

**THE GEOLOGY OF, AND KNOWN
MINERAL OCCURRENCES WITHIN,
WILDERNESS STUDY AREAS 4-14 AND
4-16 FISHHOOK - DAY MINE**

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This report is preliminary and has not been edited
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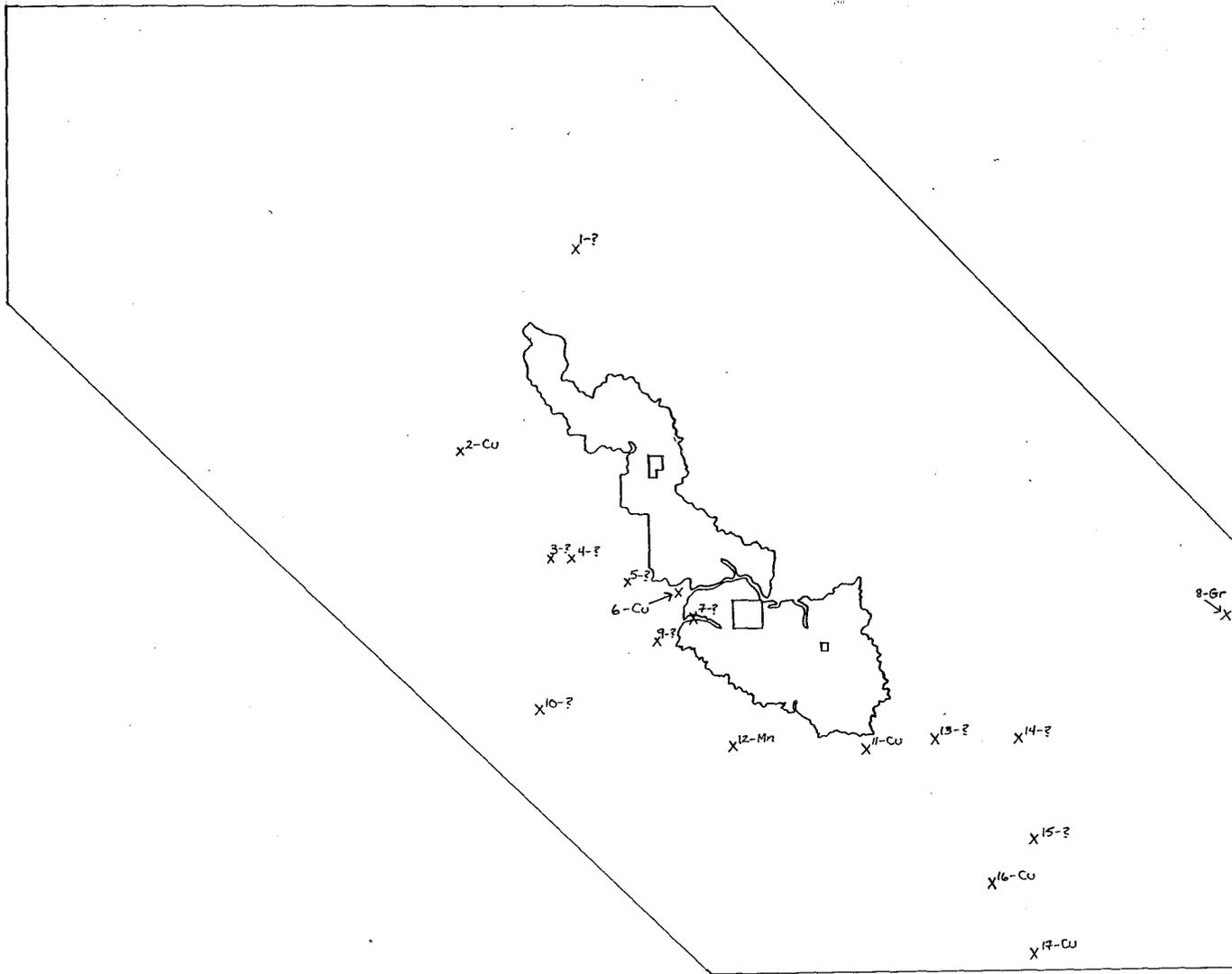
Brief summary of geological features and known mineral occurrences

Wilderness Study Areas 4-14, 4-16
Fishhook - Day Mine

- 1) The Fishhook - Day Mine areas are underlain by middle - to - upper Tertiary age volcanic flows, breccias, and tuffs, and by late Tertiary-Quaternary basin-fill deposits, primarily of alluvial and lacustrine origin (sands, gravels, etc.);
- 2) The WSA's do not contain any known base or precious metal occurrences;
- 3) Secondary copper mineral deposits have been reported from fissure veins in middle Tertiary volcanic rocks along the western and southern borders of the WSA's. Other copper deposits are located several miles to the south of WSA 4-16. No production has been recorded from exploration prospects in these areas;
- 4) Minor occurrences of gold, silver, lead, zinc, and molybdenum are associated with the copper deposits. Mining claim reports indicate that mineral amounts are insufficient to be of economic value;
- 5) One known occurrence of manganese is located to the south of WSA 4-16 in middle Tertiary volcanic rocks. There are no reports of production;
- 6) Information concerning mineral types, claim development, and ore production is unavailable for other prospects in this region;
- 7) The Safford - Lone Star Mining District, to the south of the WSA's, has been actively mined and prospected since the late 1800's. Porphyry copper and related vein deposits of the Safford region are associated with granodiorite plutons (late Cretaceous-early Tertiary; 67-52 m.y.), located in ENE-trending shear zones that transect Cretaceous-

Tertiary volcanic flows and breccias. Data on mining activity and production are largely non-existent for the many small mines that operated between 1900 and the late 1940's.

