1474-H. Pl. 17, 1:32,000.

204. Myers, J.P., Irwin, J.H., Stevens, P.R., and McCullough, L.A., 1962, Geology of the Cameron quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-163. 1:62,500.

205. Reiche, Parry, 1937, Quarternary deformation in the Cameron district of the Plateau Province: Am. Jour. Sci., 5th ser., v. 34, no. 200. 1:95,000.

206. Irwin, J.H., Akers, J.P., Cooley, M.E., 1962, Geology of the Leupp quadrangle, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-352. 1:62,500.

207. Peterson, N.P., 1962, Geology and ore deposits of the Globe-Miami district, Arizona: U.S. Geol. Survey Prof. Paper 342. Pl. 1, 1:24,000.

208. Peterson, N.P., Gilbert, C.M., and Quick, G.L., 1946, Hydrothermal alteration in the Castle Dome copper deposit: Econ. Geology, v. 41, no. 8. Fig. 2, 1:18,000.

209. Peterson, N.P., 1948, Geology of the Castle Dome copper deposit: Am. Inst. Min. Met. Engineers Tech. Pub. 2302 (Trans. v. 778). Fig. 1, 1:20,000.

210. Peterson, N.P., Gilbert, C.M., and Quick, G.L., 1951, Geology and ore deposits of the Castle Dome area, Gila County, Arizona: U.S. Geol. Survey Bull. 971. Pl. 1, 1:6,000, also mine maps.

211. Peterson, N.P., and others, 1953, Geologic map of a portion of the Inspiration quadrangle: U.S. Geol. Survey open-file map. 1:12,000.

212. Peterson, N.P., 1954, Geology of the Globe quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-41. 1:24,000.

213. Bell, G.L., 1947, Tungsten deposits near Morristown, Maricopa County, Arizona: U.S. Geol. Survey open-file rept.. Fig. 6, 1:6,000, also other maps.

214. Cosner, O.J., 1962, Ground water in the Wupatki and Sunset Crater National Monuments, Arizona: U.S. Geol. Survey Water-Supply Paper 1475-J. Pl. 20, 1:63,360.

215. Colton, H.S., 1929, Sunset Crater and the lava beds: Mus. Northern Arizona Mus. Notes, v. 2, no. 4. 1:31,680.

216. Strahler, A.N., 1944, Guide to the east Kaibab monocline in the Grand Canyon region: Plateau, v. 17, no. 1. Fig. 4, 1:100,000.

217. Cosner, O.J., 1955, Ground water in the Wupatki and Sunset Crater National Monuments, Coconino County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:62,500, (NC).

218. Gregory, H.E., 1916, The Navajo country--a geographic and hydrographic reconnaissance of parts of Arizona, New Mexico, and Utah: U.S. Geol. Survey Water-Supply Paper 380. Fig. 4, 1:31,680.

219. Witkind, I.J., and others, 1956, Preliminary geologic map of the Dinnehotso NW quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-92. 1:24,000.

220. Witkind, I.J., and others, 1956, Preliminary geologic map of the Dinnehotso NE quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-93. 1:24,000.

221. Witkind, I.J., and others, 1956, Preliminary geologic map of the Dinnehotso SE quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-94. 1:24,000.

222. Witkind, I.J., and others, 1956, Preliminary geologic map of the Dinnehotso SW quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-95. 1:24,000.

223. Witkind, I.J., and others, 1957, Preliminary geologic map of the Boot Mesa NW quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-84. 1:24,000.

224. Witkind, I.J., and others, 1957, Preliminary geologic map of Boot Mesa NE quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-85. 1:24,000.

225. Witkind, I.J., and others, 1957, Preliminary geologic map of Boot Mesa SE quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-86. 1:24,000.

226. Witkind, I.J., and others, 1957, Preliminary geologic map of Boot Mesa SW quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-87. 1:24,000.

227. Witkind, I.J., and others, 1957, Preliminary geologic map of the Agathla Peak NW quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-88. 1:24,000.

228. Witkind, I.J., and others, 1957, Preliminary geologic map of the Agathla Peak NE quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-89. 1:24,000.

229. Witkind, I.J., and others, 1957, Preliminary geologic map of Agathla Peak SE quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-90. 1:24,000.

230. Witkind, I.J., and others, 1957, Preliminary geologic map of Agathla Peak SW quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-91. 1:24,000.

231. Witkind, I.J., and Thaden, R.E., 1963, Geology and uranium-vanadium deposits of the Monument Valley area, Apache and Navajo Counties, Arizona: U.S. Geol. Survey Bull. 1103. Pl. 1, 1:62,500, also detailed maps.

232. Witkind, I.J., 1956, Uranium deposits at base of the Shinarump conglomerate, Monument Valley, Arizona: U.S. Geol. Survey Bull. 1030-C. Pl. 6, 1:31,680, also other maps.

233. Sullivan, R.B., and Beikman, H.M., 1963, Geology, structure, and uranium deposits of the Shiprock quadrangle, New Mexico and Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-345. 1:250,000.

234. Phoenix, D.A., 1963, Geology of the Lees Ferry area, Coconino County, Arizona: U.S. Geol. Survey Bull. 1137. Pl. 1, 1:24,000.

235. Gregory, H.E., and Moore, R.C., 1931, The Kaiparowits region--a geographic, geologic reconnaissance of parts of Utah and Arizona: U.S. Geol. Survey Prof. Paper 164. Pl. 2, 1:250,000.

236. McQueen, Kathleen, 1956, Photogeologic map of the Lees Ferry SE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-169. 1:24,000.

237. Detterman, J.S., 1956, Photogeologic map of the Lees Ferry SW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-189. 1:24,000.

238. McQueen, Kathleen, 1956, Photogeologic map of the Lees Ferry NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-196. 1:24,000.

239. McQueen, Kathleen, 1956, Photogeologic map of the Lees Ferry NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-222. 1:24,000.

240. Twenter, F.R., and Metzger, D.G., 1963, Geology and ground-water in Verde Valley-the Mogollon Rim region, Arizona: U.S. Geol. Survey Bull. 1177. Pl. 1, 1:62,500.

241. Feth, J.H., 1954, Preliminary report of investigations of springs in the Mogollon Rim region: U.S. Geol. Survey open-file rept.. Pl. 5, 1:95,000, (NC).

242. Hayes, P.T., and Landis, E.R., 1964, Geologic map of the southern part of the Mule Mountains, Cochise County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-418. 1:48,000.

243. Ransome, F.L., 1904, Description of the Bisbee quadrangle, Arizona: U.S. Geol. Survey Geol. Atlas, Folio 112. 1:62,500, 1:12,000.

244. Ransome, F.L., 1904, Geology and ore deposits of the Bisbee quadrangle, Arizona: U.S. Geol. Survey Prof. Paper 21. Pl. 1, 1:62,500, Pl. 3, 1:12,000.

245. Walker, R.T., 1928, Mineralized volcanic explosion pipes: Eng. and Min. Jour., v. 126, no. 25. Fig. 16, 1:30,000.

246. Billingsley, P.R., and Locke, Augustus, 1941, Structure of ore districts in the continental framework: Am. Inst. Min. Met. Engineers Trans. v. 144. Fig. 4, 1:62,500.

247. Stoyanow, A.A., 1949, Lower Cretaceous stratigraphy in southeastern Arizona: Geol. Soc. America Mem. 38. Pl. 27, 1:4,800.

248. Brennan, D.J., 1962, Tertiary sedimentary rocks and structures of the Cienega Gap area, Pima County, Arizona in Cenozoic geology of Arizona-A symposium: Arizona Geol. Soc. Digest, v. 5. 1:62,500.

249. Willden, Ronald, 1964, Geology of the Christmas quadrangle, Gila and Pinal Counties, Arizona: U.S. Geol. Survey Bull. 1161-E. Pl. 1, 1:62,500, also a small scale map.

250. Campbell, M.R., 1904, The Deer Creek coal field, Arizona: U.S. Geol. Survey Bull. 225. Fig. 7, 1:187,500.

251. Cooper, J.R., and Silver, L.T., 1964, Geology and ore deposits of the Dragoon quadrangle, Cochise County, Arizona: U.S. Geol. Survey Prof. Paper 416. Pl. 1, 1:31,680, also mine maps, plans, and inserts.

252. Warner, L.A., Holser, W.T., Wilmarth, V.R., and Cameron, E.N., 1959, Occurrence of nonpegmatite beryllium in the United States: U.S. Geol. Survey Prof. Paper 318. Fig. 24, 1:13,200.

253. Anderson, C.A., 1951, Older Precambrian structure in Arizona: Geol. Soc. America Bull., v. 62, no. 11. Fig. 2, 1:62,500.

254. Romslo, T.M., 1949, Investigations of Keystone and St. George copper-zinc deposits, Cochise County: U.S. Bur. Mines Rept. Inv. 4504. Figs. 3 and 4, 1:3,000.

255. Kellog, L.O., 1906, Sketch of the geology and ore deposits of the Cochise mining district, Cochise County: Econ. Geology, v. 1, no. 7. Fig. 48, 1:30,000.

256. Enlows, H.E., 1941, Structure of Little Dragoon Mountains: Pan-Am Geologist, v. 75, no. 4. Pl. 27, 1:62,500.

257. Cooper, J.R., and Huff, L.C., 1951, Geological investigation and geochemical prospecting experiment at Johnson: Econ. Geology, v. 46, no. 7. Fig. 2, 1:7,500.

258. Akers, J.P., 1964, Geology and ground water in the central part of Apache County, Arizona: U.S. Geol. Survey Water-Supply Paper 1771. Pl. 11, 1:125,000.

259. Beaumont, E.C., and Dixon, G.H., 1965, Geology of the Kayenta and Chilchinbito quadrangles, Navajo County, Arizona: U.S. Geol. Survey Bull. 1202-A. Pl. 1, 1:62,500.

260. Finnell, T.L., 1966, Geologic map of the Cibecue quadrangle, Navajo County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-545. 1:62,500.

261. Finnell, T.L., 1966, Geologic map of the Chediski Peak quadrangle, Navajo County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-544. 1:62,500.

262. Burchard, E.F., 1931, Iron ore on Canyon Creek, Fort Apache Indian Reservation: U.S. Geol. Survey Bull. 821-C. Figs. 7 and 9, 1:31,680.

263. Stewart, L.A., 1947, Apache iron deposits, Navajo County: U.S. Bur. Mines Rept. Inv. 4093. Fig. 6, 1:12,000, also other map.

264. Huff, L.C., and Santos, Elmer, 1966, Mineral resources of Sycamore Canyon Primitive Area, Arizona: U.S. Geol. Survey Bull. 1230-F. Pl. 1, 1:48,000.

265. Creasey, S.C., 1950, Geology of the Humboldt region and the Iron King mine, Bigbug mining district, Yavapai County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:24,000.

266. Creasey, S.C., 1952, Geology of the Iron King mine, Yavapai County: Econ. Geology, v. 47, no. 1. Fig. 2, 1:48,000.

267. Price, W.E., Jr., 1950, Cenozoic gravels on the rim of Sycamore Canyon: Geol. Soc. America Bull., v. 61, no. 5. Fig. 2, 1:187,500.

268. Creasey, S.C., 1967, Geologic map of the Benson quadrangle, Cochise and Pima Counties, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-470. 1:48,000.

269. Krieger, M.H., 1967, Reconnaissance geologic map of the Sheridan Mountain quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-505. 1:62,500.

270. Krieger, M.H., 1967, Reconnaissance geologic map of the Turkey Canyon quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-501. 1:62,500.

271. Krieger, M.H., 1967, Reconnaissance geologic map of the Camp Wood quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-502. 1:62,500.

272. Krieger, M.H., 1967, Reconnaissance geologic map of the Iron Springs quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-504. 1:62,500.

273. Krieger, M.H., 1967, Reconnaissance geologic map of the Simmons quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-503. 1:62,500.

274. Krieger, M.H., 1967, Reconnaissance geologic map of the Picacho Butte quadrangle, Yavapai and Coconino Counties, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-500. 1:62,500.

275. Krieger, M.H., 1967, Reconnaissance geologic map of the Ash Fork quadrangle, Yavapai and Coconino Counties, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-499. 1:62,500.

276. Canney, F.C., Lehmbeck, W.L., and Williams, F.E., 1967, Mineral resources of the Pine Mountain Primitive Area, Arizona: U.S. Geol. Survey Bull. 1230-J. Pl. 1, 1:31,680.

277. Creasey, S.C., 1967, General geology of the Mammoth quadrangle, Pinal County, Arizona: U.S. Geol. Survey Bull. 1218. Pl. 1, 1:48,000.

278. Heindl, L.A., 1963, Cenozoic geology in the Mammoth area, Pinal County, Arizona: U.S. Geol. Survey Bull. 1141-E. Pl. 1, 1:63,360.

279. Maxson, J.H., 1967, Preliminary geologic map of the Grand Canyon and vicinity, Arizona: Grand Canyon Nat. History Assoc.. 1:62,500.

280. Dutton, C.E., 1882, Tertiary history of the Grand Canyon district: U.S. Geol. Survey Mon. 2. Sheets 11 and 14, 1:63,360.

281. Walcott, C.D., 1894, Pre-Cambrian igneous rocks of the Unkar terrane, Grand Canyon of the Colorado: U.S. Geol. Survey 14th Ann. Rept., pt. 2. Pl. 60, 1:125,000.

282. Van Gundy, C.E., 1951, Nankoweap group of the Grand Canyon Algonkian of Arizona: Geol. Soc. America Bull., v. 62, no. 8. Pl. 1 and Fig. 2, 1:50,000.

283. Walcott, C.D., 1895, Algonkian rocks of the Grand Canyon of the Colorado: Jour. Geology, v. 3, Pl. 6. 1:187,500.

284. Jerome, S.E., and Cook, D.R., 1967, Relation of some metal mining districts in the western United States to regional tectonic environments and igneous activity: Nevada Bur. Mines Bull. 69. Pl. 21, 1:40,000.

285. Wilson, E.D., 1950, Arizona zinc and lead deposits, Pt. 1: Arizona Bur. Mines Bull. 156, Geol. Ser. 18, Fig. 38, 1:62,500, also detailed maps.

286. Anderson, C.A., 1950, Alteration and metallization in the Bagdad porphyry copper deposit: Econ. Geology, v. 45, no. 7. Fig. 2, 1:46,875.

287. Anderson, C.A., 1948, Structural control of copper mineralization, Bagdad: Am. Inst. Min. Met. Engineers Tech. Pub. 2352 (Trans., v. 178). Fig. 2, 1:72,000.

288. Butler, B.S., and Wilson, E.D., 1938, Some Arizona ore deposits: Arizona Bur. Mines Bull. 145. Pl. 25, 1:9,600.

289. Anderson, C.A., 1951, Older Pre-Cambrian structure in Arizona: Geol. Soc. America Bull., v. 62, no. 11. Fig. 3, 1:100,000.

290. Anderson, C.A., Scholz, E.A., and Strobell, J.D., Jr., 1956, Geology and ore deposits of the Bagdad area, Yavapai County, Arizona: U.S. Geol. Survey Prof. Paper 279. Pl. 3, 1:20,000.

291. Anderson, C.A., and Creasey, S.C., 1967, Geologic map of the Mingus Mountain quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-715. 1:62,500.

292. Anderson, C.A., and Creasey, S.C., 1958, Geology and ore deposits of the Jerome area, Yavapai County, Arizona: U.S. Geol. Survey Prof. Paper 308. Pl. 1, 1:24,000, also detailed maps.

293. Krieger, M.H., 1968, Geologic map of the Holy Joe Peak quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-669. 1:24,000.

294. Krieger, M.H., 1961, Troy quartzite (younger Precambrian) and Bolsa and Abrigo formation (Cambrian) northern Galiuro Mountains in southeastern Arizona, in Geological Survey research 1961, Chap. C: U.S. Geol. Survey Prof. Paper 424-C. Fig. 207.1, 1:35,000.

295. Krieger, M.H., 1968, Geologic map of the Brandenburg Mountain quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-668. 1:24,000.

296. Hayes, P.T., and Raup, R.B., 1968, Geologic map of the Huachuca and Mustang Mountains, southeastern Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-509. 1:48,000.

297. Krieger, M.H., 1968, Geologic map of the Lookout Mountain quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-670. 1:24,000.

298. Bowie, J.E., and Kam, William, 1968, Use of water by riparian vegetation, Cottonwood Wash, Arizona: U.S. Geol. Survey Water-Supply Paper 1858. Pl. 1, 1:12,000.

299. Krieger, M.H., 1968, Geologic map of the Saddle Mountain quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-671. 1:24,000.

300. Arteaga, F.E., White, N.D., Cooley, M.E., and Sutheimer, A.F., 1968, Ground water in Paradise Valley, Maricopa County, Arizona: Arizona Land Dept., Water Resources Rept. 35. Fig. 4, 1:125,000.

301. Krieger, M.H., 1974, Geologic map of the Putnam Wash quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-1109. 1:24,000.

302. Krieger, M.H., 1974, Geologic map of the Winkelman quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-1106. 1:24,000.

303. Krieger, M.H., 1974, Geologic map of the Crozier Peak quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-1107. 1:24,000.

304. Granger, H.C., and Raup, R.B., 1969, Geology of uranium deposits in the Dripping Spring quartzite, Gila County, Arizona: U.S. Geol. Survey Prof. Paper 595. Pl. 2, 1:36,000.

305. Sharp, B.J., 1956, Preliminary report on uranium occurrence and regional geology in the Cherry Creek area, Gila County: U.S. AEC RME-2036. Pl. 1, 1:24,000.

306. Granger, H.C., Raup, R.B., 1959, Uranium deposits in the Dripping Spring quartzite, Gila County, Arizona: U.S. Geol. Survey Bull. 1046-P. Pls. 45 and 47, 1:12,000.

307. Kaiser, E.P., 1951, Uraniferous quartzite, Red Bluff prospect, Gila County, Arizona: U.S. Geol. Survey Circ. 117. Pl. 1

308. Cooley, M.E., Harshbarger, J.W., Akers, J.P., and Hardt, W.F., 1969, Regional hydrogeology of the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: U.S. Geol. Survey Prof. Paper 521-A. Pl. 1, in 9 sheets, 1:125,000.

309. Gregory, H.E., 1914, Reconnaissance of a portion of the Little Colorado Valley: Am. Jour. Sci., 4th Ser., v. 38. Fig. 1, 1:250,000.

310. Baker, A.A., 1936, Geology of the Monument Valley-Navajo Mountain region, Arizona: U.S. Geol. Survey Bull. 865. Pl. 1, 1:96,000.

311. Hack, J.T., 1942, Sedimentation and volcanism in the Hopi Buttes: Geol. Soc. America Bull., v. 53, no. 2. Pl. 1, 1:250,000, also detailed maps.

312. Wanek, A.A., and Stephens, J.G., 1953, Reconnaissance geologic map of the Kaibito and Moenkopi Plateaus and parts of the Painted Desert, Coconino County, Arizona: U.S. Geol. Survey Oil and Gas Inv. Map OM-145. 1:150,000.

313. Brown, S.G., and Schumann, H.H., 1969, Geohydrology and water utilization in the Willcox basin, Graham and Cochise Counties, Arizona: U.S. Geol. Survey Water-Supply Paper 1859-F. Pl. 1, 1:63,360.

314. Kister, L.R., Brown, S.G., Schumann, H.H., and Johnson, P.W., 1966, Map showing fluoride content and salinity of ground-water in the Willcox basin, Graham and Cochise Counties, Arizona: U.S. Geol. Survey Hydrol. Inv. Atlas 214. Pl. 1, 1:125,000.

315. Ratte, J.C., Landis, E.R., Gaskill, D.L., and Raabe, R.G., 1969, Mineral resources of the Blue Range primitive area, Greenlee County, Arizona, and Catron County, New Mexico: U.S. Geol. Survey Bull. 1261-E. Pl. 1, 1:62,500.

316. Peterson, D.W., 1969, Geologic map of the Superior quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-818. 1:24,000.

317. Peterson, D.W., 1962, Preliminary geologic map of the western part of the Superior quadrangle, Pinal County, Arizona: U.S. Geol. Survey Min. Inv. Field Studies Map MF-253. 1:12,000.

318. Peterson, D.W., 1960, Geology of the Haunted Canyon quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-128. 1:24,000.

319. Moore, R.T., 1968, Mineral deposits of the Fort Apache Indian Reservation, Arizona: Arizona Bur. Mines Bull. 177. Pl. 2, 1:250,000.

320. Wilson, E.D., 1969, Mineral deposits of the Gila River Indian Reservation, Arizona: Arizona Bur. Mines Bull. 179. Pl. 2, 1:250,000.

321. Miller, F.K., 1970, Geologic map of the Quartzsite quadrangle, Yuma County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-841. 1:62,500.

322. Miller, F.K., 1968, Geology of the Quartzsite quadrangle, Arizona: U.S. Geol. Survey open-file map. 1:48,000, (NC, Db, Da, LA, M, SF, U).

323. Drewes, Harald, 1971, Geologic map of the Sahuarita quadrangle, southeast of Tucson, Pima County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-613. 1:48,000.

324. Drewes, Harald, 1970, Structural control of geochemical anomalies in the Greatervillo mining district, southeast of Tucson, Arizona: U.S. Geol. Survey Bull. 1312-A. Pl. 1, 1:24,000.

325. Creasey, S.C., and Quick, G.L., 1947, Copper deposits of a part of the Helvetia mining district, Pima County, Arizona: U.S. Geol. Survey open-file maps. Pl. 1, 1:12,000, also detailed maps. (NC).

326. Finnell, T.L., 1971, Preliminary geologic map of the Empire Mountains quadrangle, Pima County, Arizona: U.S. Geol. Survey open-file map. 1:48,000, (NC, Da, M, SF, LA, U, Db; Arizona Bur. of Mines).

327. Wilson, R.A., 1934, Thrust faulting in the Empire Mountains of southeastern Arizona: Jour. Geology, v. 42, no. 4. Fig. 3, 1:90,000.

328. Mackay, D.K., 1939, Geology of the Klene structure: Oil Weekly, v. 93, no. 10. Fig. 1, 1:21,120.

329. Haury, P.S., 1946, Exploration of the Mohawk zinc prospect, Pima County: U.S. Bur. Mines Rept. Inv. 3958. Fig. 1, 1:5,000.

330. Laney, R.L., 1971, Weathering of the granodioritic rocks in the Rose Canyon Lake area, Santa Catalina Mountains, Arizona: U.S. Geol. Survey open-file rept.. Fig. 1, 1:16,000, (NC, Wb, LA, SF, Db, U).

331. Drewes, Harald, 1971, Geologic map of the Mount Wrightson quadrangle, southeast of Tucson, Santa Cruz and Pima Counties, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-614. 1:48,000.

332. Drewes, Harald, 1971, Mesozoic stratigraphy of the Santa Rita Mountains, southeast of Tucson, Arizona: U.S. Geol. Survey Prof. Paper 650-C, Fig. 28, 1:140,000, also detail maps.

333. Akers, J.P. Shorty, J.C., and Stevens, P.R., 1971, Hydrogeology of the Cenozoic igneous rocks, Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: U.S. Geol. Survey Prof. Paper 521-D. Pl. 2, 1:125,000.

334. Denis, E.E., 1971, Ground-water conditions in the Harquahala Plains, Maricopa and Yuma Counties, Arizona: Arizona Land Dept. Water Resource Rept. 45. Pl. 2, 1:63,360.

335. Gillespie, J.B., and Bentley, C.B., 1971, Geohydrology of Hualapai and Sacramento Valleys, Mohave County, Arizona: U.S. Geol. Survey Water-Supply Paper 1899-H. Pl. 1, 1:125,000.

336. Cornwall, H.R., Banks, N.G., and Phillips, C.H., 1971, Geologic map of the Sonora quadrangle, Pinal and Gila Counties, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-1021. 1:24,000.

337. Weist, W.G., Jr., 1971, Geology and ground-water system in the Gila River Phreatophyte Project area, Graham County, Arizona: U.S. Geol. Survey Prof. Paper 655-D. Pl. 1, 1:24,000.

338. Mckay, E.J., 1972, Geologic map of the Show Low quadrangle, Navajo County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-973. 1:62,500.

339. Bromfield, C.S., Eaton, G.P., Peterson, D.L., and Ratte, J.C., 1972, Geological and geophysical investigations of an Apollo 9 photo anomaly near Point of Pines, Arizona: U.S. Geol. Survey open-file rept.. Figs. 2 and 3, 1:24,000, (NC, Da, M, Db, U, SF, LA; Arizona Bur. of Mines).

340. Maxson, J.H., 1969, Preliminary geologic map of the Grand Canyon and vicinity, Arizona: Grand Canyon Nat. History Assoc., 1:62,500.

341. Millett, J.A., and Barnett, H.F., 1971, Surface materials and terrain features of Yuma Proving Ground (Red Hill, Red Bluff Mt., and Roll quadrangles) Arizona: U.S. Army Materiel Command, Natick Labs. Tech. Rept. ES-67. Pls. 1, 2, and 3, 1:62,500.

342. Drewes, Harald, 1972, Preliminary geologic map of the Happy Valley quadrangle, Cochise County, Arizona: U.S. Geol. Survey open-file rept.. 1:48,000, (NC, Da, M, Db, U, SF, LA; Arizona Bur. of Mines).

343. Anderson, C.A., 1972, Precambrian rocks in the Cordes area, Yavapai County, Arizona: U.S. Geol. Survey Bull. 1345. Pl. 1, 1:24,000.

344. Anderson, C.A., 1967, Preliminary geologic map of SW 1/4 Mayer quadrangle, Yavapai County, Arizona: U.S. Geol. Survey open-file map. 1:24,000, (NC, Da, Db, M, LA, SF, U).

345. Blacet, P.M., 1968, Geologic map of the SE 1/4 Mount Union quadrangle, Yavapai County, Arizona: U.S. Geol. Survey open-file map. 1:24,000, (NC, Da, Db, M, LA, SF, U).

346. Anderson, C.A., and Blacet, P.M., 1972, Precambrian geology of the northern Bradshaw Mountains, Yavapai County, Arizona: U.S. Geol. Survey Bull. 1336. Pls. 1 and 2, 1:24,000.

347. Anderson, C.A., 1959, Preliminary geologic map of the NW 1/4 Mayer quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Min. Inv. Field Studies Map MF-228. 1:24,000.

348. Anderson, C.A., and Blacet, P.M., 1962, Preliminary geologic map of the NE 1/4 of Mount Union quadrangle, Yavapai County, Arizona: U.S. Geol. Survey open-file map. 1:24,000, (NC, Da, Db, M, U).

349. Moore, R.T., 1972, Geology of the Virgin and Beaverdam Mountains, Arizona: Arizona Bur. Mines, Bull. 186. Pl. 1, 1:62,500.

350. Roeske, R.H., and Werrell, W.L., 1973, Hydrologic conditions in the San Pedro River valley, Arizona, 1971: Arizona Water Comm. Bull. 4. Pls. 1 and 2, 1:125,000.

351. Metzger, D.G., and Loeltz, O.J., 1973, Geohydrology of the Needles area, Arizona, California, and Nevada: U.S. Geol. Survey Prof. Paper 486-J. Pl. 1, 1:125,000.

352. Anderson, C.A., and Blacet, P.M., 1972, Geologic map of the Mayer quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-996. 1:62,500.

353. Anderson, C.A., and Blacet, P.M., 1972, Geologic map of the Mount Union quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-997. 1:62,500.

354. Drewes, Harald, 1972, Structural geology of the Santa Rita Mountains, southeast of Tucson, Arizona: U.S. Geol. Survey Prof. Paper 748, Pl. 1, 1:95,000, also detailed maps.

355. Olmsted, F.H., 1972, Geologic map of the Laguna Dam 7.5-minute quadrangle, Arizona and California: U.S. Geol. Survey Geol. Quad. Map GQ-1014. 1:24,000.

356. Drewes, Harold and Cooper, J.R., 1973, Reconnaissance geologic map of the west side of the Sierrita Mountains, Palo Alto Ranch quadrangle, Pima County, Arizona: U.S. Geol. Survey Misc. Field Studies Map MF-538. 1:24,000.

357. Gastil, R.G., 1958, Older Precambrian rocks of the Diamond Butte quadrangle, Gila County, Arizona: Geol. Soc. America Bull., v. 69, no. 12, pt. 1. Pl. 2, 1:31,680.

358. Gilluly, James, 1956, General geology of central Cochise County, Arizona: U.S. Geol. Survey Prof. Paper 281. Pl. 5, 1:62,500, also detailed map.

359. Darton, N.H., 1925, Resume of Arizona geology: Arizona Bur. Mines Bull. 119. Fig. 100, 1:250,000.

360. Drewes, Harald, and Williams, F.E., 1973, Mineral resources of the Chiricahua Wilderness Area, Cochise County, Arizona: U.S. Geol. Survey Bull. 1385-A. Pl. 1, 1:62,500.

361. Davidson, E.S., 1973, Water-resources appraisal of the Big Sandy area, Mohave County, Arizona: Arizona Water Comm. Bull. 6. Pl. 1, 1:63,360.

362. Davidson, E.S., 1973, Geohydrology and water resources of the Tucson basin, Arizona: U.S. Geol. Survey Water-Supply Paper 1939-E. Pl. 1, 1:62,500.

363. Ulrich, G.E., and Bailey, N.G., 1974, Geologic map of the SP Mountain quadrangle, Coconino County, Arizona: U.S. Geol. Survey open-file map 74-5. 1:24,000, (NC, Da, F, M).

364. Cooper, J.R., 1973, Geologic map of the Twin Buttes quadrangle, southwest of Tucson, Pima County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-745. 1:48,000.

365. Cooper, J.R., 1971, Mesozoic stratigraphy of the Sierrita Mountains, Pima County, Arizona: U.S. Geol. Survey Prof. Paper 658-D, Figs. 4 and 6, 1:48,000, also a detailed map.

366. Cooper, J.R., 1960, Some geologic features of the Pima mining district, Pima County: U.S. Geol. Survey Bull. 1112-G. Pl. 1, 1:31,680.

367. Anderson, C.A., and Kupfer, D.H., 1945, Report on the properties of the Amargosa Molybdenum and Copper Corp., Pima County, Arizona: U.S. Geol. Survey open-file rept.. Pls. 2 and 7, 1:1,200, (NC).

368. Cummings, J.B., and Romslo, T.M., 1950, Investigations of Twin Buttes copper mines, Pima County, Arizona: U.S. Bur. Mines Rept. Inv. 4732. Figs. 3a, 3b, and 3c, 1:3,600.

369. Simons, F.S., 1974, Geologic map and sections of the Nogales and Lochiel quadrangles, Santa Cruz County, Arizona: U.S. Geol. Survey Misc. Inv. Map I-762. 1:48,000.

370. Simons, F.S., 1972, Mesozoic stratigraphy of the Patagonia Mountains and adjoining areas, Santa Cruz County, Arizona: U.S. Geol. Survey Prof. Paper 658-E. Fig. 2, 1:100,000.

371. Olmstead, F.H., Loeltz, O.J., and Irelan, Burdge, 1973, Geohydrology of the Yuma area, Arizona and California: U.S. Geol. Survey Prof. Paper 486-H. Pl. 3, 1:125,000, also detailed maps.

372. Metzger, D.G., Loeltz, O.J., and Irelan, Burdge, 1973, Geohydrology of the Parker-Blythe-Cibola area, Arizona and California: U.S. Geol. Survey Prof. Paper 486-G. Pl. 1, 1:125,000.

373. Krieger, M.H., 1974, Geologic map of the Black Mountain quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-1108. 1:24,000.

374. Stulik, R.S., 1974, Ground-water conditions in the lower Hassayampa area, Maricopa County, Arizona: Arizona Water Commission Bull. 8. Pl. 1, 1:63,360.

375. Wells, J.D., 1958, Preliminary geologic map of the House Rock Spring NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-188. 1:24,000.

376. Wells, J.D., 1959, Preliminary geologic map of the House Rock Spring SE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-189. 1:24,000.

377. Morrison, R.B., 1965, Geologic map of the Duncan and Canador Peak quadrangles, Arizona and New Mexico: U.S. Geol. Survey Misc. Geol. Inv. Map I-442. 1:48,000.

378. Hamilton, Warren, 1964, Geologic map of the Big Maria Mountains NE quadrangle, Riverside County, California, and Yuma County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-350. 1:24,000.

379. Johnson, P.W., 1962, Water in the Coconino sandstone for the Snowflake-Hay Hollow area, Navajo County, Arizona: U.S. Geol. Survey Water-Supply Paper 1539-S. Pl. 1, 1:125,000.

380. Creasey, S.C., 1965, Geology of the San Manuel area, Pinal County, Arizona: U.S. Geol. Survey Prof. Paper 471. Pl. 1, 1:24,000.

381. Peterson, N.P., 1938, Geology and ore deposits of the Mammoth mining camp area, Pinal County: Arizona Bur. Mines Bull. 144. Pl. 1, 1:4,400, also mine maps.

382. Hadley, J.B., and Sullwold, H.H., Jr., 1945, Geologic map of the San Manuel area, Pinal County, Arizona: U.S. Geol. Survey Mineral Inv. (Strat.) Map 3-180. 1:2,400.

383. Schwartz, G.M., 1953, Geology of the San Manuel copper deposit, Arizona: U.S. Geol. Survey Prof. Paper 256. Fig. 3, 1:40,000.

384. Krieger, M.H., 1965, Geology of the Prescott and Paulden quadrangles, Arizona: U.S. Geol. Survey Prof. Paper 467. Pls. 1 and 2, 1:40,000, also generalized map.

385. Page, H.G., 1963, Water regime of the inner valley of the San Pedro River near Mammoth, Arizona, (a pilot study): U.S. Geol. Survey Water Supply Paper 1669-I. Pl. 1, 1:48,000.

386. Lee, W.T., 1908, Geologic reconnaissance of a part of western Arizona: U.S. Geol. Survey Bull. 352. Fig. 7, 1:21,860, also a detail map.

387. Twenter, F.R., 1962, Geology and promising areas for ground-water development in the Hualapai Indian Reservation, Arizona: U.S. Geol. Survey Water-Supply Paper 1576-A. Pl. 1, 1:125,000.

388. Wright, P.J., 1951, Annie Laurie prospect, Santa Cruz County: U.S. Atomic Energy Commission RMO-677. Pl. 1, 1:2,400.

389. Anderson, C.A., 1945 Loma Prieta Mine, Cooper Basin, Yavapai County: U.S. Geol. Survey open-file rept.. Pl. 2, 1:2,400.

390. Wilson, E.D., and Moore, R.T., 1959, Geologic map of Mohave County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-6. 1:375,000.

391. Wilson, E.D., Moore, R.T., and Peirce, H.W., 1959, Geologic map of Gila County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-3. 1:375,000.

392. Moore, R.T., Wilson, E.D., and O'Haire, R.T., 1960, Geologic map of Coconino County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-2. 1:375,000.

393. Wilson, E.D., Moore, R.T., and O'Haire, R.T., 1960, Geologic map of Navajo and Apache Counties, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-7. 1:375,000.

394. Wilson, E.D., 1960, Geologic map of Yuma County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-11. 1:375,000.

395. Wilson E.D., Moore, R.T., and O'Haire, R.T., 1960, Geologic map of Pima and Santa Cruz Counties Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-8. 1:375,000.

396. Fitch, J.H., and Hem, J.D., 1963, Reconnaissance of headwater springs in Gila River drainage basin, Arizona: U.S. Geol. Survey Water-Supply Paper 1619-H. 1:500,000.

397. Wilson, E.D., Moore, R.T., and Cooper, J.R., 1969, Geologic map of Arizona: U.S. Geol. Survey. 1:500,000.

398. Wilson, E.D., and others, 1957, Geologic map of Maricopa County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-5. 1:375,000.

399. Wilson, E.D., and Moore, R.T., 1958, Geologic map of Graham and Greenlee Counties, Arizona: Arizona Bur. of Mines County Geol. Map Ser. 3-4. 1:375,000.

400. Arizona Bureau of Mines, 1958, Geologic map of Yavapai County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-10. 1:375,000.

401. Wilson, E.D., Moore, R.T., and others, 1959, Geologic map of Pinal, County Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-9. 1:375,000.

402. Arizona Bureau of Mines, 1959, Geologic map of Cochise County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-1. 1:375,000.

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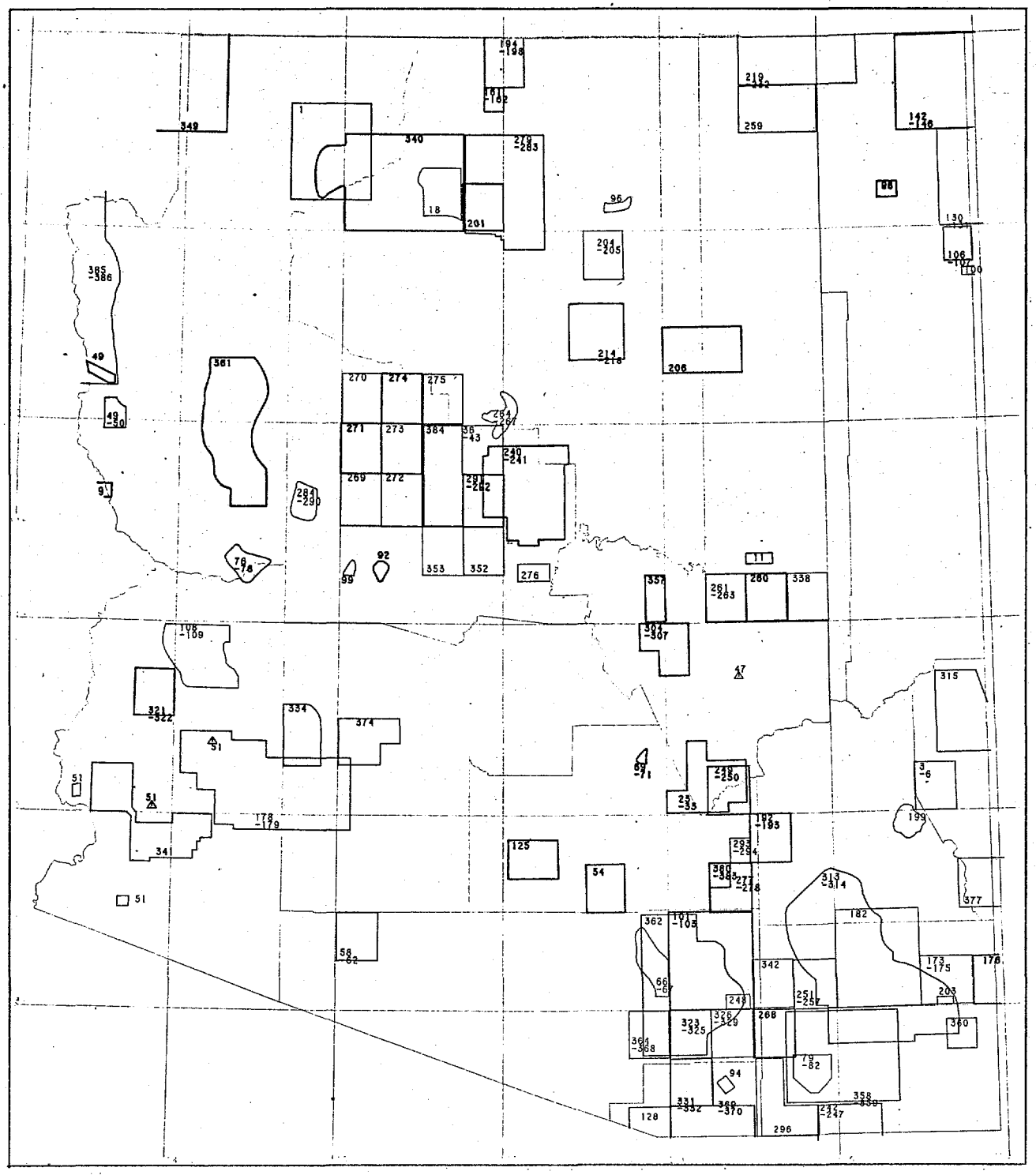