For additional discussions of the mineral potential of the Gila Mountains and vicinity, see Bromfield and Shride (1956) and Robinson and Cook (1966).

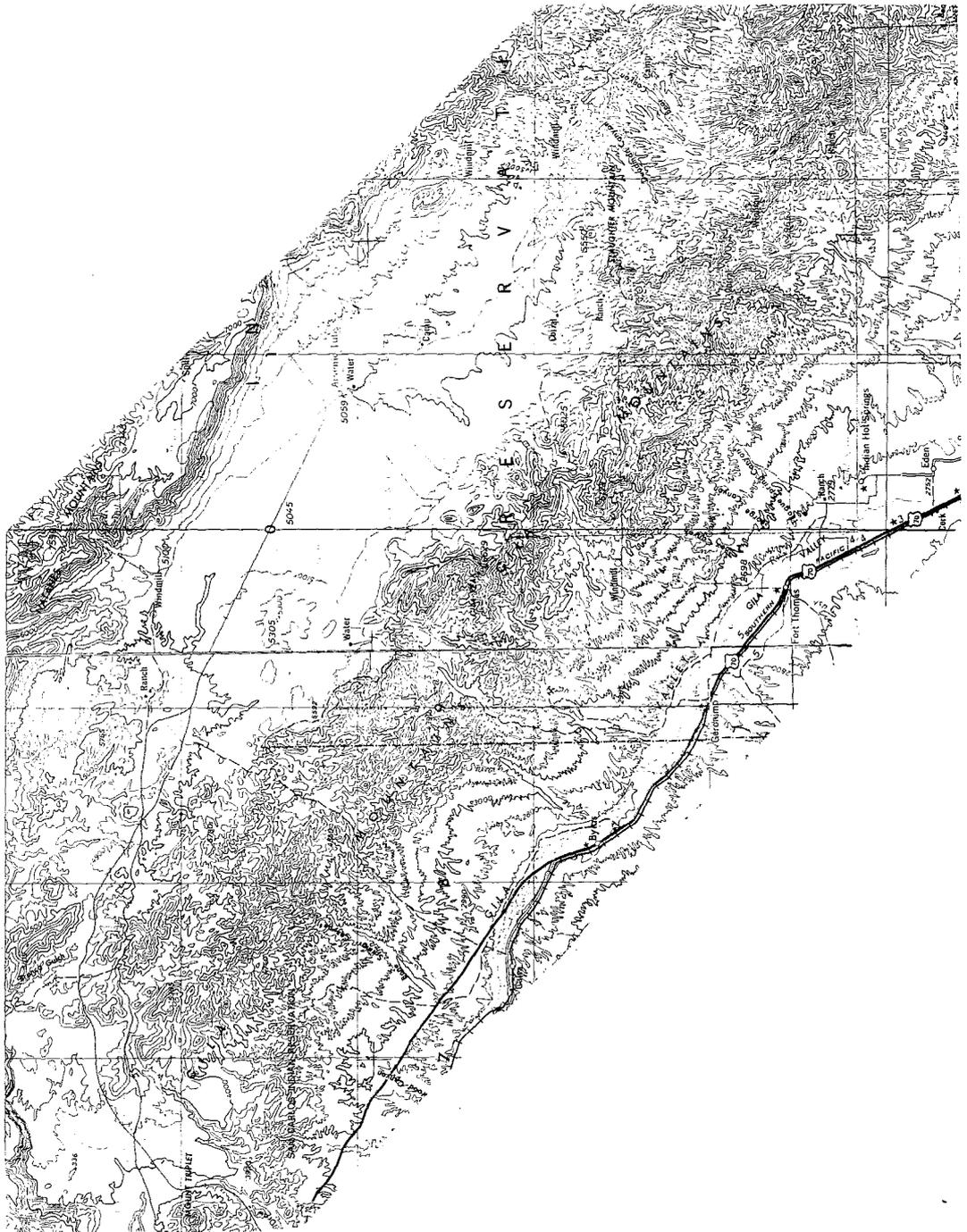


EXPLANATION

Known mineral occurrences are located by map number, followed by type of mineral deposit. See accompanying table of mineral occurrences.

- X^{Cu} copper
- X^{Mn} manganese; psilomelane, manganite
- X^{Gr} gravel and sand
- X[?] unknown

MINERAL OCCURRENCES IN THE FISHHOOK-DAY MINE AREA
 GILA MOUNTAINS
 (4-14/4-16)



KNOWN MINERAL OCCURRENCES

FISHHOOKS / DAY MINE AREA (4-14 / 4-16)

Copper and Manganese Deposits

The Gila Mountains are composed of middle-to-upper Tertiary age volcanic flows, breccias, and tuffs. Pyroclastic rocks, including basalts, rhyolites, andesites, and rhyolitic tuffs and breccias of middle Tertiary age are separated from late Tertiary-Quaternary vesicular basalt flows by a structural unconformity. About 1000 feet of these older flows and tuffs overlie exposed Paleozoic rocks in the Gila Range. Well-indurated conglomerate, fanglomerate, breccia, and coarse gravel cover terraces and low ridges sloping down to the Gila Valley on the southwest and the alluvium-filled Ash Flat - Bonita Creek basin on the east.

Secondary copper minerals are contained in fissure vein systems cutting andesitic and basaltic flows (map numbers 6, 16, 16). To the north of the Gila Range, copper sulfides and carbonates occur in a fissure vein transecting Paleozoic sedimentary rocks (map number 2). Minor amount of gold, silver, lead, zinc, and molybdenum have been reported from these vein deposits.

Map number 12 contains a manganese deposit. Psilomelane and manganite occur in irregular veins in sheared andesite (middle Tertiary). There are no records of production from these deposits.

Map numbers 1-5, 7, 9-11, and 13-15 represent exploration prospects with unknown mineral types. Information concerning development and production is unavailable.

MAP NO. 4-14/16 - 1

Mine Borrow Pit

<u>Location</u>	T.01S	Sec. 18	Lat. 33-19-16N
	R.23E	Cen.	Log. 109-59-32-W
			Elev. 5100 ft.

Geology Prospect located in middle-upper Tertiary basalt flows interbedded with, and overlying, Gila-Conglomerate - type sedimentary deposits. Near contact between basalt flow to west and Quaternary alluvium of Ash Flat to east. Basalt flows in region are generally flat-lying and have been little disturbed.

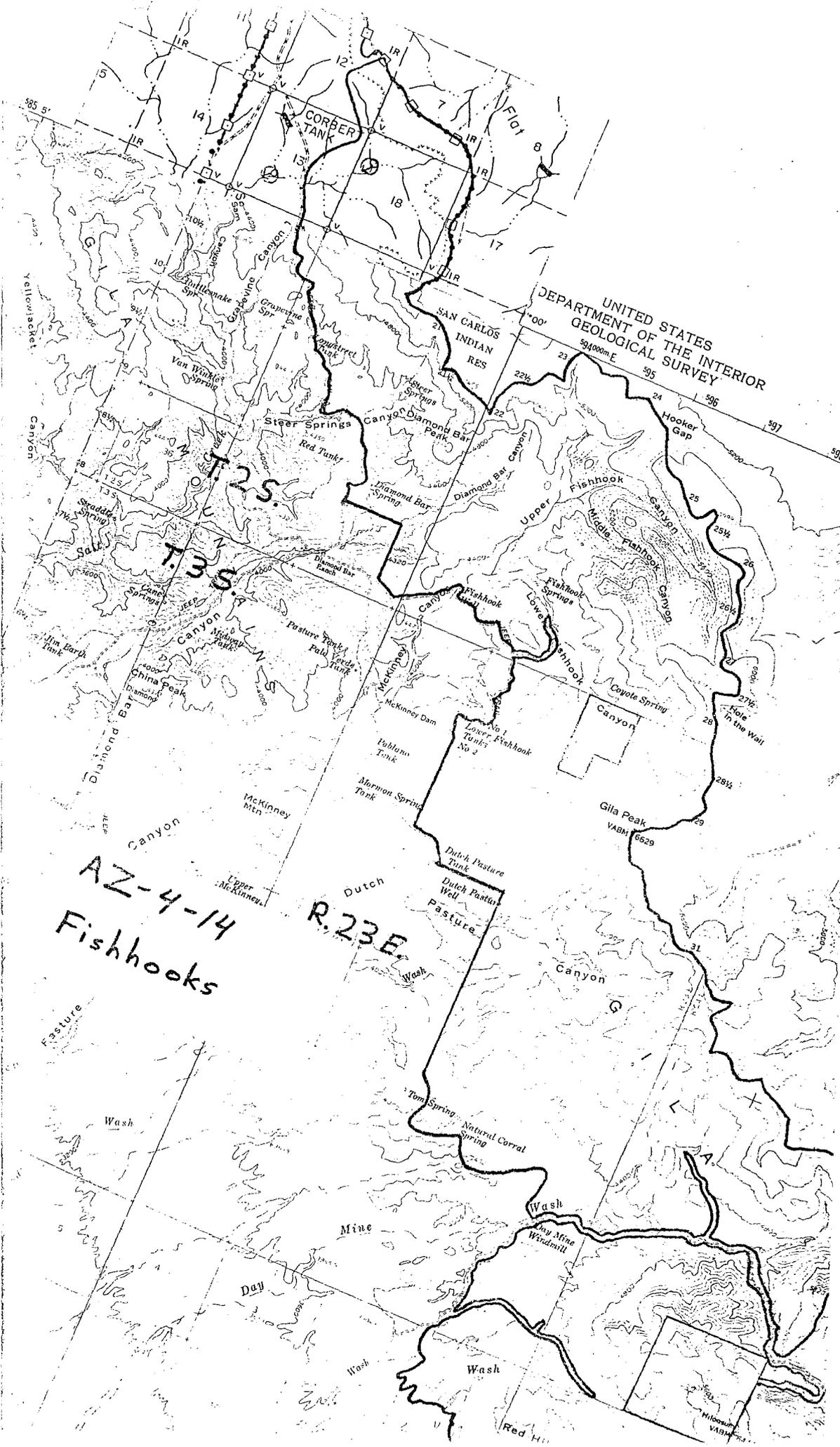
Mineral Products Unknown.

Development and Production Surface exploration, extent of development unknown.