MAPS AT SCALES SMALLER THAN 1:24,000 THROUGH 1:63,360

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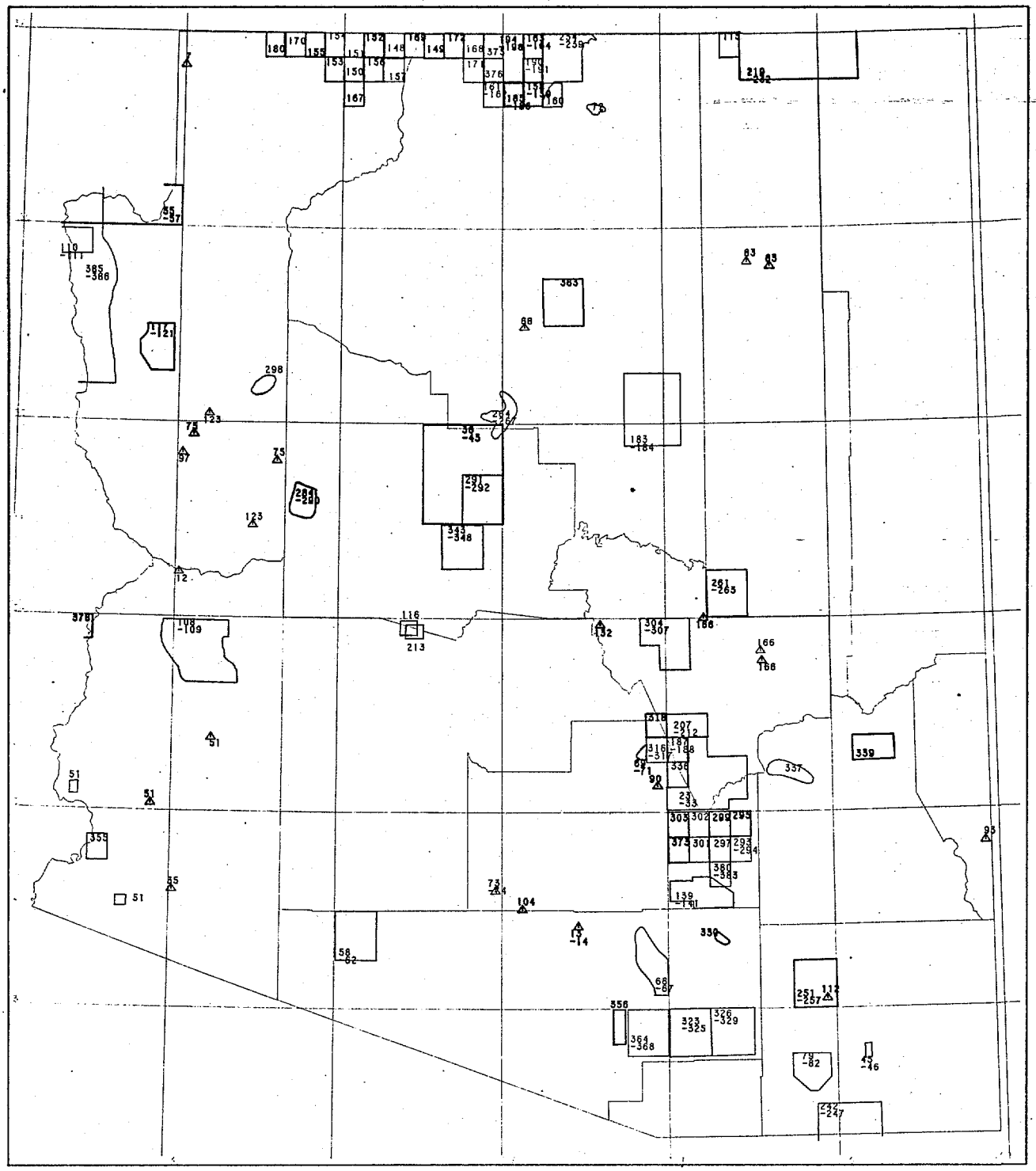
ARIZONA



MAPS AT SCALES 1:24,000 OR LARGER

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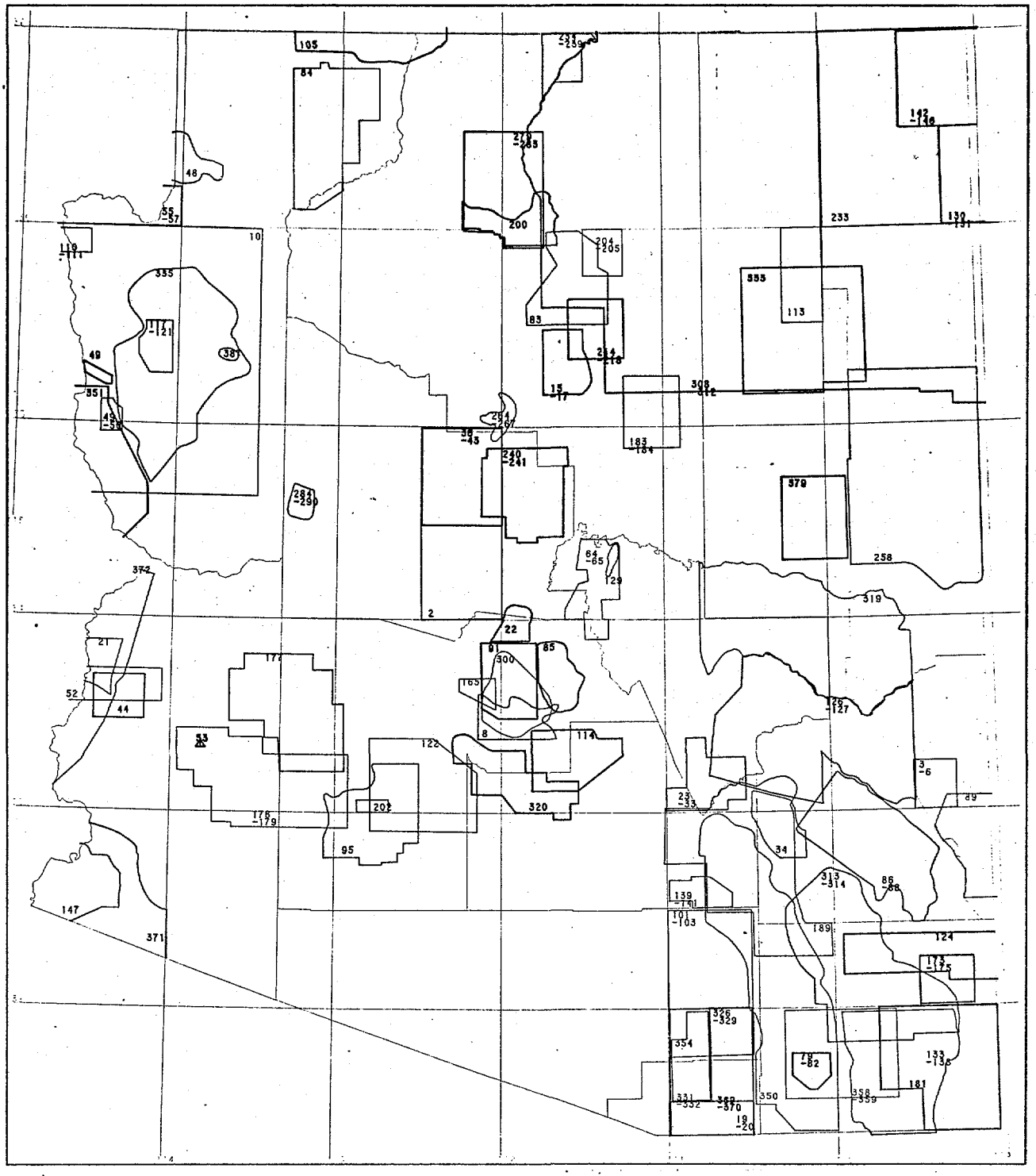

MAPS AT SCALES SMALLER THAN 1:63,360

J. D. SELL

1975

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Alphabet Listing

258. Akers, J.P., 1964, Geology and ground water in the central part of Apache County, Arizona: U.S. Geol. Survey Water-Supply Paper 1771. Pl. 11, 1:125,000.

204. Akers, J.P., Irwin, J.H., Stevens, P.R., and Cooley, M.E., 1961, Geology of the Carrizo quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-161. 1:62,500.

333. Akers, J.P. Shorty, J.C., and Stevens, P.R., 1971, Hydrogeology of the Cenozoic igneous rocks, Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: U.S. Geol. Survey Prof. Paper 521-D. Pl. 2, 1:125,000.

389. Anderson, C.A., 1945 Lona Prieta Mine, Cooper Basin, Yavapai County: U.S. Geol. Survey open-file rept.. Pl. 2, 1:2,400.

287. Anderson, C.A., 1948, Structural control of copper mineralization, Bagdad: Am. Inst. Min. Met. Engineers Tech. Pub. 2352 (Trans., v. 178). Fig. 2, 1:72,000.

286. Anderson, C.A., 1950, Alteration and metallization in the Bagdad porphyry copper deposit: Econ. Geology, v. 45, no. 7. Fig. 2, 1:46,875.

42. Anderson, C.A., 1951, Older Precambrian structure in Arizona: Geol. Soc. America Bull., v. 62, no. 11. Fig. 4, 1:187,500.

253. Anderson, C.A., 1951, Older Precambrian structure in Arizona: Geol. Soc. America Bull., v. 62, no. 11. Fig. 2, 1:62,500.

289. Anderson, C.A., 1951, Older Pre-Cambrian structure in Arizona: Geol. Soc. America Bull., v. 62, no. 11. Fig. 3, 1:100,000.

347. Anderson, C.A., 1959, Preliminary geologic map of the NW 1/4 Mayer quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Min. Inv. Field Studies Map MF-228. 1:24,000.

344. Anderson, C.A., 1967, Preliminary geologic map of SW 1/4 Mayer quadrangle, Yavapai County, Arizona: U.S. Geol. Survey open-file map. 1:24,000, (NC, Da, Db, M, LA, SF, U).

343. Anderson, C.A., 1972, Precambrian rocks in the Cordes area, Yavapai County, Arizona: U.S. Geol. Survey Bull. 1345. Pl. 1, 1:24,000.

348. Anderson, C.A., and Blacet, P.M., 1962, Preliminary geologic map of the SE 1/4 of Mount Union quadrangle, Yavapai County, Arizona: U.S. Geol. Survey open-file map. 1:24,000, (NC, Da, Db, M, U).

346. Anderson, C.A., and Blacet, P.M., 1972, Precambrian geology of the northern Bradshaw Mountains, Yavapai County, Arizona: U.S. Geol. Survey Bull. 1336. Pls. 1 and 2, 1:24,000.

352. Anderson, C.A., and Blacet, P.M., 1972, Geologic map of the Mayer quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-996. 1:62,500.

353. Anderson, C.A., and Blacet, P.M., 1972, Geologic map of the Mount Union quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-997. 1:62,500.

292. Anderson, C.A., and Creasey, S.C., 1958, Geology and ore deposits of the Jerome area, Yavapai County, Arizona: U.S. Geol. Survey Prof. Paper 308. Pl. 1, 1:4,000, also detailed maps.

291. Anderson, C.A., and Creasey, S.C., 1967, Geologic map of the Mingus Mountain quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-715. 1:62,500.

367. Anderson, C.A., and Kupfer, D.H., 1945, Report on the properties of the Amargosa Molybdenum and Copper Corp., Pima County, Arizona: U.S. Geol. Survey open-file rept.. Pls. 2 and 7, 1:1,200, (NC).

290. Anderson, C.A., Scholz, E.A., and Strobell, J.D., Jr., 1956, Geology and ore deposits of the Bagdad area, Yavapai County, Arizona: U.S. Geol. Survey Prof. Paper 278. Pl. 3, 1:20,000.

131. Appledorn, C.R., and Wright, H.E., Jr., 1957, Volcanic structures in the Chuska Mountains, Navajo Reservation, Arizona-New Mexico: Geol. Soc. America Bull., v. 68, no. 4. Figs. 6 and 8, 1:47,500, also other maps.

43. Arizona Bureau of Mines, 1933, Arizona gold placers and placering: Arizona Bur. Mines Bull. 135 (Reprinted as Bull. 168, 1961). Fig. 5, 1:125,000.

52. Arizona Bureau of Mines, 1933, Arizona gold placers and placering: Arizona Bur. Mines Bull. 135 (Reprinted as Bull. 168, 1961). Fig. 4, 1:250,000.

400. Arizona Bureau of Mines, 1958, Geologic map of Yavapai County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-10. 1:375,000.

402. Arizona Bureau of Mines, 1959, Geologic map of Cochise County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-1. 1:375,000.

71. Arizona Geological Society, 1952, Guidebook for field trip excursions in southern Arizona, Geological Society America, Cordilleran Section Meeting, Tucson, April 10-14, 1952: Arizona Geol. Soc. Guidebook. Fig. 39, 1:62,500.

102. Arizona Geological Society, 1952, Guidebook for field trip excursions in southern Arizona, Geological Society America, Cordilleran Section Meeting, Tucson, April 10-14, 1952: Arizona Geol. Soc. Guidebook. Fig. 12, 1:250,000.

114. Arizona Geological Society, 1952, Guidebook for field trip excursions in southern Arizona, Geological Society America, Cordilleran Section Meeting, Tucson, April 10-14, 1952: Arizona Geol. Soc. Guidebook. Fig. 3, 1:187,500.

178. Armstrong, C.A., and Yost, C.D., Jr., 1950, Geology and ground-water of the Palomas Plain, Dendora Valley area, Maricopa and Yuma Counties: Arizona State Land Dept. Water Resources Rept. 4. Pl. 1, 1:125,000.

300. Arteaga, F.E., White, N.D., Cooley, M.E., and Sutheimer, A.F., 1968, Ground water in Paradise Valley, Maricopa County, Arizona: Arizona Land Dept., Water Resources Rept. 35. Fig. 4, 1:125,000.

92. Babcock, H.M., and Brown, S.C., 1947, Ground-water resources of Peoples Valley, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:60,000.

99. Babcock, H.M., and Brown, S.C., 1948, Water supply of Date Creek area, Yavapai County, Arizona: Arizona State Land Dept. Pl. 1, 1:31,680.

95. Babcock, H.M., and Kendall, E.K., 1948, Geology and ground-water resources of the Gila Bend Basin, Maricopa County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:140,000, (NC).

83. Babenroth, D.L., and Stahler, A.M., 1945, Geomorphology and structure of the east Kaibab monocline, Arizona and Utah: Geol. Soc. America Bull., v. 56, no. 2. Pl. 1, 1:160,000.

310. Baker, A.A., 1936, Geology of the Monument Valley-Navajo Mountain region, Arizona: U.S. Geol. Survey Bull. 865. Pl. 1, 1:96,000.

12. Bancroft, Howland, 1911, Reconnaissance of the ore deposits in northern Yuma County Arizona: U.S. Geol. Survey Bull. 451. Fig. 5, 1:24,000.

109. Bancroft, Howland, 1911, Reconnaissance of the ore deposits in northern Yuma County, Arizona: U.S. Geol. Survey Bull. 451. Fig. 14, 1:18,000.

140. Bateman, P.C., and Erickson, M.P., 1944, Maudina and Morningstar tungsten mines, Pinal County, Arizona: U.S. Geol. Survey Prelim. Maps. Sheet 2, 1:480.

259. Beaumont, E.C., and Dixon, G.H., 1965, Geology of the Rayenta and Chilchinbito quadrangles, Navajo County, Arizona: U.S. Geol. Survey Bull. 1202-A. Pl. 1, 1:62,500.

213. Bell, G.L., 1947, Tungsten deposits near Morristown, Maricopa County, Arizona: U.S. Geol. Survey open-file rept.. Fig. 6, 1:6,000, also other maps.

246. Billingsley, P.R., and Locke, Augustus, 1941, Structure of ore districts in the continental framework: Am. Inst. Min. Met. Engineers Trans. v. 144. Fig. 4, 1:62,500.

345. Blacet, P.M., 1968, Geologic map of the SE 1/4 Mount Union quadrangle, Yavapai County, Arizona: U.S. Geol. Survey open-file map. 1:24,000, (NC, Da, Db, M, LA, SF, U).

165. Bluhm, F.I., Wolcott, H.N., and Hem, J.D., 1949, Ground-water resources of Deer Valley, Maricopa County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:84,480, (NC).

135. Bonillas, Y.S., and others, 1916, Geology of the Warren mining district: Am. Inst. Min. Engineers Bull., v. 117, (Trans., v. 55). Pl. 1, 1:250,000.

298. Bowie, J.E., and Kam, William, 1968, Use of water by riparian vegetation, Cottonwood Wash, Arizona: U.S. Geol. Survey Water-Supply Paper 1858. Pl. 1, 1:12,000.

248. Brennan, D.J., 1962, Tertiary sedimentary rocks and structures of the Cienega Gap area, Pima County, Arizona in Cenozoic geology of Arizona-A symposium: Arizona Geol. Soc. Digest, v. 5. 1:62,500.

319. Bromfield, C.S., Eaton, G.P., Peterson, D.L., and Ratte, J.C., 1972, Geological and geophysical investigations of an Apollo 9 photo anomaly near Point of Pines, Arizona: U.S. Geol. Survey open-file rept.. Figs. 2 and 3, 1:24,000, (NC, Da, M, Db, U, SF, LA; Arizona Bur. of Mines).

126. Bromfield, C.S., and Shride, A.F., 1954, Mineral resources of the San Carlos Indian Reservation, Arizona: U.S. Geol. Survey Bull. 1027-E. Pl. 52, 1:250,000, also detailed maps.

147. Brown, H.H., Harshbarger, J.W., and Thomas, H.E., 1956, Analysis of basic data concerning ground-water in the Yuma area, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:[illegible], (NC).

96. Brown, S.C., and Halpenny, L.C., Water-supply investigations at Tuba City, Navajo Indian Reservation: U.S. Geol. Survey Prelim. Rept.. Pl. 1, 1:31,680.

313. Brown, S.G., and Schumann, H.H., 1969, Geohydrology and water utilization in the Willcox basin, Graham and Cochise Counties, Arizona: U.S. Geol. Survey Water-Supply Paper 1859-F. Pl. 1, 1:63,360.

66. Brown, Witt, 1939, Tucson Mountains, an Arizona basin range type: Geol. Soc. America Bull., v. 50, no. 5. Pl. 1, 1:62,500.

35. Bryan, Kirk, 1925, The Papago country, Arizona--a geographic, geologic, and hydrologic reconnaissance, with a guide to desert watering places: U.S. Geol. Survey Water-Supply Paper 499. Fig. 23, 1:4,800.

262. Burchard, E.F., 1931, Iron ore on Carson Creek, Fort Apache Indian Reservation: U.S. Geol. Survey Bull. 831-C. Figs. 7 and 9, 1:31,680.

6. Butler, B.S., and Wilson, E.D., 1938, Some Arizona ore deposits: Arizona Bur. Mines Bull. 145. Pl. 16, 1:24,000.

40. Butler, B.S., and Wilson, E.D., 1938, Some Arizona ore deposits: Arizona Bur. Mines Bull. 145, Geol. Ser. 12. Pl. 8, 1:125,000, also detailed map.

288. Butler, B.S., and Wilson, E.D., 1938, Some Arizona ore deposits: Arizona Bur. Mines Bull. 145. Pl. 25, 1:9,600.

82. Butler, B.S., Wilson, E.D., and Rasor, C.A., 1938, Geology and ore deposits of the Tombstone district: Arizona Bur. Mines Bull. 143, Geol. Ser. 10. Pl. 4, 1:6,000.

111. Campbell, Ian, and Schenk, E.T., 1950, Camptonite dikes near Boulder Dam, Arizona: Am. Mineralogist, v. 35, nos. 9-10. Fig. 1, 1:18,000, also a detailed map.

250. Campbell, M.R., 1904, The Deer Creek coal field, Arizona: U.S. Geol. Survey Bull. 225. Fig. 7, 1:187,500.

276. Canney, F.C., Lehrbeck, W.L., and Williams, F.E., 1967, Mineral resources of the Pine Mountain Primitive Area, Arizona: U.S. Geol. Survey Bull. 1240-J. Pl. 1, 1:31,680.

146. Chenoweth, W.L., 1955, The geology and uranium deposits of the northwest Carrizo area, Apache County, Arizona, in Guidebook, Four Corners Geol. Soc. Field Conference, June 15-17, 1955: Geol. Soc. Guidebook. Fig. 2, 1:125,000, also other maps.

33. Coates, D.R., 1955, Memorandum on the geology and ground-water resources of Dripping Springs basin, Gila and Pinal Counties, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:62,500, (NC).

133. Coates, D.R., and Cushman, P.L., 1955, Geology and ground-water resources of the Douglas basin, Arizona: U.S. Geol. Survey Water-Supply Paper 1354. Pl. 1, 1:253,440.

215. Colton, H.S., 1929, Sunset Crater and the lava beds: Mus. Northern Arizona Mus. Notes, v. 2, no. 4. 1:31,680.

308. Cooley, M.E., Harshbarger, J.W., Akers, J.P., and Hardt, W.F., 1969, Regional hydrogeology of the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: U.S. Geol. Survey Prof. Paper 521-A. Pl. 1, in 9 sheets, 1:125,000.

181. Cooper, J.R., 1959, Reconnaissance geologic map of southeastern Cochise County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-213. 1:125,000.

182. Cooper, J.R., 1960, Reconnaissance map of the Willcox, Fisher Hills, Cochise, and Dos Cabezas quadrangles, Cochise and Graham Counties, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-231. 1:62,500.

366. Cooper, J.R., 1960, Some geologic features of the Pima mining district, Pima County: U.S. Geol. Survey Bull. 1112-G. Pl. 1, 1:31,680.

365. Cooper, J.R., 1971, Mesozoic stratigraphy of the Sierrita Mountains, Pima County, Arizona: U.S. Geol. Survey Prof. Paper 658-D, Figs. 4 and 6, 1:48,000, also a detailed map.