References

USBM Files, Borrow Pit
USGS Tule Tubs Quad (1:24000)
Wilson and Moore, 1958
Bromfield and Shride, 1956, p. 627-628

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



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Fishhooks

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Geology Weakly to well-indurated conglomerate, fanglomerate, breccia, and coarse gravel in shallowly dipping to flat-lying beds, in SE portion of Ash Flat. Near contact between Quarternary alluvium and exposed basaltic flow to south of workings; separated by an erosional unconformity.

Mineral Products Gravel

Development and Production Surface workings; recent producer.

References

USBM Files, Gravel, Pit
USGS Bryce Mountain Quad (1:625000)
Wilson and Moore, 1958

MAP NO. 4-14/16 - 9

Mine Prospect

Location T.04S Sec. 02 Lat. 33-07-07N
R.23E NE Long. 109-57-09W
Elev. 3900 ft.

Geology Prospect located in faulted middle Tertiary andesitic flow. Copper prospects in vicinity.

Mineral Products Unknown.

Development and Production Exploration prospect.

References

USBM Files, Prospect
USGS Ft. Thomas Quad (1:62500)
Wilson and Moore, 1958

MAP NO. 4-14/16 - 10

Mine Prospect

Location T.04S Sec. 18 Lat. 33-05-31N
R.23E Cen, N $\frac{1}{2}$ Long. 109-55-28W
Elev. 2640 ft.

Geology Prospect located in Quaternary - Recent alluvium of the Gila River drainage. Unconsolidated silt, sand, and gravel forms low-lying terraces, overflow channels, and lowland plain supporting the Gila River.

Mineral Products Unknown

Development and Production Exploration prospect.

References

USBM Files Prospect
USGS Bylas Quad (1:62500)
Wilson and Moore, 1958
Knechtel, 1938, p. 200

MAP NO. 4-14/16 - 11

Mine Poteet Claims (Marla L., Rams,
unpatented claims - Farout, Big Square, Osolomio)

Location T. 04S Sec. 26 Lat. 33-03-01N
R. 24E E $\frac{1}{2}$ Long. 109-51-00W
Elev. 3600 ft.

Geology Secondary copper minerals occur in middle Tertiary andesitic flow and porphyritic andesite rocks. Andesite beds generally trend NE; mineral deposits found in fault and fissure vein systems. Claims extended to south and east, into Quaternary-Recent, unconsolidated to well-indurated fanglomerates and gravels, capping low-lying ridges and terrace of the Gila River Valley.

Mineral Products Copper

Development and Production Exploration; no record of production. Claims extend into Sec. 25, 33, 34, 35 (T.04S, R.24E). Sec. 1, 12, 13 (T.05S, R.24E); Sec. 26, 27, 30, 31, 35, 36 (T.04S, R.25E)' Sec. 19, 20, 21, 28, 29, 30, 33 (T.05S, R.25E).

References

USBM Files Poteet Claims
BLM Mining Claims Lead File 50456, 50528, 76551, 34486; July 1980
USGS Ft. Thomas Quad (1:62500)
USGS Thatcher Quad (1:62500)
USGS Bryce Mountain Quad (1:62500)
Wilson and Moore, 1958

MAP NO. 4-14/16 -12

Mine Voelckel Claims

Location T.04S Sec. 30 Lat. 33-03-47N
R.24E NE of NE Long. 109-55-00W
Elev. 3800 ft.

Geology Small, low-grade manganese deposit in porphyritic andesite (middle Tertiary) within faulted, steeply dipping volcanic rocks composed primarily of rhyolite, andesite, obsidian and interbedded yellow tuffs. Deposit consists of narrow and irregular veins striking NE through sheared andesite and seams that cement andesite breccia. Maximum vein length is 30 ft. Manganese oxides associated with calcite.

Mineral Products Manganese: psilomelane, manganite

Development and Production Exploration prospects; no known production. Claims located in 1914 by Louis Voelckel; development included one 30-ft. tunnel. Assay values (early 1900's) averaged 18-20% MN.

References

ADMR Voelckel Claims File
USBM Files, Voelckel Claims
Jones and Ransome, 1920, p. 129-130
USGS CRIB Data, 1979
USGS Ft. Thomas Quad (1:62500)

MAP NO. 4-14/16 - 13

Mine Bryce Brothers Claims

Location T.04S Sec. 21 Lat. 33-03-52N
R. 25E SW Long. 109-47-06W
Elev. 4400 ft.

Geology Prospect located at or near contact between middle Tertiary andesite flow and middle-late Tertiary porphyritic basalt. Copper prospects in vicinity.

Mineral Products Unknown.

Development and Production Exploration prospect.

References

USBM Files, Bryce Bros. Claims
BLM Mining Claims Lead File 40072, July 1980
USGS Ft. Thomas Quad (1:62500)
Wilson and Moore, 1958

MAP NO. 4-14/16 - 14

Mine Robin Claims
(Orbit, Orbitter)

Location T.04S Sec. 25 Lat. 33-03-15N
R.25E W $\frac{1}{2}$ Long. 109-44-20W
Elev. 4800 ft.

Geology Claims located on faulted, middle Tertiary andesitic flow and porphyritic andesite rocks. Adjacent Poteet Claims to north and south report copper deposits.

Mineral Products Unknown.

Development and Production Exploration prospect; extent of development unknown. Property borders Poteet Claim Group.

References

USBM Files, Robin Claims
BLM Mining Claims Lead File 76436, July 1980
USGS Bryce Mountain Quad (1:62500)
Wilson and Moore, 1958

MAP NO. 4-14/16 - 15

Mine Quarry

Location T.05S Sec. 12 Lat. 33-00-45N
R.25E Cen., E $\frac{1}{2}$ Long. 109-43-38W
Elev. 4360 ft.

Geology Quarry located on or near contact between middle Tertiary andesitic flow and north and middle-late Tertiary porphyritic basalt to south. Andesite beds regionally trend NE and dip fairly steeply, while basaltic flows and interbedded sedimentary rocks are generally flat-lying.

Mineral Products Unknown.

Development and Production Surface workings; extent of development unknown.

References

USBM Files Quarry
USGS Bryce Mountain Quad (1:62500)
Bromfield and Shride, 1956, p. 626-630
Wilson and Moore, 1958

MAP NO. 4-14/16 - 16

Mine Peck Claims

Location T.05S Sec. 23 Lat. 32-59-00N
R.25E W $\frac{1}{2}$ Long. 109-45-20W
Elev. 3600 ft.

Geology Secondary copper minerals occur along fault zones in middle-late Tertiary basaltic flows interbedded with, and overlying, Gila Conglomerate-type sedimentary rocks (Pliocene-Pleistocene).

Mineral Products Copper

Development and Production Exploration prospect. Unpatented claims extend into Sec. 13, 14, 26, 27 (T.05S, R.25E).

References

USBM Files, Peck Claims
BLM Mining Claims Lead File 1705, July 1980
USGS Thatcher Quad (1:62500)
Wilson and Moore, 1958

MAP NO. 4-14/16 - 17

Mine Mardi Gras Claims

Location T.05S Sec. 35 Lat. 32-57-30N
R.25E N $\frac{1}{2}$ Long. 109-45-15W
Elev. 3360 ft.

Geology Copper minerals occur along fault zones in middle-late Tertiary basaltic flows interbedded with, and overlying, sedimentary rocks similar to Gila Conglomerate Formation (Pliocene-Pleistocene).

Mineral Products Copper

Development and Production Underground exploration prospect; extent of development unknown. Unpatented claims extend into Sec. 13, 23, 24, 25, 26 and 36 (T.05S, R.25E)

References

USBM Files, Mardi Gras Claims
BLM Mining Claims Lead File 4107, July 1980
USGS Thatcher Quad (1:62500)
USGS Safford Quad (1:62500)
Wilson and Moore, 1958