364. Cooper, J.R., 1973, Geologic map of the Twin Buttes quadrangle, southwest of Tucson, Pima County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-745. 1:48,000.

112. Cooper, J.R., and Huff, L.C., 1951, Geological investigations and geochemical prospecting experiment at Johnson, Arizona: Econ. Geology, v. 46, no. 7. Fig. 2, 1:7,500.

257. Cooper, J.R., and Huff, L.C., 1951, Geological investigation and geochemical prospecting experiment at Johnson: Econ. Geology, v. 46, no. 7. Fig. 2, 1:7,500.

251. Cooper, J.R., and Silver, L.T., 1964, Geology and ore deposits of the Dragoon quadrangle, Cochise County, Arizona: U.S. Geol. Survey Prof. Paper 416. Pl. 1, 1:31,680, also mine maps, plans, and inserts.

336. Cornwall, H.R., Banks, N.G., and Phillips, C.H., 1971, Geologic map of the Sonora quadrangle, Pinal and Gila Counties, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-1021. 1:24,000.

217. Cosner, O.J., 1955, Ground water in the Wupatki and Sunset Crater National Monuments, Coconino County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:62,500, (NC).

214. Cosner, O.J., 1962, Ground water in the Wupatki and Sunset Crater National Monuments, Arizona: U.S. Geol. Survey Water-Supply Paper 1475-J. Pl. 20, 1:63,360.

265. Creasey, S.C., 1950, Geology of the Humboldt region and the Iron King mine, Bigbug mining district, Yavapai County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:24,000.

41. Creasey, S.C., 1952, Geology of the Iron King Mine, Yavapai County, Arizona: Econ. Geology, v. 47, no. 1. Fig. 3, 1:6,400.

266. Creasey, S.C., 1952, Geology of the Iron King mine, Yavapai County: Econ. Geology, v. 47, no. 1. Fig. 2, 1:48,000.

380. Creasey, S.C., 1965, Geology of the San Manuel area, Pinal County, Arizona: U.S. Geol. Survey Prof. Paper 471. Pl. 1, 1:24,000.

268. Creasey, S.C., 1967, Geologic map of the Benson quadrangle, Cochise and Pima Counties, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-470. 1:48,000.

277. Creasey, S.C., 1967, General geology of the Mammoth quadrangle, Pinal County, Arizona: U.S. Geol. Survey Bull. 1218. Pl. 1, 1:48,000.

179. Creasey, S.C., Gambell, N.A., and Peterson, D.W., 1974, Preliminary geologic map of the Teapot Mountain quadrangle, Pinal County, Arizona: U.S. Geol Survey open-file 75-314. 1:24,000.

189. Creasey, S.C., and others, 1961, Reconnaissance geologic map of parts of the San Pedro and Aravaipa Valleys, south-central Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-238. 1:[illegible],000.

325. Creasey, S.C., and Quick, G.L., 1947, Copper deposits of a part of the Helvetia mining district, Pima County, Arizona: U.S. Geol. Survey open-file maps. Pl. 1, 1:12,000, also detailed maps. (NC).

368. Cummings, J.B., and Romslo, T.M., 1959, Investigations of Twin Buttes copper mines, Pima County, Arizona: U.S. Bur. Mines Rept. Inv. 4732. Figs. 3a, 3b, and 3c, 1:3,600.

28. Darton, N.H., 1925, Resume of Arizona geology: Arizona Bur. Mines Bull. 119. Pl. 72, 1:125,000.

81. Darton, N.H., 1925, Resume of Arizona geology: Arizona Bur. Mines Bull. 119. Fig. 99, 1:78,125.

359. Darton, N.H., 1925, Resume of Arizona geology: Arizona Bur. Mines Bull. 119. Fig. 100, 1:250,000.

29. Darton, N.H., 1933, Guidebook of the western United States--Part F, the Southern Pacific Lines, New Orleans to Los Angeles: U.S. Geol. Survey Bull. 845. Fig. 54, 1:220,000.

361. Davidson, E.S., 1973, Water-resources appraisal of the Big Sandy area, Mohave County, Arizona: Arizona Water Comm. Bull. 6. Pl. 1, 1:63,360.

362. Davidson, E.S., 1973, Geohydrology and water resources of the Tucson basin, Arizona: U.S. Geol. Survey Water-Supply Paper 1939-E. Pl. 1, 1:62,500.

334. Denis, E.E., 1971, Ground-water conditions in the Harquahala Plains, Maricopa and Yuma Counties, Arizona: Arizona Land Dept. Water Resource Rept. 45. Pl. 2, 1:63,[illegible].

74. Denton, T.C., and Maury, P.S., 1946, Exploration of the Reward (Vekol) zinc deposit, Pinal County, Arizona: U.S. Bur. Mines Rept. Inv. 3975. Fig. 2, 1:7,500.

159. Detterman, J.S., 1956, Photogeologic map of the Emmett Wash NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-190. 1:24,000.

237. Detterman, J.S., 1956, Photogeologic map of the Lees Ferry SW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-189. 1:24,000.

119. Dings, M.G., 1951, Wallapai mining district, Cerbat Mountains, Mohave County: U.S. Geol. Survey Bull. 978-E. Pl. 18, 1:24,000.

324. Drewes, Harald, 1970, Structural control of geochemical anomalies in the Greaterville mining district, southeast of Tucson, Arizona: U.S. Geol. Survey Bull. 1312-A. Pl. 1, 1:24,000.

323. Drewes, Harald, 1971, Geologic map of the Sahuarita quadrangle, southeast of Tucson, Pima County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-613. 1:48,000.

331. Drewes, Harald, 1971, Geologic map of the Mount Wrightson quadrangle, southeast of Tucson, Santa Cruz and Pima Counties, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-614. 1:48,000.

332. Drewes, Harald, 1971, Mesozoic stratigraphy of the Santa Rita Mountains, southeast of Tucson, Arizona: U.S. Geol. Survey Prof. Paper 658-C, Fig. 28, 1:140,000, also detail maps.

342. Drewes, Harald, 1972, Preliminary geologic map of the Happy Valley quadrangle, Cochise County, Arizona: U.S. Geol. Survey open-file rept.. 1:48,000, (NC, Da, M, Db, U, SF, LA; Arizona Bur. of Mines).

354. Drewes, Harald, 1972, Structural geology of the Santa Rita Mountains, southeast of Tucson, Arizona: U.S. Geol. Survey Prof. Paper 748, Pl. 1, 1:95,000, also detailed maps.

356. Drewes, Harold and Cooper, J.R., 1973, Reconnaissance geologic map of the west side of the Sierrita Mountains, Palo Alto Ranch quadrangle, Pima County, Arizona: U.S. Geol. Survey Misc. Field Studies Map MF-538. 1:24,000.

360. Drewes, Harald, and Williams, F.E., 1973, Mineral resources of the Chiricahua Wilderness Area, Cochise County, Arizona: U.S. Geol. Survey Bull. 1385-A. Pl. 1, 1:62,500.

1. Dutton, C.E., 1882, Tertiary history of the Grand Canyon district: U.S. Geol. Survey Mon. 2. Sheets 7 and 8, 1:63,360.

280. Dutton, C.E., 1882, Tertiary history of the Grand Canyon district: U.S. Geol. Survey Mon. 2. Sheets 11 and 14, 1:63,360.

143. Emery, W.B., 1916, Igneous geology of Carrizo Mountain: Am. Jour. Sci., 4th ser., v. 42. Fig. 1, 1:250,000.

256. Enlows, H.E., 1941, Structure of Little Dragoon Mountains: Pan-Am Geologist, v. 75, no. 4. Pl. 27, 1:62,500.

174. Enlows, H.E., 1955, Welded tuffs of Chiricahua National Monument: Geol. Soc. America Bull., v. 66, no. 10. Pl. 1, 1:31,680.

38. Fearing, J.L., Jr., 1926, Some notes on the geology of the Jerome district, Arizona: Econ. Geology, v. 21, no. 8. Fig. 1, 1:9,000.

94. Feth, J.H., 1948, Permian stratigraphy and structure, northern Canelo Hills: Am. Assoc. Petroleum Geologists Bull., v. 32, no. 1. Fig. 1, 1:36,000.

54. Feth, J.H., 1950, Structural reconnaissance of the Red Rock quadrangle: U.S. Geol. Survey open-file rept.. Fig. 1, 1:62,500.

17. Feth, J.H., 1951, A geologic and geophysical reconnaissance of the Doney Park-Black Hill Park area, Arizona, with reference to ground water: U.S. Geol. Survey Circ. 233. Pl. 1, 1:91,750.

129. Feth, J.H., 1954, Preliminary report of investigations of springs in the Mogollon Rim region, Arizona: U.S. Geol. Survey open-file rept.. Pl. 4, 1:75,000.

241. Feth, J.H., 1954, Preliminary report of investigations of springs in the Mogollon Rim region: U.S. Geol. Survey open-file rept.. Pl. 5, 1:95,000, (NC).

260. Finnell, T.L., 1966, Geologic map of the Cibecue quadrangle, Navajo County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-545. 1:62,500.

261. Finnell, T.L., 1966, Geologic map of the Chediski Peak quadrangle, Navajo County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-544. 1:62,500.

326. Finnell, T.L., 1971, Preliminary geologic map of the Empire Mountains quadrangle, Pima County, Arizona: U.S. Geol. Survey open-file map. 1:48,000, (NC, Da, M, SF, LA, U, Db; Arizona Bur. of Mines).

115. Fischer, W.A., and Condon, W.H., 1952, Photogeologic map of the Shanto Spring-1 quadrangle, Arizona: U.S. Geol. Survey Rept. TEM-499. 1:24,000.

396. Fitch, J.H., and Hem, J.D., 1963, Reconnaissance of headwater springs in Gila River drainage basin, Arizona: U.S. Geol. Survey Water-Supply Paper 1619-H. 1:500,000.

357. Gastil, R.G., 1958, Older Precambrian rocks of the Diamond Butte quadrangle, Gila County, Arizona: Geol. Soc. America Bull., v. 69, no. 12, pt. 1. Pl. 2, 1:31,680.

176. Gillerman, Elliot, 1958, Geology of the central Peloncillo Mountains, Hidalgo County, New Mexico, and Cochise County, Arizona: New Mexico Bur. Mines and Mineral Resources Bull. 47. Pl. 1, 1:48,000.

335. Gillespie, J.B., and Bentley, C.B., 1971, Geohydrology of Hualapai and Sacramento Valleys, Mohave County, Arizona: U.S. Geol. Survey Water-Supply Paper 1999-H. Pl. 1, 1:125,000.

58. Gilluly, James, 1937, Geology and ore deposits of the Ajo quadrangle: Arizona Bur. Mines Bull. 141, Geol. Ser. 9, Pl. 1, 1:62,500, also detailed map.

61. Gilluly, James, 1937, Physiography of the Ajo region, Arizona: Geol. Soc. America Bull., v. 48, no. 3. Fig. 6, 1:31,680.

59. Gilluly, James, 1942, The mineralization of the Ajo copper district, Arizona: Econ. Geology, v. 37, no. 4. Fig. 2, 1:42,000.

79. Gilluly, James, 1945, Emplacement of the Uncle Sam porphyry, Tombstone, Arizona: Am. Jour. Sci., v. 243, no. 12. Fig. 2, 1:230,000.

60. Gilluly, James, 1946, The Ajo mining district, Arizona: U.S. Geol. Survey Prof. Paper 209. Pl. 3, 1:62,500, also detailed map.

358. Gilluly, James, 1956, General geology of central Cochise County, Arizona: U.S. Geol. Survey Prof. Paper 281. Pl. 5, 1:62,500, also detailed map.

306. Granger, H.C., Raup, R.B., 1969, Uranium deposits in the Dripping Spring quartzite, Gila County, Arizona: U.S. Geol. Survey Bull. 1276-P. Pls. 45 and 47, 1:12,000.

304. Granger, H.C., and Raup, R.B., 1969, Geology of uranium deposits in the Dripping Spring quartzite, Gila County, Arizona: U.S. Geol. Survey Prof. Paper 595. Pl. 2, 1:36,000.

389. Gregory, H.E., 1914, Reconnaissance of a portion of the Little Colorado Valley: Am. Jour. Sci., 4th Ser., v. 38. Fig. 1, 1:250,000.

218. Gregory, H.E., 1916, The Navajo country--a geographic and hydrographic reconnaissance of parts of Arizona, New Mexico, and Utah: U.S. Geol. Survey Water-Supply Paper 380. Fig. 4, 1:31,680.

107. Gregory, H.E., 1917, Geology of the Navajo country--A reconnaissance of parts of Arizona, New Mexico and Utah: U.S. Geol. Survey Prof. Paper 93. Fig. 2, 1:42,240.

105. Gregory, H.E., 1950, Geology and geography of the Zion Park region, Utah and Arizona: U.S. Geol. Survey Prof. Paper 220. Pl. 2, 1:125,000.

235. Gregory, H.E., and Moore, R.C., 1931, The Kaiparowits region--a geographic, geologic reconnaissance of parts of Utah and Arizona: U.S. Geol. Survey Prof. Paper 164. Pl. 2, 1:250,000.

311. Hack, J.T., 1942, Sedimentation and volcanism in the Hopi Buttes: Geol. Soc. America Bull., v. 53, no. 2. Pl. 1, 1:250,000, also detailed maps.

73. Hadley, J.B., and Sullwood, H.H., Jr., 1944, Copper and zinc deposits in the Seward area, Casa Grande mining district, Pinal County, Arizona: U.S. Geol. Survey Prelim. Map. Pl. 2, 1:6,000, also detailed maps.

382. Hadley, J.B., and Sullwold, H.H., Jr., 1945, Geologic map of the San Manuel area, Pinal County, Arizona: U.S. Geol. Survey Mineral Inv. (Strat.) Map 3-189. 1:2,400.

184. Hager, Dorsey, 1953, Crater Mound (Meteor Crater), a geologic feature: Am. Assoc. Petroleum Geologists Bull., v. 37, no. 4. Fig. 7, 1:12,000.

98. Halpenny, L.C., and Brown, S.C., 1948, Water-supply investigations at Chinle, Navajo Indian Reservation: U.S. Geol. Survey open-file rept.. 1:62,500, (NC).

100. Halpenny, L.C., and Brown, S.C., 1949, Water-supply investigations of Fort Defiance area, Navajo Indian Reservation, Apache County, Arizona: U.S. Geol. Survey open-file rept.. 1:31,680, (NC).

88. Halpenny, L.C., and Cushman, R.L., 1947, Ground-water resources and problems of the Cactus Flat-Artesia area, San Simon Basin, Arizona: U.S. Geol. Survey open-file rept.. Pl. 2, 1:94,000, (NC).

89. Halpenny, L.C., and others, 1946, Ground-water resources of the Duncan Basin, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:95,000, (NC).

378. Hamilton, Warren, 1964, Geologic map of the Big Maria Mountains NE quadrangle, Riverside County, California, and Yuma County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-350. 1:24,000.

130. Harshbarger, J.W., and Repenning, C.A., 1954, Water resources of the Chuska Mountains area, Navajo Indian Reservation, Arizona and New Mexico: U.S. Geol. Survey Circ. 308. Pl. 1, 1:125,000.

121. Hart, O.M., and Hetland, D.L., 1953, Preliminary report on uranium-bearing deposits in Mohave County: U.S. AEC RME-4026, Fig. 6, 1:1,200, also other detailed maps.

123. Hart, O.M., and Hetland, D.L., 1953, Preliminary report on uranium-bearing deposits in Mohave County: U.S. AEC RME-4026. Fig. 8, 1:120, Fig. 9, 1:720.

329. Haury, P.S., 1946, Exploration of the Mohawk zinc prospect, Pima County: U.S. Bur. Mines Rept. Inv. 3958. Fig. 1, 1:5,000.

118. Haury, P.S., 1947, Examination of zinc-lead mines in the Wallapai mining district, Mohave County, Arizona: U.S. Bur. Mines Rept. Inv. 4101. Fig. 7, 1:400.

242. Hayes, P.T., and Landis, E.R., 1964, Geologic map of the southern part of the Mule Mountains, Cochise County, Arizona: U.S. Geol. Survey Misc.

296. Hayes, P.T., and Raup, R.B., 1968, Geologic map of the Huachuca and Mustang Mountains, southeastern Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-509. 1:48,000.

30. Hazen, G.E., and Turner, S.F., 1946, Geology and ground-water resources of the upper Pinal Creek area, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:56,000, (NC).

139. Heindl, L.A., 1955, Ground-water conditions between Oracle and Oracle Junction, Pinal County: U.S. Geol. Survey open-file rept.. Fig. 3, 1:125,000, (NC).

141. Heindl, L.A., 1955, Memorandum on geology and ground-water resources in the vicinity of Oracle, Pinal County: U.S. Geol. Survey open-file rept.. Fig. 2, 1:125,000, (NC).

278. Heindl, L.A., 1963, Cenozoic geology in the Mammoth area, Pinal County, Arizona: U.S. Geol. Survey Bull. 1141-E. Pl. 1, 1:63,360.

202. Heindl, L.A., and Armstrong, C.A., 1963, Geology and ground-water conditions in the Gila Bend Indian Reservation, Maricopa County, Arizona: U.S. Geol. Survey Water-Supply Paper 1647-A. Fig. 4, 1:100,000.

199. Heindl, L.A., and McCullough, R.A., 1961, Geology and the availability of water in the lower Bonita Creek area, Graham County, Arizona: U.S. Geol. Survey Water-Supply Paper 1589. Pl. 1, 1:48,000.

143. [illegible], 1956, [illegible] quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-111, 1:4,[illegible].

7. Hewett, D.F., and others, 1936, Mineral resources of the region around Boulder Dam: U.S. Geol. Survey Bull. 871. Fig. 47, 1:5,400.

20. Hill, J.M., 1910, Notes on the placer deposits of Greaterville, Arizona: U.S. Geol. Survey Bull. 430. Fig. 1, 1:89,000.

75. Hobbs, S.W., 1944, Tungsten deposits in the Boriana district and the Aquarius Range, Mohave County, Arizona: U.S. Geol. Survey Bull. 940-I. Pl. 43, 1:9,600, Fig. 28, 1:7,200.

264. Huff, L.C., and Santos, Elmer, 1966, Mineral resources of Sycamore Canyon Primitive Area, Arizona: U.S. Geol. Survey Bull. 1230-F. Pl. 1, 1:48,000.

206. Irwin, J.H., Akers, J.P., Cooley, M.E., 1962, Geology of the Leupp quadrangle, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-352. 1:62,500.

2. Jagger, T.A., Jr., and Palache, Charles, 1905, Description of the Bradshaw Mountains quadrangle, Arizona: U.S. Geol. Survey Geol. Atlas, Folio 126. 1:125,000.

116. Jahns, R.H., 1952, Pegmatite deposits of the White Picacho district, Maricopa and Yavapai Counties, Arizona: Arizona Bur. Mines Bull. 162, Mineral Technology Ser. 46. Pls. 17, 21, and 24, 1:240.

67. Jenkins, O.P., and Wilson, E.D., 1920, A geological reconnaissance of the Tucson and Ajo Mountains: Arizona Univ. Bull. 106. Pl. 1, 1:16,000.

284. Jerome, S.E., and Cook, D.R., 1967, Relation of some metal mining districts in the western United States to regional tectonic environments and igneous activity: Nevada Bur. Mines Bull. 69. Pl. 21, 1:40,000.

203. Johnson, P.W., 1962, Availability of additional water for Chiricahua National Monument, Cochise County, Arizona: U.S. Geol. Survey Water-Supply Paper 1473-H. Pl. 17, 1:[illegible],000.

379. Johnson, P.W., 1962, Water in the Coconino sandstone for the Snowflake-Hay Hollow area, Navajo County, Arizona: U.S. Geol. Survey Water-Supply Paper 1539-S. Pl. 1, 1:125,000.

53. Jones, E.L., Jr., 1915, A reconnaissance in the Kofa Mountains, Arizona: U.S. Geol. Survey Bull. 620. Pl. 5, 1:125,000.

21. Jones, E.L., Jr., 1916, Gold deposits near Quartzsite, Arizona: U.S. Geol. Survey Bull. 620. Pl. 4, 1:187,500.

80. Jones, E.L., Jr., and Ransome, F.L., 1920, Deposits of manganese ore in Arizona: U.S. Geol. Survey Bull. 710. Pl. 5, 1:48,000.

134. Jones, E.L., and [illegible], 1947, [illegible] of the Willcox Basin, Cochise and Graham [illegible] Survey open-file rept.. Pl. 1, 1:[illegible],000, (NC).

107. Kaiser, F.P., 1951, Granitferous quartzite, Red Bluff prospect, Gila County, Arizona: U.S. Geol. Survey Circ. 117. Pl. 1, 1:2,400.