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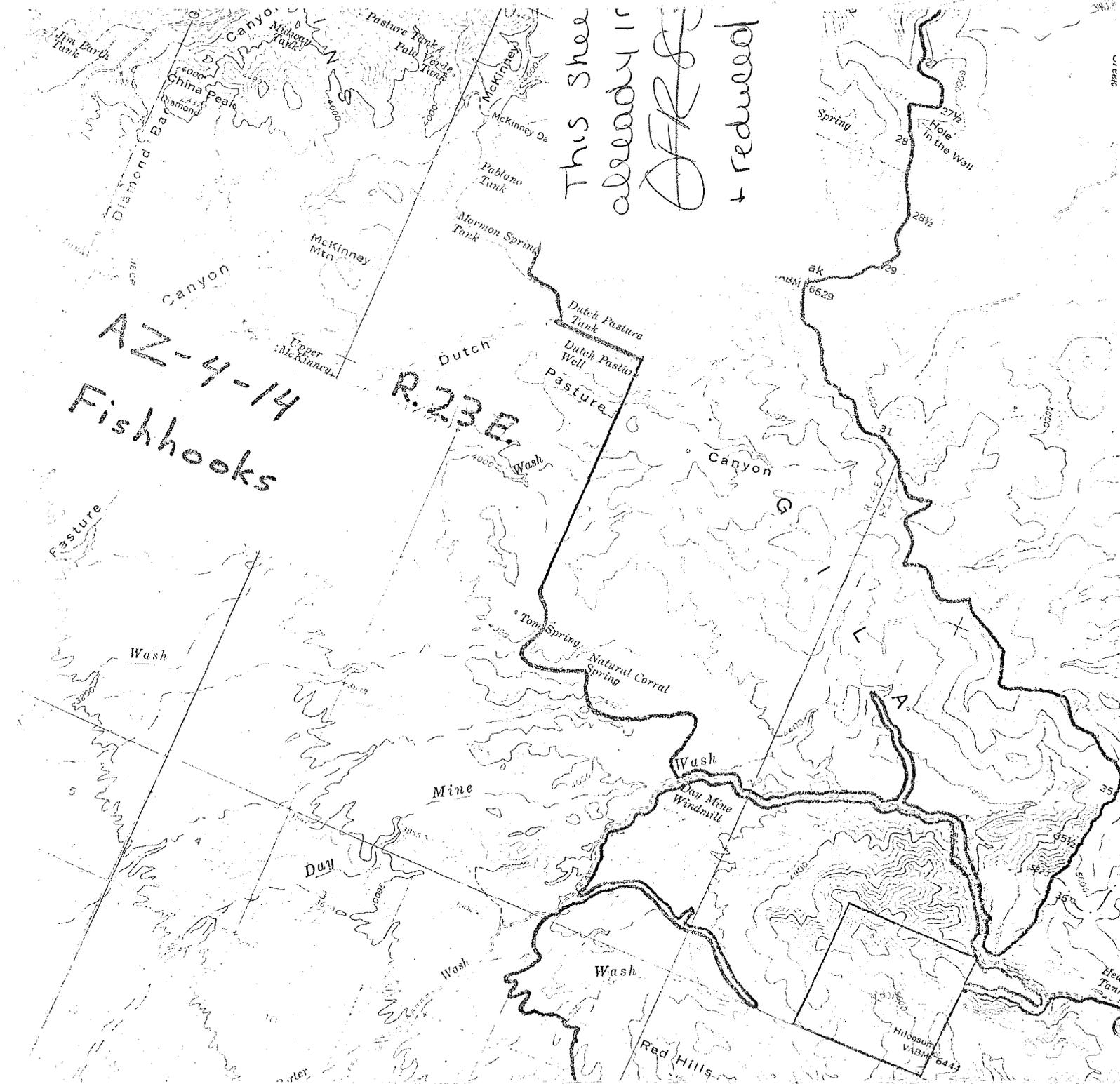
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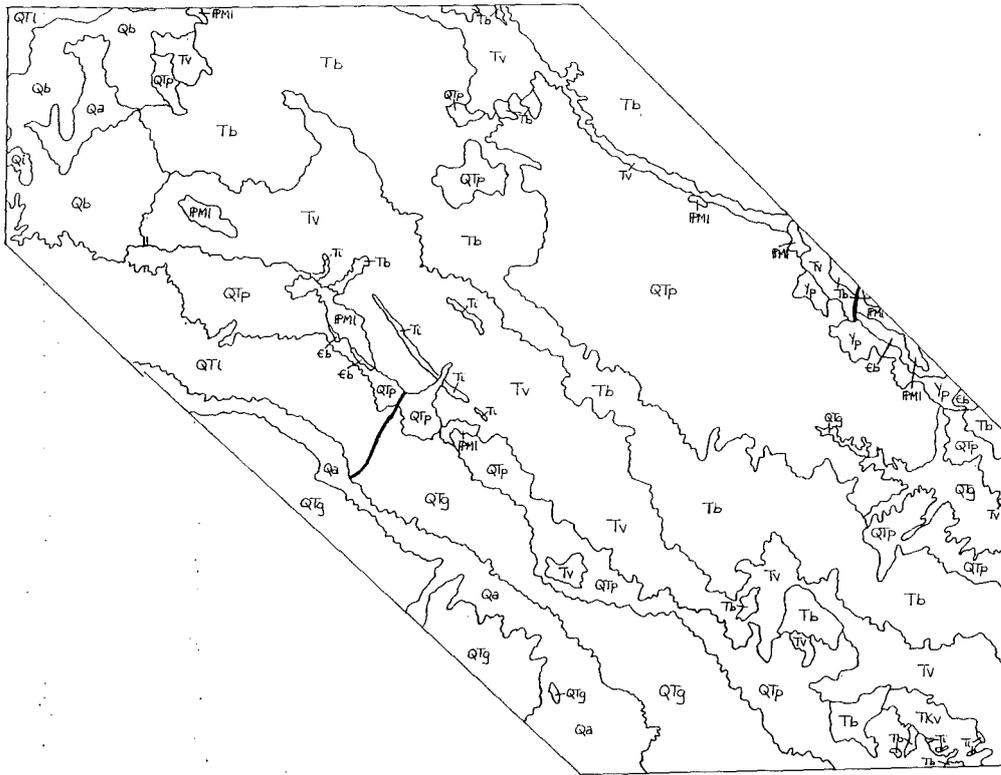
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AZ-4-14
Fishhooks

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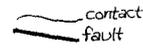
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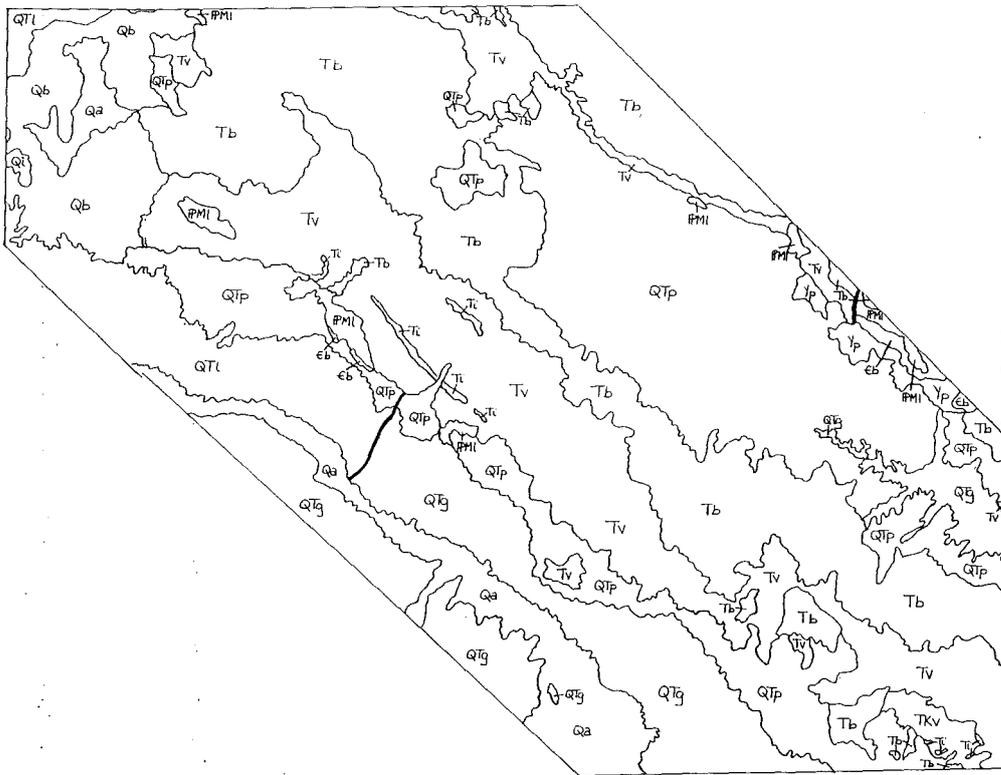
EXPLANATION