255. Kellog, L.O., 1906, Sketch of the geology and ore deposits of the Cochise mining district, Cochise County: Econ. Geology, v. 1, no. 7. Fig. 48, 1:30,000.

14. Kerr, P.F., 1951, Alteration features at Silver Bell: Geol. Soc. America, Bull., v. 62, no. 5. Pl. 1, 1:24,000.

103. Keyes, C.R., 1930, Colossal Cave in Arizona: Pan-Am. Geologist v. 53, no. 5. Pl. 17, 1:48,000.

31. Kiersch, G.A., 1949, Structural control and mineralization at the Seventy-Nine Mine, Gila County, Arizona: Econ. Geology, v. 44, no. 1. Fig. 1, 1:14,400.

314. Kister, L.R., Brown, S.G., Schumann, H.H., and Johnson, P.W., 1966, Map showing fluoride content and salinity of ground-water in the Willcox basin, Graham and Cochise Counties, Arizona: U.S. Geol. Survey Hydrol. Inv. Atlas 214. Pl. 1, 1:125,000.

87. Knechtel, M.M., 1938, Geology and ground-water resources of the valley of the Gila River and San Simon Creek, Graham County, Arizona: U.S. Geol. Survey Water-Supply Paper 796-F. Pl. 46, 1:96,000.

84. Koons, E.D., 1945, Geology of the Uinkaret plateau, northern Arizona: Geol. Soc. America Bull., v. 56, no. 2. Pl. 1, 1:108,612.

294. Krieger, M.H., 1961, Troy quartzite (younger Precambrian) and Bolsa and Abrigo formation (Cambrian) northern Galiuro Mountains in southeastern Arizona, in Geological Survey research 1961, Chap. C: U.S. Geol. Survey Prof. Paper 424-C. Fig. 207.1, 1:35,000.

384. Krieger, M.H., 1965, Geology of the Prescott and Paulden quadrangles, Arizona: U.S. Geol. Survey Prof. Paper 467. Pls. 1 and 2, 1:48,000, also generalized map.

269. Krieger, M.H., 1967, Reconnaissance geologic map of the Sheridan Mountain quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-505. 1:62,500.

270. Krieger, M.H., 1967, Reconnaissance geologic map of the Turkey Canyon quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-501. 1:62,500.

271. Krieger, M.H., 1967, Reconnaissance geologic map of the Camp Wood quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-502. 1:62,500.

272. Krieger, M.H., 1967, Reconnaissance geologic map of the Iron Springs quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-504. 1:62,500.

273. Krieger, M.H., 1967, Reconnaissance geologic map of the Simmons quadrangle, Yavapai County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-503. 1:62,500.

274. Krieger, M.H., 1967, Reconnaissance geologic map of the Picacho Butte quadrangle, Yavapai and Coconino Counties, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-500. 1:62,500.

275. Krieger, M.H., 1967, Reconnaissance geologic map of the Ash Fork quadrangle, Yavapai and Coconino Counties, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-499. 1:62,500.

293. Krieger, M.H., 1968, Geologic map of the Holy Joe Peak quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-669. 1:24,000.

295. Krieger, M.H., 1968, Geologic map of the Brandenburg Mountain quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-668. 1:24,000.

297. Krieger, M.H., 1968, Geologic map of the Lookout Mountain quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-670. 1:24,000.

299. Krieger, M.H., 1968, Geologic map of the Saddle Mountain quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-671. 1:24,000.

301. Krieger, M.H., 1974, Geologic map of the Putnam Wash quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-1109. 1:24,000.

302. Krieger, M.H., 1974, Geologic map of the Winkelman quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-1106. 1:24,000.

303. Krieger, M.H., 1974, Geologic map of the Crozier Peak quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-1107. 1:24,000.

373. Krieger, M.H., 1974, Geologic map of the Black Mountain quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-1108. 1:24,000.

193. Kuhn, T.H., 1941, Pipe deposits of the Copper Creek area: Econ. Geology, v. 36, no. 5. Fig. 2, 1:28,800.

330. Laney, R.L., 1971, Weathering of the granodioritic rocks in the Rose Canyon Lake area, Santa Catalina Mountains, Arizona: U.S. Geol. Survey open-file rept.. Fig. 1, 1:16,000, (NC, Wb, LA, SF, Db, U).

76. Lasky, S.G., and Webber, B.N., 1944, Manganese deposits in the Artillery Mountains region, Mohave County, Arizona: U.S. Geol. Survey Bull. 936-R. Pl. 62, 1:31,680, also a detailed map.

77. Lasky, S.G., and Webber, B.N., 1949, Manganese resources of the Artillery Mountains region, Arizona: U.S. Geol. Survey Bull. 961. Pl. 1, 1:31,680, also a detailed map.

39. Lausen, Carl, 1930, The pre-Cambrian Greenstone complex of the Jerome quadrangle: Jour. Geology, v. 38, no. 2. Fig. 1, 1:150,000.

49. Lausen, Carl, 1931, Geology and ore deposits of the Oatman and Katherine districts, Arizona: Arizona Bur. Mines Geol. Ser. 6, Bull. 131. Pl. 1, 1:42,240, Pl. 2, 1:100,000.

44. Lausen, Carl, and Gardner, E.D., 1927, Quicksilver resources of Arizona: Arizona Bur. Mines Bull. 122. Fig. 2, 1:250,000, also detailed map.

65. Lausen, Carl, and Wilson, E.D., 1925, Gold and copper deposits near Payson: Arizona Bur. Mines Bull. 120. Pl. 1, 1:187,500.

8. Lee, W.T., 1905, Underground waters of Salt River Valley, Arizona: U.S. Geol. Survey Water-Supply Paper 136. Pl. 7, 1:96,000, and detailed maps.

9. Lee, W.T., 1908, Geologic reconnaissance of a part of western Arizona: U.S. Geol. Survey Bull. 352. Fig. 10, 1:55,440.

386. Lee, W.T., 1908, Geologic reconnaissance of a part of western Arizona: U.S. Geol. Survey Bull. 352. Fig. 7, 1:21,860, also a detail map.

3. Lindgren, Waldemar, 1905, The copper deposits of the Clifton-Morenci district, Arizona: U.S. Geol. Survey Prof. Paper 43. Pl. 1, 1:62,500, also detailed maps.

4. Lindgren, Waldemar, 1905, Description of the Clifton quadrangle, Arizona: U.S. Geol. Survey Geol. Atlas, Folio 129, 1:62,500.

36. Lindgren, Waldemar, 1926, Ore deposits of the Jerome and Bradshaw Mountains quadrangles, Arizona: U.S. Geol. Survey Bull. 782. Pls. 1 and 2, 1:125,000.

48. Longwell, C.R., 1928, Geology of the Muddy Mountains, Nev., with a section through the Virgin Range to the Grand Wash Cliffs, Arizona: U.S. Geol. Survey Bull. 798. Pl. 1, 1:250,000.

55. Longwell, C.R., 1936, Geology of the Boulder Reservoir floor: Geol. Soc. America Bull., v. 47, no. 9. Pls. 2 and 3, 1:110,000.

110. Longwell, C.R., 1951, Megabreccia developed downslope from large faults: Am. Jour. Sci., v. 249, no. 5. Fig. 2, 1:125,000.

328. Mackay, D.K., 1939, Geology of the Xlene structure: Oil Weekly, v. 93, no. 10. Fig. 1, 1:21,120.

150. Marshall, C.H., 1956, Photogeologic map of the Short Creek SW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-140. 1:24,000.

151. Marshall, C.H., and Pillmore, C.L., 1956, Photogeologic map of the Short Creek NW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-141. 1:24,000.

153. Marshall, C.H., 1956, Photogeologic map of the Lost Spring Mountain SE quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-144. 1:24,000.

154. Marshall, C.H., 1956, Photogeologic map of the Lost Spring Mountain NE quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-145. 1:24,000.

155. Marshall, C.H., 1956, Photogeologic map of the Lost Spring Mountain NW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-146. 1:24,000.

156. Marshall, C.H., 1956, Photogeologic map of the Short Creek SE quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-153. 1:24,000.

157. Marshall, C.H., 1956, Photogeologic map of the Fredonia SW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-160. 1:24,000.

161. Marshall, C.H., 1956, Photogeologic map of the Jacob Lake NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-164. 1:24,000.

167. Marshall, C.H., 1956, Photogeologic map of the Heaton Knolls NW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-143. 1:24,000.

191. Marshall, C.H., 1956, Photogeologic map of the Paria Plateau SE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-191. 1:24,000.

170. Marshall, C.H., 1957, Photogeologic map of the Hurricane Cliffs-2 NE quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-252. 1:24,000.

145. Masters, J.A., 1952, Uranium deposits on southwest rim of Lukachukai Mountains, northeast Arizona: U.S. AEC RMO-911. Pl. 1, 1:78,125.

201. Maxson, J.H., 1961, Geologic map of the Bright Angel quadrangle, Grand Canyon National Park, Arizona: Grand Canyon Nat. Hist. Assoc. 1:48,000.

279. Maxson, J.H., 1967, Preliminary geologic map of the Grand Canyon and vicinity, Arizona: Grand Canyon Nat. History Assoc.. 1:62,500.

340. Maxson, J.H., 1969, Preliminary geologic map of the Grand Canyon and vicinity, Arizona: Grand Canyon Nat. History Assoc., 1:62,500.

132. Mcallister, J.F., 1955, Geologic maps of the Ord quicksilver area, Mazatzal Mountains, Arizona: U.S. Geol. Survey open-file rept.. 1:2,400, (NC; Arizona Bur. Mines).

85. Mcdonald, H.R., and Padgett, H.D., Jr., 1946, Geology and ground-water resources of the Verde River Valley near Fort Mcdowell: U.S. Geol. Survey open-file rept.. Pl. 2, 1:125,000, (NC).

91. Mcdonald, H.R., Malcott, H.M., and Bluhm, F.I., 1947, Geology and ground-water resources of Paradise Valley, Maricopa County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:210,000, (NC).

338. Mckay, E.J., 1972, Geologic map of the Show Low quadrangle, Navajo County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-973. 1:62,500.

164. Mcqueen, Kathleen, 1956, Photogeologic map of the Paria Plateau NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-228. 1:24,000.

172. Mcqueen, Kathleen, 1957, Photogeologic map of the Shinarump NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-255. 1:24,000.

196. McQueen, Kathleen, 1956, House Rock Spring SE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-199. 1:24,000.

236. McQueen, Kathleen, 1956, Photogeologic map of the Lees Ferry SE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-169. 1:24,000.

238. McQueen, Kathleen, 1956, Photogeologic map of the Lees Ferry NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-196. 1:24,000.

239. McQueen, Kathleen, 1956, Photogeologic map of the Lees Ferry NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-222. 1:24,000.

108. Metzger, D.G., 1951, Geology and ground-water resources of the northern part of the Ranegras Plain, Yuma County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:62,500, (NC).

177. Metzger, D.G., 1957, Geology and ground-water resources of the Harquahala Plains area, Maricopa and Yuma Counties: Arizona State Land Dept. Water Resources Rept. 3. Pl. 1, 1:125,000.

200. Metzger, D.G., 1961, Geology in relation to availability of water along the south rim, Grand Canyon National Park, Arizona: U.S. Geol. Survey Water-Supply Paper 1475-C. Pl. 13, 1:125,000.

22. Meinzer, O.E., and Ellis, A.J., 1916, Ground water in Paradise Valley, Arizona: U.S. Geol. Survey Water-Supply Paper 375. Pl. 3, 1:187,500.

138. Meinzer, O.E., and Kelton, F.C., 1913, Geology and water resources of Sulphur Spring Valley, Arizona: U.S. Geol. Survey Water-Supply Paper 320. Pl. 1, 1:250,000.

351. Metzger, D.G., and Loeltz, O.J., 1973, Geohydrology of the Needles area, Arizona, California, and Nevada: U.S. Geol. Survey Prof. Paper 486-J. Pl. 1, 1:125,000.

372. Metzger, D.G., Loeltz, O.J., and Irelan, Burdge, 1973, Geohydrology of the Parker-Blythe-Cibola area, Arizona and California: U.S. Geol. Survey Prof. Paper 486-G. Pl. 1, 1:125,000.

322. Miller, F.K., 1968, Geology of the Quartzsite quadrangle, Arizona: U.S. Geol. Survey open-file map. 1:48,000, (NC, Db, Da, LA, M, SF, U).

321. Miller, F.K., 1970, Geologic map of the Quartzsite quadrangle, Yuma County, Arizona: U.S. Geol. Survey Geol. Quad. Map Quad. 1:62,500.

341. Millett, J.A., and Barnett, H.F., 1971, Surface materials and terrain features of Yuma Proving Ground (Red Hill, Red Bluff Mt., and Roll quadrangles) Arizona: U.S. Army Materiel Command, Natick Labs. Tech. Rept. ES-67. Pls. 1, 2, and 3, 1:62,500.

160. Minard, J.P., 1956, Photogeologic map of the Tanner Wash NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-193. 1:24,000.

186. Minard, J.P., 1956, Photogeologic map of the Emmett Wash NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-192. 1:24,000.

195. Minard, J.P., 1956, Photogeologic map of the House Rock Spring NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-198. 1:24,000.

197. Minard, J.P., 1956, Photogeologic map of the Paria Plateau SW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-171. 1:24,000.

198. Minard, J.P., 1956, Photogeologic map of the Paria Plateau NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-182. 1:24,000.

168. Minard, J.P., 1957, Photogeologic map of the House Rock Spring NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-253. 1:24,000.

68. Mintz, Yale, 1942, Slate Mountain volcano-laccolith: Plateau, v. 14, no. 3. 1:24,000.

319. Moore, R.T., 1960, Mineral deposits of the Fort Apache Indian Reservation, Arizona: Arizona Bur. Mines Bull. 177. Pl. 2, 1:250,000.

349. Moore, R.T., 1972, Geology of the Virgin and Beaverdam Mountains, Arizona: Arizona Bur. Mines, Bull. 186. Pl. 1, 1:62,500.

101. Moore, R.H., and others, 1949, Geology of the Tucson quadrangle, Arizona: U.S. Geol. Survey open-file map. 1:125,000.

392. Moore, R.T., Wilson, E.D., and O'Haire, R.T., 1960, Geologic map of Coconino County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-2. 1:375,000.

149. Morris, R.H., 1956, Photogeologic map of the Shinarump NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-139. 1:24,000.

169. Morris, R.H., 1957, Photogeologic map of the Fredonia NE quadrangle, Coconino and Mohave Counties, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-247. 1:24,000.

377. Morrison, R.B., 1965, Geologic map of the Duncan and Cañador Peak quadrangles, Arizona and New Mexico: U.S. Geol. Survey Misc. Geol. Inv. Map I-442. 1:48,000.

124. New Mexico Geological Society, 1953, Guidebook of southwestern New Mexico, 4th field conference, October 15-18, 1953: New Mexico Geological Society Guidebook. Maps 3-4, 3-5, 3-6, 1:126,720.

56. Nickell, F.A., 1942, Development and use of engineering geology: Am. Assoc. Petroleum Geologists Bull., v. 26, no. 12, Fig. 3, 1:22,000, also a detailed map.

18. Noble, L.F., 1914, The Shinumo quadrangle, Grand Canyon district, Arizona: U.S. Geol. Survey Bull. 549. Pl. 1, 1:48,000.

355. Olmsted, F.H., 1972, Geologic map of the Laguna Dam 7.5-minute quadrangle, Arizona and California: U.S. Geol. Survey Geol. Quad. Map GQ-1014. 1:24,000.

371. Olmstead, F.H., Loeltz, O.J., and Irelan, Burdge, 1973, Geohydrology of the Yuma area, Arizona and California: U.S. Geol. Survey Prof. Paper 486-H. Pl. 3, 1:125,000, also detailed maps.

385. Page, H.G., 1961, Water regime of the inner valley of the San Pedro River near Mammoth, Arizona, (a pilot study): U.S. Geol. Survey Water Supply Paper 1669-I. Pl. 1, 1:48,000.

158. Petersen, R.G., 1959, Preliminary geologic map of the Emmett Wash NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-215. 1:24,000.

190. Petersen, R.G., 1961, Preliminary geologic map of the Paria Plateau SE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Inv. Field Studies Map MF-196. 1:24,000.

163. Petersen, R.G., and Phoenix, D.A., 1959, Preliminary geologic map of the Paria Plateau NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-214. 1:24,000.

185. Petersen, R.G., and Wells, J.D., 1961, Preliminary geologic map of the Emmett Wash NW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-197. 1:24,000.

318. Peterson, D.W., 1960, Geology of the Haunted Canyon quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-128. 1:24,000.

317. Peterson, D.W., 1962, Preliminary geologic map of the western part of the Superior quadrangle, Pinal County, Arizona: U.S. Geol. Survey Min. Inv. Field Studies Map MF-253. 1:12,000.

316. Peterson, D.W., 1969, Geologic map of the Superior quadrangle, Pinal County, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-818. 1:24,000.

381. Peterson, N.P., 1938, Geology and ore deposits of the Mammoth mining camp area, Pinal County: Arizona Bur. Mines Bull. 144. Pl. 1, 1:4,400, also mine maps.

209. Peterson, N.P., 1948, Geology of the Castle Dome copper deposit: Am. Inst. Min. Met. Engineers Tech. Pub. 2302 (Trans. v. 778). Fig. 1, 1:20,000.

212. Peterson, N.P., 1954, Geology of the Globe quadrangle, Arizona: U.S. Geol. Survey Geol. Quad. Map GQ-41. 1:24,000.

188. Peterson, N.P., 1961, Preliminary geologic map of the Final Ranch quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-91. 1:24,000.

207. Peterson, N.P., 1962, Geology and ore deposits of the Globe-Miami district, Arizona: U.S. Geol. Survey Prof. Paper 342. Pl. 1, 1:24,000.

187. Peterson, N.P., 1963, Geology of the Pinal Ranch quadrangle, Arizona: U.S. Geol. Survey Bull. 1141-H. Pl. 1, 1:24,000.

208. Peterson, N.P., Gilbert, C.M., and Quick, G.L., 1946, Hydrothermal alteration in the Castle Dome copper deposit: Econ. Geology, v. 41, no. 8. Fig. 2, 1:18,000.

210. Peterson, N.P., Gilbert, C.M., and Quick, G.L., 1951, Geology and ore deposits of the Castle Dome area, Gila County, Arizona: U.S. Geol. Survey Bull. 971. Pl. 1, 1:6,000, also mine maps.

211. Peterson, N.P., and others, 1953, Geologic map of a portion of the Inspiration quadrangle: U.S. Geol. Survey open-file map. 1:12,000.

90. Phelps, H.D., 1946, Exploration of the Copper Butte Mine, Mineral Creek mining district, Pinal County, Arizona: U.S. Bur. Mines Rept. Inv. 3914. Fig. 6, 1:3,000.

234. Phoenix, D.A., 1963, Geology of the Lees Ferry area, Coconino County, Arizona: U.S. Geol. Survey Bull. 1137. Pl. 1, 1:24,000.

152. Pillmore, C.L., 1956, Photogeologic map of the Short Creek NE quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-142. 1:24,000.

171. Pomeroy, J.S., 1957, Photogeologic map of the House Rock Spring SW quadrangle, Coconino County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-254. 1:24,000.

180. Pomeroy, J.S., 1959, Photogeologic map of the Hurricane Cliffs-2 NW quadrangle, Mohave County, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-293. 1:24,000.

267. Price, W.E., Jr., 1950, Cenozoic gravels on the rim of Sycamore Canyon: Geol. Soc. America Bull., v. 61, no. 5. Fig. 2, 1:187,500.

37. Provot, F.A., 1916, Jerome mining district geology: Eng. and Min. Jour., v. 102. Fig. 1, 1:62,500.

24. Ransome, F.L., 1903, Geology of the Globe Copper district, Arizona: U.S. Geol. Survey Prof. Paper 12. Pl. 1, 1:62,500, also mine maps.

243. Ransome, F.L., 1904, Description of the Bisbee quadrangle, Arizona: U.S. Geol. Survey Geol. Atlas, Folio 112. 1:62,500, 1:12,000.

244. Ransome, F.L., 1904, Geology and ore deposits of the Bisbee quadrangle, Arizona: U.S. Geol. Survey Prof. Paper 21. Pl. 1, 1:62,500, Pl. 3, 1:12,000.

25. Ransome, F.L., 1905, Description of the Globe quadrangle, Arizona: U.S. Geol. Survey Geol. Atlas, Folio 111, 1:62,500.

46. Ransome, F.L., 1913, The Turquoise copper-mining district, Arizona: U.S. Geol. Survey Bull. 530. Fig. 17, 1:18,000.

70. Ransome, F.L., 1914, Copper deposits near Superior, Arizona: U.S. Geol. Survey Bull. 540. Fig. 13, 1:13,500.

23. Ransome, F.L., 1919, The copper deposits of Ray and Miami, Arizona: U.S. Geol. Survey Prof. Paper 115. Pl. 2, 1:125,000, also detailed maps.

26. Ransome, F.L., 1923, Description of the Ray quadrangle, Arizona: U.S. Geol. Survey Geol. Atlas, Folio 217, 1:62,500.

50. Ransome, F.L., 1923, Geology of the Oatman gold district, Arizona: U.S. Geol. Survey Bull. 743. Pl. 1, 1:48,000.

315. Ratte, J.C., Landis, E.R., Gaskill, D.L., and Raabe, R.G., 1969, Mineral resources of the Blue Range primitive area, Greenlee County, Arizona, and Catron County, New Mexico: U.S. Geol. Survey Bull. 1261-E. Pl. 1, 1:62,500.

72. Read, C.B., Sample, R.D., and Sullwood, H.H., Jr., 1943, Copper deposits of the White Mesa mining district, Coconino County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:7,200, also detailed maps, (NC; Arizona Bur. Mines).

5. Reber, L.E., Jr., 1916, The mineralization at Clifton-Morenci: Econ. Geology, v. 11. Fig. 28, 1:221,760.

63. Reiche, Parry, 1937, Toreva-block, a distinctive landslide type: Jour. Geology, v. 45, no. 5. Fig. 3, 1:12,000, Fig. 6, 1:16,000.

205. Reiche, Parry, 1937, Quarternary deformation in the Cameron district of the Plateau Province: Am. Jour. Sci., 5th ser., v. 34, no. 200. 1:95,000.

113. Repenning, C.A., and Halpenny, L.C., 1951, Water-supply investigations of Keams Canyon area, Hopi Indian Reservation, Navajo County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:125,000, (NC).

15. Robinson, H.H., 1913, The San Francisco volcanic field, Arizona: U.S. Geol. Survey Prof. Paper 76. Pl. 5, 1:96,000, also other maps.

350. Roeske, R.H., and Werrell, W.L., 1973, Hydrologic conditions in the San Pedro River valley, Arizona, 1971: Arizona Water Comm. Bull. 4. Pls. 1 and 2, 1:125,000.

97. Romslo, T.M., 1948, Antler copper-zinc deposit, Mohave County, Arizona: U.S. Bur. Mines Rept. Inv. 4214. Fig. 2, 1:2,400.

254. Romslo, T.M., 1949, Investigations of Keystone and St. George copper-zinc deposits, Cochise County: U.S. Bur. Mines Rept. Inv. 4504. Figs. 3 and 4, 1:3,000.

104. Romslo, T.M., 1950, Investigations of the Lake Shore copper deposits, Pinal County: U.S. Bur. Mines Rept. Inv. 4706. Fig. 3, 1:840.

62. Romslo, T.M., and Robinson, C.S., 1952, Copper Giant deposits, Pima County, Arizona: U.S. Bur. Mines Rept. Inv. 4850. Fig. 2, 1:1,800.

27. Ross, C.P., 1925, Ore deposits of the Saddle Mountain and Banner mining districts, Arizona: U.S. Geol. Survey Bull. 771. Pls. 1 and 17, 1:62,500, also detailed map.

34. Ross, C.P., 1925, Geology and ore deposits of the Aravaipa and Stanley mining districts, Graham County, Arizona: U.S. Geol. Survey Bull. 763. Pl. 1, 1:125,000, also detailed maps.

173. Sabins, F.F., Jr., 1957, Geology of the Cochise Head and western part of the Vanar quadrangles, Arizona: Geol. Soc. America Bull., v. 68, no. 10. Pl. 1, 1:62,500.

175. Sabins, F.F., Jr., 1957, Stratigraphic relations in Chiricahua and Dos Cabezas Mountains: Am. Assoc. Petroleum Geologists Bull., v. 41, no. 1. Fig. 2, 1:215,000.

10. Schrader, F.C., 1909, Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Arizona: U.S. Geol. Survey Bull. 397. Pl. 1, 1:250,000.

19. Schrader, F.C., and Hill, J.M., 1915, Mineral deposits of the Santa Rita and Patagonia Mountains, Arizona: U.S. Geol. Survey Bull. 582. Pl. 2, 1:125,000, also detailed maps.

383. Schwartz, G.M., 1953, Geology of the San Manuel copper deposit, Arizona: U.S. Geol. Survey Prof. Paper 256. Fig. 3, 1:40,000.

127. Schwennesen, A.T., 1921, Geology and water resources of the Gila and San Carlos Valleys in the San Carlos Indian Reservation, Arizona: U.S. Geol. Survey Water-Supply Paper 450. Pl. 2, 1:250,000.

16. Sharp, R.P., 1942, Multiple Pleistocene glaciation on San Francisco Mountain, Arizona: Jour. Geology, v. 50, no. 5. Fig. 1, 1:20,000.

305. Sharp, R.J., 1956, Preliminary report on uranium occurrence and regional geology in the Cherry Creek area, Gila County: U.S. AEC RME-2036. Pl. 1, 1:24,000.

183. Shoemaker, E.M., 1959, Impact mechanics at Meteor Crater: U.S. Geol. Survey open-file rept.. Fig. 1, 1:200,000, also detailed map of crater, (NC).

69. Short, M.N., and others, 1943, Geology and ore deposits of the Superior mining area, Arizona: Arizona Bur. Mines Bull. 151, Geol. Ser. 16. Pl. 1, 1:12,000, also mine maps.

192. Simons, F.S., 1964, Geology of the Klondyke quadrangle, Graham and Pinal Counties, Arizona: U.S. Geol. Survey Prof. Paper 461. Pl. 1, 1:62,500.

370. Simons, F.S., 1972, Mesozoic stratigraphy of the Patagonia Mountains and adjoining areas, Santa Cruz County, Arizona: U.S. Geol. Survey Prof. Paper 658-E. Fig. 2, 1:100,000.

369. Simons, F.S., 1974, Geologic map and sections of the Nogales and Lochiel quadrangles, Santa Cruz County, Arizona: U.S. Geol. Survey Misc. Inv. Map I-762. 1:48,000.

13. Stewart, C.A., 1912, The geology and ore deposits of the Silverbell mining district, Arizona: Am. Inst. Min. Eng. Bull., v. 65, (See Trans., v. 43, 1913). Fig. 1, 1:24,000.

263. Stewart, L.A., 1947, Apache iron deposits, Navajo County: U.S. Bur. Mines Rept. Inv. 4093. Fig. 6, 1:12,000, also other map.

166. Stewart, L.A., and Haury, P.S., 1947, Arizona asbestos deposits, Gila County: U.S. Bur. Mines Rept. Inv. 4100. Fig. 16, 1:1,800, Fig. 19, 1:1,200, Fig. 23, 1:4,000.

144. Stokes, W.L., 1951, Carnotite deposits in the Carrizo Mountains area, Navajo Indian Reservation, Apache County, Arizona, and San Juan County, New Mexico: U.S. Geol. Survey Circ. 111. Pl. 1, 1:125,000.

247. Stoyanow, A.A., 1949, Lower Cretaceous stratigraphy in southeastern Arizona: Geol. Soc. America Mem. 38. Pl. 47, 1:4,800.

162. Strahler, A.N., 1940, Landslides of the Vermillion and Echo Cliffs: Jour. Geomorphology, v. 3, no. 4. Fig. 3, 1:62,500.

216. Strahler, A.N., 1944, Guide to the east Kaibab monocline in the Grand Canyon region: Plateau, v. 17, no. 1. Fig. 4, 1:100,000.

142. Strobell, J.D., Jr., 1956, Geology of the Carrizo Mountains area, in northeastern Arizona and northwestern New Mexico: U.S. Geol. Survey Oil and Gas Inv. Map OM-160. 1:48,000.

374. Stulik, R.S., 1974, Ground-water conditions in the lower Hassayampa area, Maricopa County, Arizona: Arizona Water Commission Bull. 8. Pl. 1, 1:63,360.

233. Sullivan, R.B., and Beikman, H.M., 1963, Geology, structure, and uranium deposits of the Shiprock quadrangle, New Mexico and Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-345. 1:250,000.

136. Tenney, J.B., 1933, The Bisbee mining district, in ore deposits of the southwest: Internat. Geol. Cong. 16th Guidebook 14. Pl. 11, 1:187,500.

137. Tenney, J.B., 1935, The copper deposits of Arizona, in copper resources of the world: Internat. Geol. Cong. 16th. Pl. 12, 1:187,500.

120. Thomas, B.E., 1949, Ore deposits of the Wallapai district, Arizona: Econ. Geology, v. 44, no. 8. Fig. 2, 1:72,000.

117. Thomas, B.E., 1953, Geology of the Chloride quadrangle, Arizona: Geol. Soc. America Bull., v. 64, no. 4. Pl. 1, 1:125,000.

93. Trace, R.D., 1967, Fourth of July and Lucky Boy, 1 and 2, [illegible] Duncan, Greenlee County: U.S. Geol. Survey Prelim. Map [illegible], Pl. 2, Also detailed map 1:1,200

86. Turner, S.F., and others, 1946, Ground-water resources and problems of the Safford Basin, Arizona: U.S. Geol. Survey open-file rept.. Pl. 2, 1:250,000, (NC).

387. Twenter, F.R., 1962, Geology and promising areas for ground-water development in the Hualapai Indian Reservation, Arizona: U.S. Geol. Survey Water-Supply Paper 1576-A. Pl. 1, 1:125,000.

240. Twenter, F.R., and Metzger, D.G., 1963, Geology and ground-water in Verde Valley-the Mogollon Rim region, Arizona: U.S. Geol. Survey Bull. 1177. Pl. 1, 1:62,500.

363. Ulrich, G.E., and Bailey, N.G., 1974, Geologic map of the SP Mountain quadrangle, Coconino County, Arizona: U.S. Geol. Survey open-file map 74-5. 1:24,000, (NC, Da, F, M).

57. U.S. Bureau of Reclamation, 1950, Boulder Canyon project, geological investigations, final report, Pt. 3: U.S. Bur. Reclamation Bull. 1. Fig. 34, 1:14,400, also detailed map.

282. Van Gundy, C.E., 1951, Nankoweap group of the Grand Canyon Algonkian of Arizona: Geol. Soc. America Bull., v. 62, no. 8. Pl. 1 and Fig. 2, 1:50,000.

11. Veatch, A.C., 1911, Coal deposits near Pinedale, Navajo County, Arizona: U.S. Geol. Survey Bull. 431. Pl. 12, 1:48,000.

201. Walcott, C.D., 1894, Pre-Cambrian igneous rocks of the Unkar terrane, Grand Canyon of the Colorado: U.S. Geol. Survey 14th Ann. Rept., pt. 2. Pl. 60, 1:125,000.

203. Walcott, C.D., 1895, Algonkian rocks of the Grand Canyon of the Colorado: Jour. Geology, v. 3, Pl. 6. 1:187,500.

245. Walker, R.T., 1928, Mineralized volcanic explosion pipes: Eng. and Min. Jour., v. 126, no. 25. Fig. 16, 1:30,000.

312. Wanek, A.A., and Stephens, J.G., 1953, Reconnaissance geologic map of the Kaibito and Moenkopi Plateaus and parts of the Painted Desert, Coconino County, Arizona: U.S. Geol. Survey Oil and Gas Inv. Map OM-145. 1:150,000.

252. Warner, L.A., Holser, W.T., Wilmarth, V.R., and Cameron, E.N., 1959, Occurrence of nonpegmatite beryllium in the United States: U.S. Geol. Survey Prof. Paper 318. Fig. 24, 1:13,200.

32. Weathers, G., 1954, Uranium occurrence at the King No. 1 claim, Gila County: U.S. AEC RME-2017 (Pt. 1), 1:62,500.

128. Webb, B.P., and Coryell, K.C., 1954, Preliminary regional mapping in the Ruby quadrangle: U.S. AEC RME-2009. Pl. 1, 1:43,000.

337. Weist, W.G., Jr., 1971, Geology and ground-water system in the Gila River Phreatophyte Project area, Graham County, Arizona: U.S. Geol. Survey Prof. Paper 655-D. Pl. 1, 1:24,000.

375. Wells, J.D., 1958, Preliminary geologic map of the House Rock Spring NE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-188. 1:24,000.

376. Wells, J.D., 1959, Preliminary geologic map of the House Rock Spring SE quadrangle, Coconino County, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-189. 1:24,000.

194. Wells, J.D., 1960, Stratigraphy and structure of House Rock Valley area, Coconino County, Arizona: U.S. Geol. Survey Bull. 1081-D. Pl. 4, 1:62,500.

106. Whitcomb, H.A., and Halpenny, L.C., 1950, Water-supply investigations of the Burell Park-Sawmill area, Navajo Indian Reservation, Apache County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:31,680, (NC).

249. Willden, Ronald, 1964, Geology of the Christmas quadrangle, Gila and Pinal Counties, Arizona: U.S. Geol. Survey Bull. 1161-E. Pl. 1, 1:62,500, also a small scale map.

45. Wilson, E.D., 1927, Geology and ore deposits of the Courtland-Gleeson region: Arizona Bur. Mines Bull. 123. Pl. 1, 1:24,000.

47. Wilson, E.D., 1928, Asbestos deposits of Arizona: Arizona Bur. Mines Bull. 126. Fig. 4, 1:27,000, also a mine map.

51. Wilson, E.D., 1933, Geology and mineral deposits of southern Yuma County, Arizona: Arizona Bur. Mines Bull. 134. Pl. 5, 1:24,000, Pl. 9, 1:14,400, Pl. 16, 1:7,000, Fig. 2, 1:1,000, Fig. 7, 1:62,500.

64. Wilson, E.D., 1939, Pre-Cambrian Mazatzal revolution in central Arizona: Geol. Soc. America Bull., v. 50, no. 7. Pl. 12, 1:125,000, also other maps.

285. Wilson, E.D., 1950, Arizona zinc and lead deposits, Pt. 1: Arizona Bur. Mines Bull. 156, Geol. Ser. 18, Fig. 38, 1:62,500, also detailed maps.

394. Wilson, E.D., 1960, Geologic map of Yuma County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-11. 1:375,000.

320. Wilson, E.D., 1969, Mineral deposits of the Gila River Indian Reservation, Arizona: Arizona Bur. Mines Bull. 179. Pl. 2, 1:250,000.

399. Wilson, E.D., and Moore, R.T., 1958, Geologic map of Graham and Greenlee Counties, Arizona: Arizona Bur. of Mines County Geol. Map Ser. 3-4. 1:375,000.

390. Wilson, E.D., and Moore, R.T., 1959, Geologic map of Mohave County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-6. 1:375,000.

397. Wilson, E.D., Moore, R.T., and Cooper, J.R., 1969, Geologic map of Arizona: U.S. Geol. Survey. 1:500,000.

395. Wilson E.D., Moore, R.T., and O'Haire, R.T., 1960, Geologic map of Pima and Santa Cruz Counties Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-8. 1:375,000.

393. Wilson, E.D., Moore, R.T., and O'Haire, R.T., 1960, Geologic map of Navajo and Apache Counties, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-7. 1:375,000.

401. Wilson, E.D., Moore, R.T., and others, 1959, Geologic map of Pinal, County Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-9. 1:375,000.

391. Wilson, E.D., Moore, R.T., and Peirce, H.W., 1959, Geologic map of Gila County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-3. 1:375,000.

398. Wilson, E.D., and others, 1957, Geologic map of Maricopa County, Arizona: Arizona Bur. Mines County Geol. Map Ser. 3-5. 1:375,000.

327. Wilson, R.A., 1934, Thrust faulting in the Empire Mountains of southeastern Arizona: Jour. Geology, v. 42, no. 4. Fig. 3, 1:90,000.

232. Witkind, I.J., 1956, Uranium deposits at base of the Shinarump conglomerate, Monument Valley, Arizona: U.S. Geol. Survey Bull. 1030-C. Pl. 6, 1:31,680, also other maps.

219. Witkind, I.J., and others, 1956, Preliminary geologic map of the Dinnehotso SW quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-93. 1:24,000.

220. Witkind, I.J., and others, 1956, Preliminary geologic map of the Dinnehotso NE quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-93. 1:24,000.

221. Witkind, I.J., and others, 1956, Preliminary geologic map of the Dinnehotso SE quadrangle, Arizona: U.S. Geol. Survey. Mineral Inv. Field Studies Map MF-94. 1:24,000.

222. Witkind, I.J., and others, 1956, Preliminary geologic map of the Dinnehotso SW quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-95. 1:24,000.

223. Witkind, I.J., and others, 1957, Preliminary geologic map of the Boot Mesa NW quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-84. 1:24,000.

224. Witkind, I.J., and others, 1957, Preliminary geologic map of Boot Mesa NE quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-85. 1:24,000.

225. Witkind, I.J., and others, 1957, Preliminary geologic map of Boot Mesa SE quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-86. 1:24,000.

226. Witkind, I.J., and others, 1957, Preliminary geologic map of Boot Mesa SW quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-87. 1:24,000.

227. Witkind, I.J., and others, 1957, Preliminary geologic map of the Agathla Peak NW quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-88. 1:24,000.

228. Witkind, I.J., and others, 1957, Preliminary geologic map of the Agathla Peak NE quadrangle, Arizona-Utah: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-89. 1:24,000.

229. Witkind, I.J., and others, 1957, Preliminary geologic map of Agathla Peak SE quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-90. 1:24,000.

230. Witkind, I.J., and others, 1957, Preliminary geologic map of Agathla Peak SW quadrangle, Arizona: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-91. 1:24,000.

231. Witkind, I.J., and Thaden, R.E., 1963, Geology and uranium-vanadium deposits of the Monument Valley area, Apache and Navajo Counties, Arizona: U.S. Geol. Survey Bull. 1103. Pl. 1, 1:62,500, also detailed maps.

122. Wolcott, H.H., 1953, Memorandum on ground-water resources and geology of Rainbow Valley-Waterman Wash area, Maricopa County, Arizona: U.S. Geol. Survey open-file rept.. Pl. 1, 1:250,000, (NC).

78. Wolcott, H.H., Skibitzke, H.E., and Halpenny, L.C., 1956, Water resources of Bill Williams River valley near Alamo, Arizona: U.S. Geol. Survey Water-Supply Paper 1160-D. Pl. 21, 1:62,500.

388. Wright, R.J., 1951, Annie Laurie prospect, Santa Cruz County: U.S. Atomic Energy Commission RMO-677. Pl. 1, 1:2,400.

125. Yost, C.B., Jr., 1953, Geophysical and geological reconnaissance to determine ground-water resources of Chiu Chiuschu area, Papago Indian Reservation, Arizona: U.S. Geol. Survey open-file rept.. Pl. 2, 1:62,500, (NC).

Red Mtn

Based on new data (holes 142 – 143) plus verbal info from R Corn, it appears that the shell concept is valid. RC says the alteration zones cut across all rock types.

The back of an upper shell in hole 139 may have been overlooked as no ore values were intercepted; however RC says that "anhydrite" was found at approximately the same elevation as in hole 134. This is apparently the top of the upper shell & therefore the shell could be projected over to hole 139.

The contours of the upper shell suggests a closed portion on the southwest & open to the north. (northeast).

The contours of the lower shell suggest a closed portion to the northeast & open to the southwest

883-4684

June 1971

J. D. SELL

CHRONOLOGICAL BIBLIOGRAPHY OF GEOSCIENCES THESES AND DISSERTATIONS

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1914 Cochran, H. Merle; MS 1914; THE PETROGRAPHY OF THE TWIN HILLS, PIMA COUNTY, ARIZONA; 19 pages.

1916 Joseph-Haakevitch, Phincas E.; MS 1916; PRIMARY OR SECONDARY ORIGIN OF WULFENITE; 23 pages.

1922 Wilson, Eldred D.; MS 1922; THE MAZATZAL QUARTZITE, A NEW PRE-CAMBRIAN FORMATION OF CENTRAL ARIZONA; 40 pages.

Gordon, Ernest R.; MS 1922; THE GEOLOGY OF THE TWIN BUTTES MINING DISTRICT; 12 pages.

1923 Lausen, Carl; MS 1923; GEOLOGY OF THE OLD DOMINION MINE, GLOBE, ARIZONA; 155 pages.

1924 Shoemaker, Abbot H. and Somners, George; MS 1924; THE GEOLOGY OF THE EL TIRO MINE, SILVER BELL, ARIZONA; 40 pages.

1925 Webber, Benjamin N.; MS 1925; THE UPPER CARBONIFEROUS STRATIGRAPHY OF THE GALIURO MOUNTAINS; 29 pages.

1926 Brown, Ronald L.; MS 1926; GEOLOGY AND ORE DEPOSITS OF THE TWIN BUTTES DISTRICT; 40 pages

1927 Bruhn, Henry, H.; MS 1927; SOME NOTES ON THE APACHE GROUP OF THE SANTA CATALINA MOUNTAINS AND OTHER SECTIONS IN SOUTHEASTERN ARIZONA; 31 pages.