QUATERNARY	Qa	Younger alluvium; unconsolidated silt, sand, and gravel on flood plains and in stream channels.
	Qb	Basalt flows interbedded with, and overlying, Gila Congl-type sedimentary rocks.
	Qc	Basaltic dikes and plugs.
QUATERNARY-TERTIARY	Qg	Weakly- to well- indurated conglomerate, fan conglomerate breccia capping low terraces and ridges.
	Qtl	Lake-deposited silt, sand, and limy sediments.
	Qtp	Older alluvium and colluvium; coarse gravel, sand, silt of older valley fill.
TERTIARY	Tv	Rhyolite welded ash-flow tuff and coarse-grained porphyritic andesite flows.
	Tb	Basalt and basaltic andesite flows and pyroclastic deposits.
	Tl	Intrusive rocks, including granitic plutons and apl to porphyritic dikes and plugs.
CARBONIFEROUS-TERTIARY-CRETACEOUS	Tkv	Flows, tuffs, breccias, and volcanic conglomerates of andesitic to rhyolitic composition.
PERMIAN	Pmi	Fine-grained fossiliferous limestone; Horquilla and Escabrosa formations.
CAMBRIAN	Eb	Bolsa Quartzite; orthoquartzite and grit with bas conglomerate unit.
	Yp	Coarse-grained porphyritic quartz monzonite, local chloritized and foliated.



Sources of information include:
Wilson, E.D., and R.T. Moore, 1958

GEOLOGY OF THE FISHHOOK - DAY MINE AREA
GILA MOUNTAINS
(4-14/4-16)