Heineman, Robert E.; MS 1927; THE GEOLOGY AND ORE DEPOSITS OF THE JOHNSON MINING DISTRICT, ARIOZNA; 45 pages.

Smith, Lewis A.; MS 1927; THE GEOLOGY OF THE COMMONWEALTH MINE; 73 pages.

Woodell, Charles E.; MS 1927; THE MISSISSIPPIAN FAUNA OF THE REDWALL LIMESTONE NEAR JEROME, ARIZONA; 117 pages.

1928 Reid, Robert R.; MS 1928; SOME DEVONIAN SECTIONS IN SOUTHEASTERN ARIZONA, AND THEIR CORRELATION; 54 pages.

1929 Feiss, Julian W.; MS 1929; THE GEOLOGY AND ORE DEPOSITS OF HILTANO CAMP, ARIZONA; 41 pages

Park, Charles F. Jr.; MS 1929; GEOLOGY OF THE SAN XAVIER DISTRICT; 20 pages.

1930 Eckel, Edwin B; MS 1930; GEOLOGY AND ORE DEPOSITS OF THE MINERAL HILL AREA, PIMA COUNTY, ARIZONA; 51 pages.

Ornsby, Walter B.; MS 1930; THE CRYSTAL STRUCTURE OF MANGANESE DIOXIDE; 24 pages.

1931 Lausen, Carl; Ph.D. 1931; GOLD VEINS OF THE CATMAN AND KATHERINE DISTRICTS, ARIZONA; 91 pages.

Thomas, Walter L.; MS 1931; GEOLOGY AND ORE DEPOSITS OF THE ROSEMONT AREA, PIMA COUNTY, ARIZONA; 54 pages

Gebhardt, Rudolph C.; MS 1931; THE GEOLOGY AND MINERAL RESOURCES OF THE QUIJOTOA MOUNTAINS; 63 pages.

1932 Hernon, Robert M.; MS 1932; PETMATITIC ROCKS OF THE CATALINA-RINCON MOUNTAINS, ARIZONA; 65 pages.

1933 Stewart, Lincoln A.; MS 1933; A STUDY OF THE AJO COPPER ORE MINERALS; 24 pages.

1934 Hernon, Robert M.; Ph.D. 1934; THE PARADISE FORMATION AND ITS FAUNA; 107pages.

1935 Bishop, Ottey M.; MS 1935; GEOLOGY AND ORE DEPOSITS OF THE RICHMOND BASIN AREA; GILA COUNTY, ARIZONA; 50 pages.

Higdon, Charles E.; MS 1935; GEOLOGY AND ORE DEPOSITS OF THE SUNSHINE AREA, PIMA COUNTY, ARIZONA; 25 pages.

Galbraith, Frederic W.; Ph.D. 1935; GEOLOGY OF THE SILVER KING AREA, SUPERIOR, ARIZONA; 154 pages.

Lee, Charles A. and Borland, Gerald C.; MS 1935; THE GEOLOGY AND ORE DEPOSITS OF THE CUPRITE MINING DISTRICT; 54 pages.

1936 Gillingham, Thomas E.; MS 1936; THE GEOLOGY OF THE CALIFORNIA MINE AREA, PIMA COUNTY, ARIZONA; 65 pages.

1937 Dunham, Motgomery S.; MS 1937; THE GEOLOGY OF THE BLUE JAY MINE AREA, HELVETIA, ARIZONA; 43 pages.

Rasor, Charles A.; Ph.D. 1937; MINERALOGY AND PETROGRAPHY OF THE TOMBSTONE MINING DISTRICT, ARIZONA; 115 pages.

1938 Alberding, Herbert; Ph.D. 1938; THE GEOLOGY OF THE NORTHERN EMPIRE MOUNTAINS, ARIZONA; 106 pages.

Cook, Frederic S.; MS 1938; THE GEOLOGY OF THE SEVEN DASH RANCH AREA, COCHISE COUNTY, ARIZONA; 27 pages.

Entwistle, Lawson P.; MS 1938; THE CHLORIDE FLAT MINING DISTRICT, NEW MEXICO; 97 pages.

Peterson, Nels P.; Ph.D. 1938; GEOLOGY AND ORE DEPOSITS OF THE MAMMOUTH MINING CAMP, PINAL COUNTY, ARIZONA; 171 pages.

Simmons, Woodrow W.; MS 1938; THE GEOLOGY OF THE CLEVELAND MINE AREA, GILA COUNTY, ARIZONA; 22 pages.

Wilson, Clark L.; MS 1938; THE GEOLOGY OF THE BLACK FOREST MINE AREA, SPRUCE MOUNTAIN, NEVADA; 60 pages.

1939 Alexis, Carl O.; MS 1939; THE GEOLOGY OF THE LEAD MOUNTAIN AREA, PIMA COUNTY, ARIZONA; 48 pages.

1939 Enlows, Harold E.; Ph.D. 1939; GEOLOGY AND ORE DEPOSITS OF THE LITTLE DRAGOON MOUNTAINS; 52 pages.

Legge, John A. Jr.; MS 1939; PARAGENESIS OF THE ORE MINERALS OF THE MIAMI MINE, ARIZONA; 47 pages.

1940 Harshman, Elbert N.; Ph.D. 1940; GEOLOGY OF THE BELMONT-QUEEN CREEK AREA, SUPERIOR, ARIZONA; 167 pages.

Hogue, William G.; MS 1940; GEOLOGY OF THE NORTHERN PART OF THE SLATE MOUNTAINS, PINAL COUNTY, ARIZONA; 45 pages.

Kuhn, Truman H.; Ph.D. 1940; GEOLOGY AND ORE DEPOSITS OF THE COPPER CREEK, ARIZONA, AREA; 147 pages.

Popoff, Constantine; MS 1940; THE GEOLOGY OF THE ROSEMONT MINING CAMP, PIMA COUNTRY, ARIZONA; 100 pages.

Shields, James C. II; MS 1940; GEOLOGY AND ORE DEPOSITS OF THE DIVES AND GOLD RIDGE GROUPS, DOS CABEZAS, ARIZONA; 67 pages.

Sopp, George P.; MS 1940; GEOLOGY OF THE MONTANA MINE AREA, EMPIRE MOUNTAINS, ARIZONA; 63 pages.

1941 Johnson, Vard H.; Ph.D. 1941; THE GEOLOGY OF THE HELVETIA MINING DISTRICT, ARIZONA; 111 pages.

Jones, William R.; MS 1941; THE GEOLOGY OF THE SYCAMORE RIDGE AREA, PIMA COUNTY, ARIZONA; 89 pages.

Wardwell, Henry R.; MS 1941; GEOLOGY OF THE POTTS CANYON MINING AREA NEAR SUPERIOR, ARIZONA; 104 pages.

1942 Marvin, Thomas C.; MS 1942; THE GEOLOGY OF THE HILTON RANCH AREA, PIMA COUNTY, ARIZONA; 60 pages.

1943 Hoiles, Randolph G.; Ph.D. 1943; GEOLOGY OF THE BANKFIELD VICINITY, LITTLE LONG LAC AREA, ONTARIO; 66 pages

1944 Kartchner, Wayne E.; Ph.D. 1944; THE GEOLOGY AND ORE DEPOSITS OF THE HARSHAW DISTRICT, PATAGONIA MOUNTAINS, ARIZONA: 100 pages.

1946 Campbell, Donald F.; Ph.D. 1946; GEOLOGY OF THE COLQUIRI TIN MINE, BOLIVIA; 51 pages.

Cederstrom, D. John; Ph.D. 1946; GEOLOGY OF THE CENTRAL DRAGOON MOUNTAINS, ARIZONA; 93 pages.

1947 Feth, John H; Ph.D. 1947; THE GEOLOGY OF THE NORTHERN CANELO HILLS, SANTA CRUZ COUNTY, ARIZONA; 150 pages.

Kierch, George A.; Ph.D. 1947; THE GEOLOGY AND ORE DEPOSITS OF THE SEVENTY NINE MINE AREA, GILA COUNTY, ARIZONA; 124 pages.

Loring, William B.; MS 1947; THE GEOLOGY AND ORE DEPOSITS OF THE MOUNTAIN QUEEN AREA, NORTHERN SWISSHELM MOUNTAINS, ARIZONA; 65 pages.

Robinson, Daniel O.; MS 1947; THE MINERAL COMPOSITION OF THE COLLOIDAL CLAY FRACTIONS OF SOME ARIZONA SOILS; 54 pages.

1948 Harshbarger, John W.; MS 1948; THE UPPER JURASSIC STRATIGRAPHY OF BLACK MESA, ARIZONA; 117 pages.

Moore, David L.; MS 1948; GEOLOGY OF THE SANTA ROSALIA MINE AREA, DISTRICT OF ARIZPE, SONORA, MEXICO; 71 pages.

Peng, Chi-jui; MS 1948; THE MOUNTAIN MAID ORE BODY, BISBEE, ARIZONA; 37 pages.

Price, William E. Jr.; MS 1948; RIM ROCKS OF SYCAMORE CANYON, ARIZONA; 93 pages.

Whitcomb, Harold A.; MS 1948; GEOLOGY OF THE MORGAN MINE AREA, TWIN BUTTES ARIZONA; 83 pages.

1949 Alexis, Carl O.; Ph.D. 1949; THE GEOLOGY OF THE NORTHERN PART OF THE HUACHUCA MOUNTAINS, ARIZONA; 74 pages.

Harshbarger, John W.; Ph.D. 1949; PETROGRAPHY AND STRATIGRAPHY OF UPPER JURASSIC ROCKS OF CENTRAL NAVAJO RESERVATION, ARIZONA; 216 pages.

Houser, Frederick N.; MS 1949; THE GEOLOGY OF THE CONTENTION MINE AREA, TWIN BUTTES, ARIZONA; 61 pages.

1950 Bromfield, Calvin S.; MS 1950; GEOLOGY OF THE MAUDINA MINE AREA, NORTHERN SANTA CATALINA MOUNTAINS, PINAL COUNTY, ARIZONA; 63 pages.

Coulson, Otis B.; MS 1950; GEOLOGY OF THE SWEETWATER DRIVE AREA, AND CORRELATION OF THE SANTA CRUZ VALLEY GRAVELS; 71 pages.

Hughes, Paul W.; MS 1950; THE STRATIGRAPHY OF THE SUPAI FORMATION IN THE CHINO VALLEY AREA, YAVAPAI COUNTY, ARIZONA; 95 pages.

Ludden, Raymond W.; MS 1950; GEOLOGY OF THE CAMPO BONITO AREA, ORACLE, ARIZONA; 52 pages.

Weber, Robert H; Ph.D. 1950; THE GEOLOGY OF THE EAST-CENTRAL PORTION OF THE HUACHUCA MOUNTAINS, ARIZONA; 191 pages.

1951 Anthony, John W.; MS 1951; GEOLOGY OF THE MONTOSA-COTTONWOOD CANYONS AREA, SANTA CRUZ COUNTY, ARIZONA; 84 pages.

Blissenback, Erich; MS 1951; THE GEOLOGY OF ALLUVIAL FANS IN ARIZONA; 86 pages.

Brimhall, Willis H.; MS 1951; STRATIGRAPHY AND STRUCTURAL GEOLOGY OF THE NORTHERN DEER CREEK RESERVOIR AREA, PROVO CANYON, UTAH; 71 pages.

1951 Bryant, Donald L.; MS 1951; THE GEOLOGY OF THE MUSTANG MOUNTAINS, SANTA CRUZ COUNTY, ARIZONA; 142 pages.

Callahan, Joseph T.; MS 1951; THE GEOLOGY OF THE GLEN CANYON GROUP OF THE ECHO CLIFFS REGION, ARIZONA; 100 pages.

Jackson, Robert L.; MS 1951; THE STRATIGRAPHY OF THE SUPAI FORMATION ALONG THE MOGOLLON RIM, CENTRAL ARIZONA; 82 pages.

Ruff, Arthur W.; MS 1951; THE GEOLOGY AND ORE DEPOSITS OF THE INDIANA MINE AREA, PIMA COUNTY, ARIZONA; 64 pages.

Wallace, Roberta M; MS 1951; STRATIGRAPHY AND STRUCTURE OF A PART OF THE CANADA DEL ORO DISTRICT, SANTA CATALINA MOUNTAINS, PINAL COUNTY, ARIZONA; 55 pages.

Williams, George A.; Ph.D. 1951; THE COAL DEPOSITS AND CRETACEOUS STRATIGRAPHY OF THE WESTERN PART OF BLACK MESA, ARIZONA; 307 pages.

1952 Bejnar, Waldomere; Ph.D. 1952; GEOLOGY OF THE RUIN BASIN AREA, GILA COUNTY, ARIZONA; 103 pages.

Chew, Randall T.; MS 1952; GEOLOGY OF THE MINETA RIDGE AREA, PIMA AND COCHISE COUNTIES, ARIZONA; 53 pages.

Papke, Keith G.; MS 1952; GEOLOGY AND ORE DEPOSITS OF THE EASTERN PORTION OF THE HILLTOP MINE AREA, COCHISE COUNTY, ARIZONA; 99 pages.

1953 Evensen, Charles G.; MS 1953; A COMPARISON OF THE SHINARUMP CONGLOMERATE ON HOSKINNINE MESA WITH THAT IN OTHER SELECTED AREAS IN ARIZONA AND UTAH; 88 Pages.

Grundy, Wilbur D.; MS 1953; GEOLOGY AND URANIUM DEPOSITS OF THE SHINARUMP CONGLOMERATE OF NOKAI MESA, ARIZONA AND UTAH; 88 pages.

Hillebrand, James R.; MS 1953; GEOLOGY AND ORE DEPOSITS IN THE VICINITY OF PITMAN WASH, PINAL COUNTY, ARIZONA; 94 pages.

Lovering, Tom G.; MS 1953; THE GEOLOGY OF A WESTERN PORTION OF THE SANTA RITA QUADANGLE, GRANT COUNTY, NEW MEXICO; 44 pages.

Voelger, Klaus; MS 1953; CENOZOIC DEPOSITS IN THE SOUTHERN FOOTHILLS OF THE SANTA CATALINA MOUNTAINS NEAR TUCSON, ARIZONA; 101 pages.

1954 Belden, William A.; MS 1954; THE STRATIGRAPHY OF THE TOROWEAP FORMATION, AUBBEY CLIFFS, COCONINO COUNTY, ARIZONA; 77 pages.

Brittain, Richard L.; MS 1954; GEOLOGY AND ORE DEPOSITS OF THE WESTERN PORTION OF THE HILLTOP MINE AREA, COCHISE COUNTY, ARIZONA; 97 pages.

Dickerman, Robert W.; MS 1954; AN ECOLOGICAL SURVEY OF THE THREE-BAR GAME MANAGEMENT UNIT LOCATED NEAR ROOSEVELT, ARIZONA; 126 pages.

Schwartz, Roland J.; MS 1954; DETAILED GEOLOGICAL RECONNAISANCE OF THE CENTRAL TORTILLA MOUNTAINS, PINAL COUNTY, ARIZONA; 82 pages.

Wargo, Joseph G.; MS 1954; GEOLOGY OF A PORTION OF THE COYOTE-QUINLAN COMPLEX, PIMA COUNTY, ARIZONA; 67 pages.

1955 Anderson, Roger Y.; MS 1955; URANIUM ACCUMULATION IN PLANTS; 44 pages.

Bailey, James S.; Ph.D. 1955; A STRATIGRAPHIC ANALYSIS OF RIO STRATA IN THE FOUR CORNERS REGION; 88 pages.

Bollin, Edgar M; MS 1955; THE GEOLOGY OF THE KAIBAB FORMATION, MARBLE PLATFORM, COCONINO COUNTY, ARIZONA; 105 pages.

Britt, Terence L; MS 1955; GEOLOGY OF THE TWIN PEAKS AREA, PIMA COUNTY, ARIZONA; 58 pages.

Bryant, Donald L.; Ph.D. 1955; STRATIGRAPHY OF THE PERMIAN SYSTEM IN SOUTHERN ARIZONA; 209 pages.

Davis, Robert E.; MS 1955; GEOLOGY OF THE MARY G MINE AREA, PIMA COUNTY, ARIZONA; 51 pages.

Kurtz, William L; MS 1955; GEOLOGY OF A PORTION OF THE COYOTE MOUNTAINS, PIMA COUNTY, ARIZONA; 62 pages.

Wallace, Roberta M.; Ph.D. 1955; STRUCTURE OF THE NORTHERN END OF THE SANTA CATALINA MOUNTAINS, ARIZONA; 45 pages.

1956 Clark, Jackson, L.; MS 1956; STRUCTURE AND PETROLOGY PERTAINING TO A BERYL DEPOSIT, BABOQUIVARI MOUNTAINS, ARIZONA; 49 pages.

Emich, G. Donald; Ph.D. 1956; THE PETROGRAPHY, MINERALOGY, AND ORIGIN OF PHOSPHATE PELLETS IN THE WESTERN PERMIAN FORMATION AND OTHER SEDIMENTARY FORMATIONS; 157 pages.

Hook, Donald L.; MS 1956; LATE CENOZOIC STRATIGRAPHY AND STRUCTURE OF A PART OF THE WALNUT GROVE BASIN, YAVAPAI COUNTY, ARIZONA; 49 pages.

Plafker, Lloyd; MS 1956; GEOLOGIC RECONNAISSANCE OF THE CENOZOIC WALNUT GROVE BASIN, YAVAPAI COUNTY, ARIZONA; 62 pages.

Smith, George E.; MS 1956; THE GEOLOGY AND ORE DEPOSITS OF THE MOWRY MINE AREA, SANTA CRUZ COUNTY, ARIZONA; 44 pages.

West, Samuel W.; MS 1956; GEOLOGY AND GROUND WATER RESOURCES OF THE DRY CREEK AREA, CASSIA AND TWIN FALLS COUNTIES, IDAHO; 155 pages.

Wilson, Robert L.; Ph.D. 1956; STRATIGRAPHY AND ECONOMIC GEOLOGY OF THE CHINLE FORMATION, NORTHEASTERN ARIZONA; 255 pages.

Wood, Paul A.; MS 1956; A MIOCENE CAMEL FROM WELLTON, PIMA COUNTY, ARIZONA; 37 pages.

Wood, William H.; Ph.D. 1956; THE CAMBRIAN AND DEVONIAN CARBONATE ROCKS AT YAMPAI CLIFFS, MOHAVE COUNTY, ARIZONA; 228 pages.

1957 Bannerjee, Anil K.; Ph.D. 1957; STRUCTURAL AND PETROLOGICAL STUDY OF THE ORACLE GRANITE; 112 pages.

Bennett, Paul J.; MS 1957; GEOLOGY AND MINERALIZATION OF THE SEDIMENTARY HILLS AREA; 40 pages.

1957 Bremman, Daniel J.; Ph.D. 1957; GEOLOGICAL RECONNAISSANCE OF CIENEGA VALLEY, PIMA COUNTY, ARIZONA; 53 pages.

Burnette, Charles R.; MS 1957; GEOLOGY OF THE MIDDLE CANYON, WHETSTONE MOUNTAINS, COCHISE COUNTY, ARIZONA; 54 pages.

Cooley, Maurice E.; MS 1957; GEOLOGY OF THE CHINLE FORMATION IN THE UPPER LITTLE COLORADO RIVER DRAINAGE AREA, ARIZONA AND NEW MEXICO; 317 pages.

Jones, Richard D.; MS 1957; GEOLOGY OF THE CERRO COLORADO MINING DISTRICT, 59 pages.

Kidwai, Zamir U.; MS 1957; THE RELATIONSHIP OF GROUNDWATER TO ALLUVIUM IN THE TUCSON AREA; 55 pages

Layton, Donald W.; MS 1957; STRATIGRAPHY AND STRUCTURE OF THE SOUTHWESTERN FOOTHILLS OF THE RINCON MOUNTAINS, PIMA COUNTY, ARIZONA; 87 pages.

MacKallor, Jules A.; MS 1957; GEOLOGY OF THE WESTERN PART OF THE COBABI MINING DISTRICT, PIMA COUNTY, ARIZONA; 108 pages.

McClymonds, Neal E.; MS 1957; STRATIGRAPHY AND STRUCTURE OF THE SOUTHERN PORTION OF THE WATERMAN MOUNTAINS, PIMA COUNTY, ARIZONA; 157 pages.

St. Clair, Charles S.; MS 1957; GEOLOGIC RECONNAISSANCE OF THE AQUA FRIA RIVER AREA, CENTRAL ARIZONA; 76 pages.

Smith, Riley S. Jr.; Ph.D. 1957; A STUDY OF THE CHINLE-SHINARUMP BEDS IN THE LEUPP-HOLBROOK AREA, ARIZONA; 170 pages.

Sulik, John F.; MS 1957; STRATIGRAPHY AND STRUCTURE OF THE MONTOSA CANYON AREA, SANTA CRUZ COUNTY, ARIZONA; 64 pages.

Van Horn, William L.; MS 1957; LATE CENOZOIC BEDS IN THE UPPER SAFFORD VALLEY, GRAHAM COUNTY, ARIZONA; 108 pages.

Webb, Robert T.; MS 1957; PETROGRAPHY, STRUCTURE AND MINERALIZATION OF THE MEADOWCREEK AREA, CHELAN COUNTY, WASHINGTON; 51 pages.

Weidner, Melvin I.; MS 1957; THE GEOLOGY OF THE BEACON HILL-COLOSSAL CAVE AREA, PIMA COUNTY, ARIZONA; 34 pages.

Whitney, Richard Lee; MS 1957; STRATIGRAPHY AND STRUCTURE OF THE NORTH-EASTERN PART OF THE TUCSON MOUNTAINS; 61 pages.

1958 Acker, Clement J.; MS 1958; GEOLOGIC INTERPRETATIONS OF A SILICEOUS BRECCIA IN THE COLLOSAL CAVE AREA, PIMA COUNTY, ARIZONA; 50 pages.

Bissett, David H.; MS 1958; A SURVEY OF HYDROTHERMAL URANIUM OCCURRENCES IN SOUTHEASTERN ARIZONA; 88 pages.

Browne, Jonathan F.; MS 1958; THE GEOLOGY OF THE CUPRITE MINE AREA, PIMA COUNTY, ARIZONA; 39 pages.

Colby, Robert E.; MS 1958; STRATIGRAPHY AND STRUCTURE OF THE RECREATIONS RED BEDS, TUCSON MOUNTAIN PARK, ARIZONA; 64 pages.

1958 Havenor, Kay Charles; MS 1958; PENNSYLVANIAN FRAMEWORK OF SEDIMENTATION IN ARIZONA; 73 pages.

Heindl, Leopold A.; Ph.D. 1958; CENOZOIC ALLUVIAL DEPOSITS OF THE UPPER GILA RIVER AREA, NEW MEXICO AND ARIZONA; 249 pages.

Heyman, Arthur M.; MS 1958; GEOLOGY OF THE PEACH-ELGIN COPPER DEPOSIT, HELVETIA DISTRICT, ARIZONA; 66 pages.

Kerns, John R.; MS 1958; GEOLOGY OF THE AQUA VERDE HILLS, PIMA COUNTY, ARIZONA; 69 pages.

Kinnison, John E.; MS 1958; GEOLOGY AND ORE DEPOSITS OF THE SOUTHERN SECTION OF THE AMOLE MINING DISTRICT, TUCSON MOUNTAINS, PIMA COUNTY, ARIZONA; 123 pages.

Lutton, Richard J.; MS 1958; SOME STRUCTURAL FEATURES IN SOUTHERN ARIZONA; 138 pages.

Moore, Richard T.; MS 1958; GEOLOGY OF NORTHWESTERN MOHAVE COUNTY, ARIZONA; 81 pages.

Peirce, Frederick L.; Ph.D. 1958; STRUCTURE AND PETROGRAPHY OF PART OF THE SANTA CATALINA MOUNTAINS; 86 pages.

Peirce, H. Wesley; Ph.D. 1958; STRATIGRAPHY OF THE DE CHELLY SANDSTONE OF ARIZONA ND UTAH; 208 pages.

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Anaconda

Victoria Mine

10 mi N of City, Nev.

July 29, 74 Metals Week V. 11, No. 14, p. 203

exploration operation Jan 1975.

Reserve of 3.5 mill @ 2.5% Cu.

Upper Shell

$$\frac{2000 \times 1\cancel{7}00 \times 200}{\cancel{12}} = 4900000 \text{ min.}$$

3.25

4) 12.75

$$\frac{2000 \times 1\cancel{7}00 \times 325}{\cancel{12}} \quad 6500000 \text{ ave?}$$

Lower Shell

no real control but probably little than 100,000,000 ?

CR - Company Reports

1.	Aa-16A.0.0	Gravity Survey, Coolidge Area, Arizona, Depth Determinations, (Montgomery, J.R., 4/23/73)
2.	Aa-16A.3.19B	Gravity Survey, Sacaton Prospect, Pinal County, Arizona, (Saegart, W.E., 6/19/62)
3.	Aa-16A.3.19C	Relative Gravity Contours, Santa Cruz Project, Pinal County, Arizona, (Beck, D.B., 5/64), Map Only
4.	Aa-16A.3.19C	I.P. and Resistivity Survey, Santa Cruz Project, Pinal County, Arizona, (Farley, W.G., 10/1/65)
5.		Estrella Quadrangle, Map in Drafting Dept.
6.		Antelope Peak Quadrangle, Map in Drafting Dept.
7.		Kaka Quadrangle, Map in Drafting Dept.
8.		Vekol Mountains Quadrangle, Map in Drafting Dept.
9.		Silver Reef Quadrangle, Map in Drafting Dept.
10.	Aa-16A.0.0	Geophysical Surveys, Greater Arizona Ranches, Sawtooth Mountains, Pinal County, Arizona (Farley, W.G., 12/3/70), Map No. 2365
11.		Eloy Quadrangle, Map in Drafting Dept.
12.	Aa-16A.16.16	Geophysical Surveys, Red Rock Quadrangle, Pinal County, Arizona, (Farley, W.G., 6/21/68), Map No. 2079
13.	Aa-16.19.19F	Geophysical Survey, West Silver Bell Area, Pima County, Arizona, (Farley, W.G., 6/24/69), Map No. 2171
14.	Aa-16.19.0	Computer Depth Determinations, Gravity Survey, Silver Bell-Wasson Peak-Avra Valley, Pima County, Arizona (Porter, J.R., 6/29/73)
15.	Aa-16.19.19F	Geophysical Surveys, East Silver Bell Area, Pima County, Arizona, (Farley, W.G., 9/5/69), Map No. 2193
16.	Aa-16.1.3J	Relative Gravity, Copper Mountain and Valley of the Ajo, Pima County, Arizona, (Farley, W.G., 11/2/66)
17.	Aa-16.1.0B	Geophysical Surveys, Amole District, North Boundary Area, Pima County, Arizona (Saegart, W.E., 11/22/61)
18.	Aa-16.16.0	Pima District Geophysics, (Morrison, B.C., 7/11/67)

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CR - Company Reports - Continued

19.	Aa-16.0.0	Gravity Survey, East of Mission Mine, Pima County, Arizona, (Farley, W.G., 9/17/65)
20.	Aa-16.19.2C	I.P. and Resistivity, Batamote Project, South Sierrita Mountains, Pima County, Arizona, (Farley, W.G., 1/30/69)
21.	Aa-16A.2.0A	Gravity Survey, Poston Butte Area, Pinal County, Arizona, (Montgomery, J.R., 2/25/74)
22.	Aa-3.4B.0	Gravity Survey, Dragoon Area, Cochise County, Arizona. (Montgomery, J.R., 8/24/73)
23.	Aa-16A.0.0	Gravity Survey, Vekol Valley, Maricopa & Pinal Counties, Arizona, (Montgomery, J.R., 7/13/73)
24.		Casa Grande-Stanfield Area; Map in Drafting Dept.
25.	Aa-25A.5.3B	Preliminary Gravity Results, Copper Eagle Area, Yuma & Maricopa Counties, Arizona (Montgomery, J.R., May 1974)

O - Other

1. USGS OF — Gravity Anomaly Map, Twin Buttes Area, Pima & Santa Cruz Counties, Arizona, (Plouff, Donald, 8/8/62); Map in Drafting Dept.

2. USGS GP-615 — Bouguer Gravity Map of Parts of Maricopa, Pima, Pinal, and Yuma Counties, Arizona, (Peterson, D. L., 1968); Map in Drafting Dept.

3. USGS PP-753 — Geophysical, Geohydrological, and Geochemical Reconnaissance of Luke Salt Body, Central Arizona, (Eaton, G. P., Peterson, D. L., Schumann, H.H., 1972) Fig. 5; Map in Drafting Dept.

4. — Simple Bouguer Plan Map, Wickenburg, Project for Kaiser Exploration & Mining Co., Mining Geophysical Surveys 0253; Map in Drafting Dept.

5. USGS PP-726-D — Geophysical Studies in the Yuma Area, Arizona and California, (Matlick, R.E., et al, 1973), Plate 1 and Plate 5

6. Aa-19.16.7A — Simple Bouguer Gravity Survey, Goldbaum Canyon, Project for Texas Gulf, Inc. (Williams, C. R., Sept. 14, 1972)

my map.

Other: 6 USGS. PP-726D. Geophysical Studies in the Yuma area, Arizona & Calif. (Matlick, R.E, et al, 1973) Plates 1 & 5.

7. USGS ~~PP~~ WSP-1939-E. Geohydrology of Tucson Basin, Arizona (Davidson, 1973) Plate 5.

T - Theses (University of Arizona)

1. Analysis of Gravity Data from Avra Valley Area, Pima County, Arizona (West, R. E., MS 1970), Map only in Drafting Dept.

2. A Geophysical Investigation of Hydrologic Boundaries in Tucson Basin, Pima County, Arizona (Davis, R.W., PhD 1967), Plates 4 & 5 in Drafting Dept.

3. Reconnaissance Gravity Survey of the Ruby-Pena Blanca Area, Santa Cruz County, Arizona (Hench, S.W., MS 1968), Figures 3 & 4 in Drafting Dept.

4. Structure of the Pantano Beds in the Northern Tucson Basin (Abuajamieh, M.M., MS 1966), Plate 2 in Drafting Dept. See Also O-7

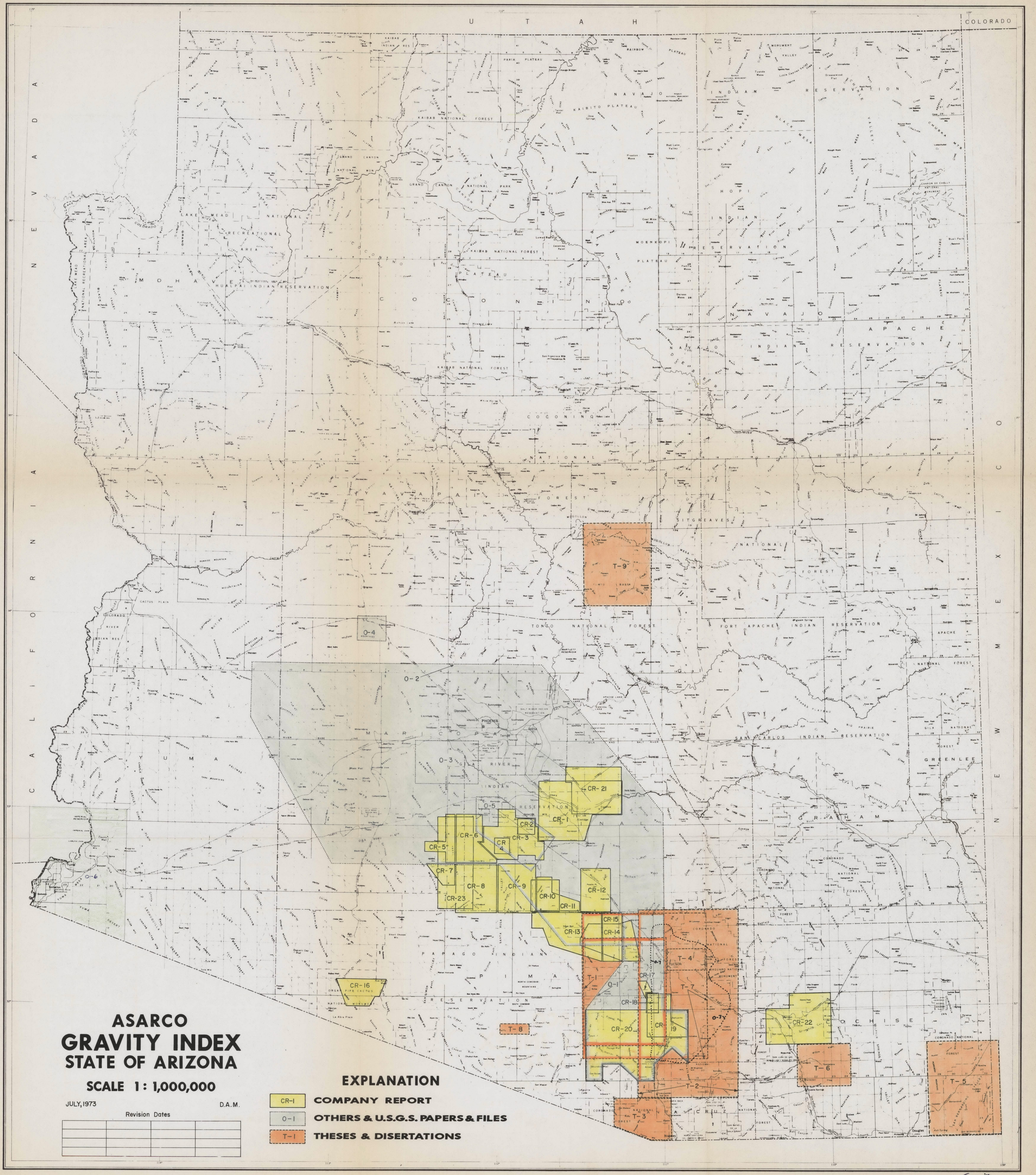
5. Reconnaissance Geology of the Bernardino Volcanic Field, Cochise County, Arizona (Lynch, D.A., MS 1972), Figure 16 in Drafting Dept.

6. Geophysical Study of the Hydrogeology of the Walnut Gulch Experimental Watershed, Tombstone, Arizona (Spangler, D.P., PhD 1969), Figure 7 in Drafting Dept.

7. An Analysis of Some Regional Gravity Data in Arizona (Bhuyan, G. Ch., MS 1965), Map only in Drafting Dept.

8. Hydrogeology of the Sells Area, Papago Indian Reservation, Arizona (Matis, J.R., MS 1970), Profile only in Drafting Dept.

9. The Characteristics of the Deeper Crust of Central Arizona (Benham, M.J., Aborded Dissertation 1972), Figures 15 & 17 in Drafting Dept.



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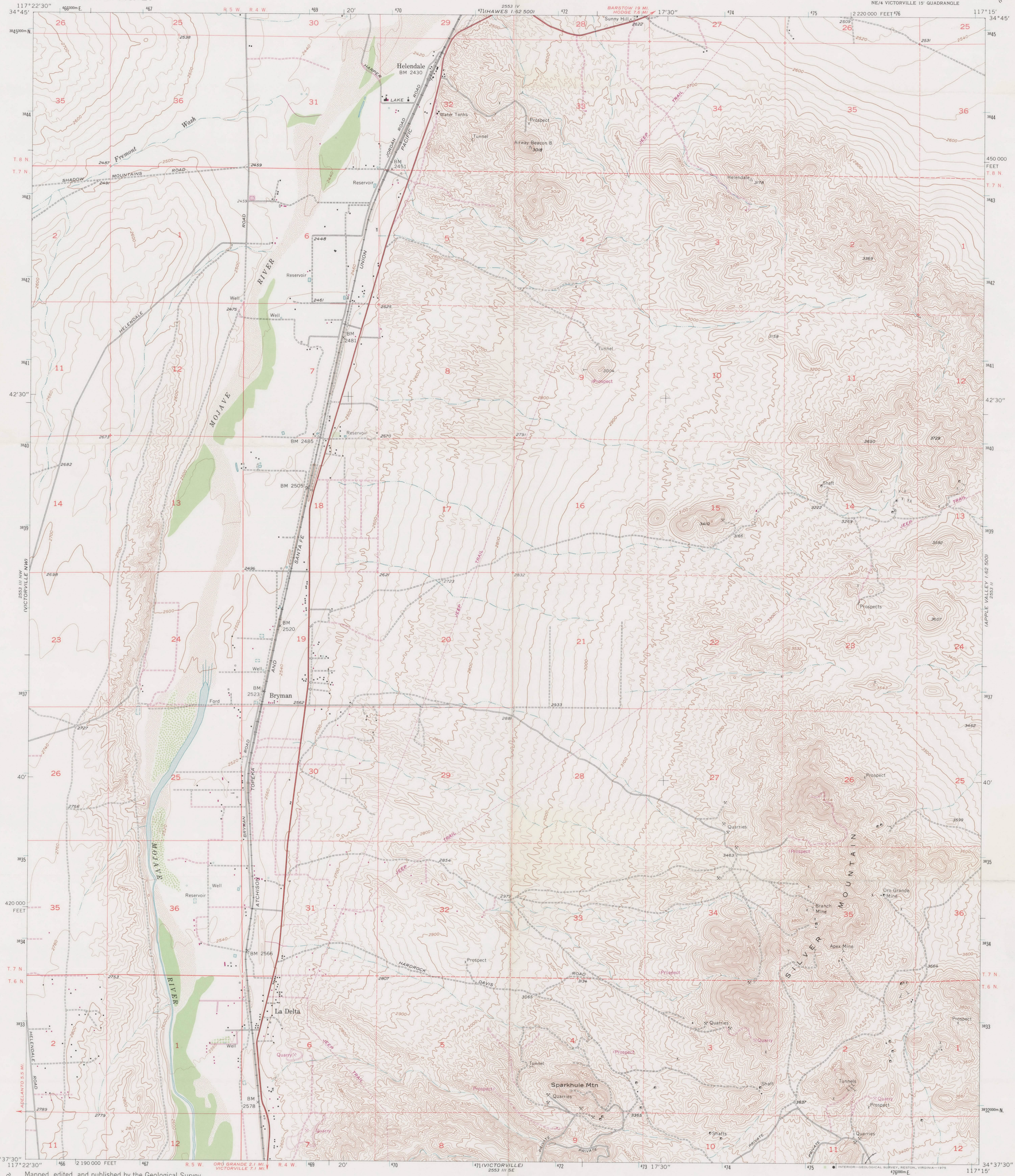
Gravity Index.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

HELENDALE QUADRANGLE
CALIFORNIA—SAN BERNARDINO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE/4 VICTORVILLE 15' QUADRANGLE



Mapped, edited, and published by the Geological Survey

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Topography from aerial photographs by Wild A-8
Aerial photographs taken 1952. Field check 1956

Polyconic projection. 1927 North American datum
10,000-foot grid based on California coordinate system, zone 5

Dashed land lines indicate approximate locations

Unchecked elevations are shown in brown

1000-metre Universal Transverse Mercator grid ticks, zone 11, shown in blue

Revised in cooperation with California Department of Water Resources

Revisions shown in purple compiled from aerial photographs taken 1968. This information not field checked

UTM GRID AND 1968 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
GN MN 0°11' 3 MILS 15½° 276 MILS

SCALE 1:24 000
1 ½ 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETRE

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Unimproved dirt

CALIF
QUADRANGLE LOCATION

HELENDALE, CALIF.
NE/4 VICTORVILLE 15' QUADRANGLE
N3437.5—W11715/7.5

1956
PHOTOREVISED 1968
AMS 2553 III NE—SERIES V895

ASARCO

Southwestern Exploration Division

July 5, 1988

R.L. Brown
New York Office

Monthly Report
April 18 thru June 30, 1988

April 18 - April 29

Separated, rolled and packaged maps from Salt Lake City Geophysics office and sent them to regional offices.

May 2 - June 2

Research on recently developed theories on derivation of mineralization. Research on Gold Hill District and detachment type deposits.

June 3 - June 5

Travelled to Stateline, California, and aided Tony Dalla Vista on claim staking on Gold Valley Project. Travelled to Wendover.

June 6 - June 7

Examined geology, alteration and mineralization in Gold Hill District while drilling contractor was preparing to get equipment to Gold Hill.

June 8 - June 9

Travelled to Tucson to do research because of delay in drilling equipment arrival.

June 13 - June 17

Further research on Utah and Eastern Nevada Mining districts. Examination of new geologic study on Gold Hill District by Jamie Robinson.

June 20 - June 21

Travelled from Tucson to Wendover.

June 22 - June 29

Examination of geology and mines in Gold Hill District.

June 30

Sampled drilling on hole #1 on Ochre Springs Project.

Time and Expense Summary

	Field Days	Office Days	No. of Samples	Assay Cost	Expense Account	Vehicle Expense
June	18	8	-0-	-0-	$187	$300
YTD	19	38	-0-	-0-	$187	$300

FAM:mek

F. A. Michel

cc: W.L. Kurtz
J.D. Sell