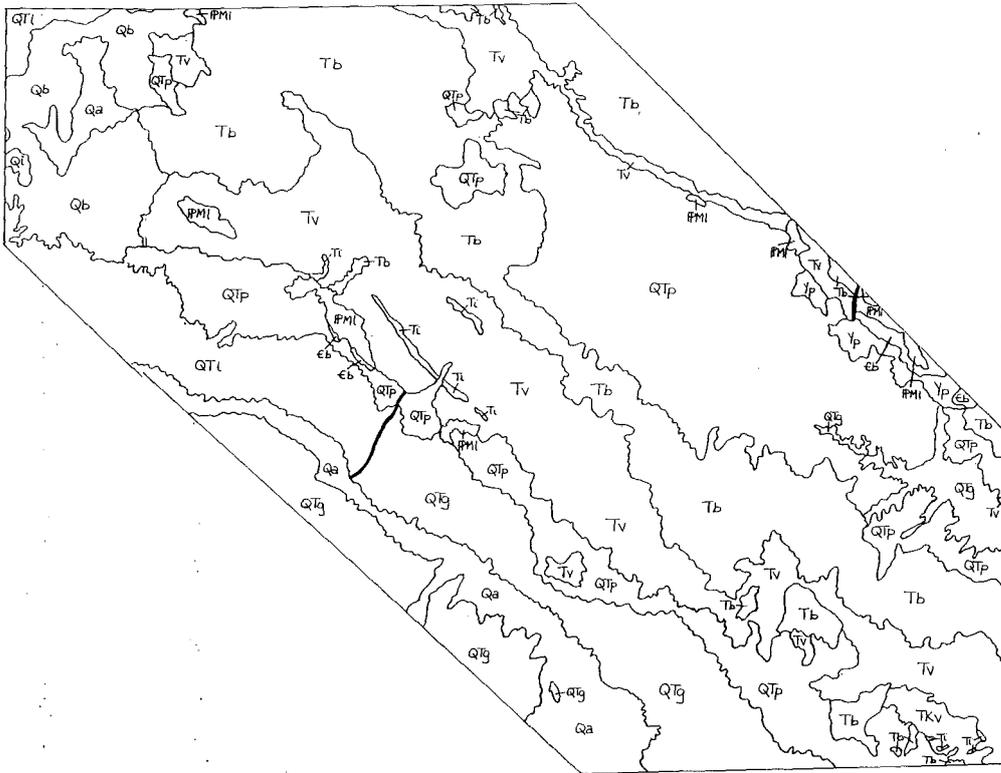
EXPLANATION

QUATERNARY	Qa	Younger alluvium; unconsolidated silt, sand, and gravel or flood plains and in stream channels.
	Qb	Basalt flows interbedded with, and overlying, Gila Congl-type sedimentary rocks.
	Qi	Basaltic dikes and plugs.
QUATERNARY-TERTIARY	QTP	Weakly- to well-indurated conglomerate, fanglomerate breccia capping low terraces and ridges.
	QTL	Lake-deposited silt, sand, and limy sediments.
	QTP	Older alluvium and colluvium; coarse gravel, san silt of older valley fill.
TERTIARY	Tv	Rhyolite, welded ash-flow tuff and coarse-grained porphyritic andesite flows.
	Tb	Basalt and basaltic andesite flows and pyroclastic deposits.
	Tl	Intrusive rocks, including granitic plutons and ap to porphyritic dikes and plugs.
CARBONIFEROUS-TERTIARY	TKV	Flows tuffs, breccias, and volcanic conglomerates andesitic to rhyolitic composition.
PERMIAN-CARBONIFEROUS	PML	Fine-grained fossiliferous limestone; Horquilla or Escabrosa formations.
	Eb	Bolsa Quartzite; orthoquartzite and grit with ba conglomerate unit.
	Yp	Coarse-grained porphyritic quartz monzonite, loca chloritized and foliated.

— contact
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Sources of information include:
 Wilson, E.D., and R.T. Moore, 1958

GEOLOGY OF THE FISHHOOK-DRY MINE AREA
 GILA MOUNTAINS
 (4-14/4-16)



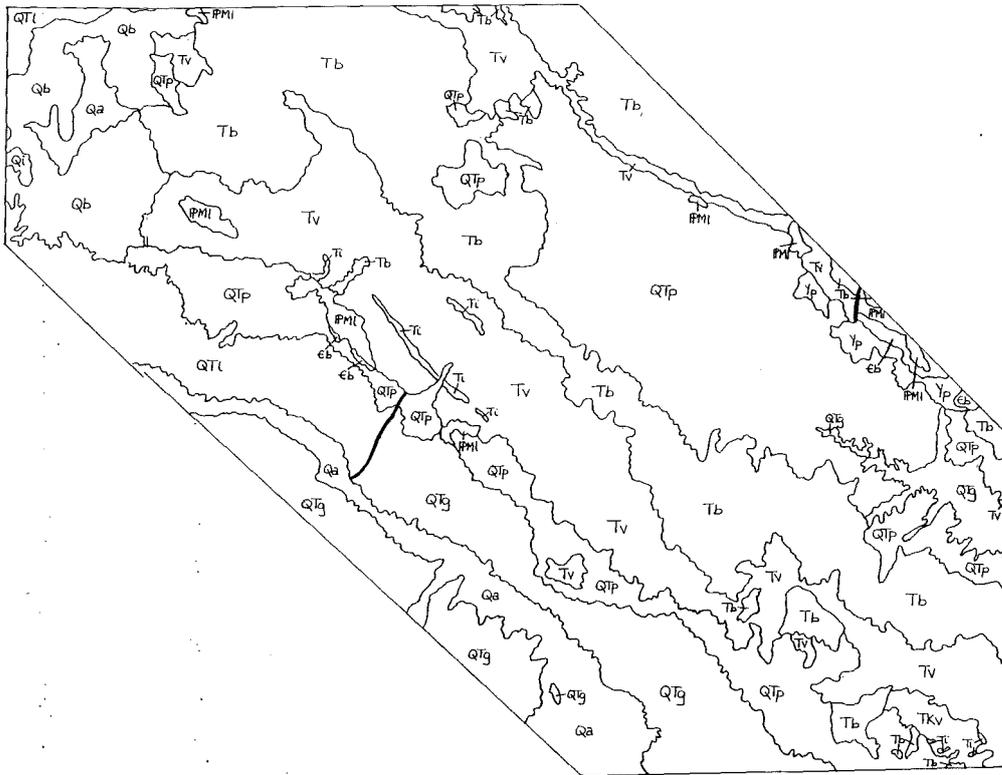
EXPLANATION

QUATERNARY	Qa	Younger alluvium; unconsolidated silt, sand, and gravel or flood plains and in stream channels.
	Qb	Basalt flows interbedded with, and overlying, Gila Cong type sedimentary rocks.
	Qi	Basaltic dikes and plugs.
QUATERNARY-TERTIARY	Qlg	Weakly- to well-indurated conglomerate, fanglomerate breccia capping low terraces and ridges.
	Qtl	Lake-deposited silt, sand, and limy sediments.
	Qtp	Older alluvium and colluvium; coarse gravel, sand silt of older valley fill.
TERTIARY	Tv	Rhyolite welded ash-flow tuff and coarse-grained porphyritic andesite flows.
	Tb	Basalt and basaltic andesite flows and pyroclastic deposits.
	Tr	Intrusive rocks, including granitic plutons and up to porphyritic dikes and plugs.
CARBONIFEROUS-TERTIARY	TKv	Flows, tuffs, breccias, and volcanic conglomerates andesitic to rhyolitic composition.
PERMIAN	IPMI	Fine-grained fossiliferous limestone; Horquilla a Escabrosa formations.
CAMBRIAN	Eb	Bolsa Quartzite; orthoquartzite and grit with bas conglomerate unit.
PRECAMBRIAN	Yp	Coarse-grained porphyritic quartz monzonite, locally chloritized and foliated.

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Sources of information include:
 Wilson, E.D., and R.T. Moore, 1958

GEOLOGY OF THE FISHHOOK - DAY MINE AREA
 GILA MOUNTAINS
 (4-14/4-16)



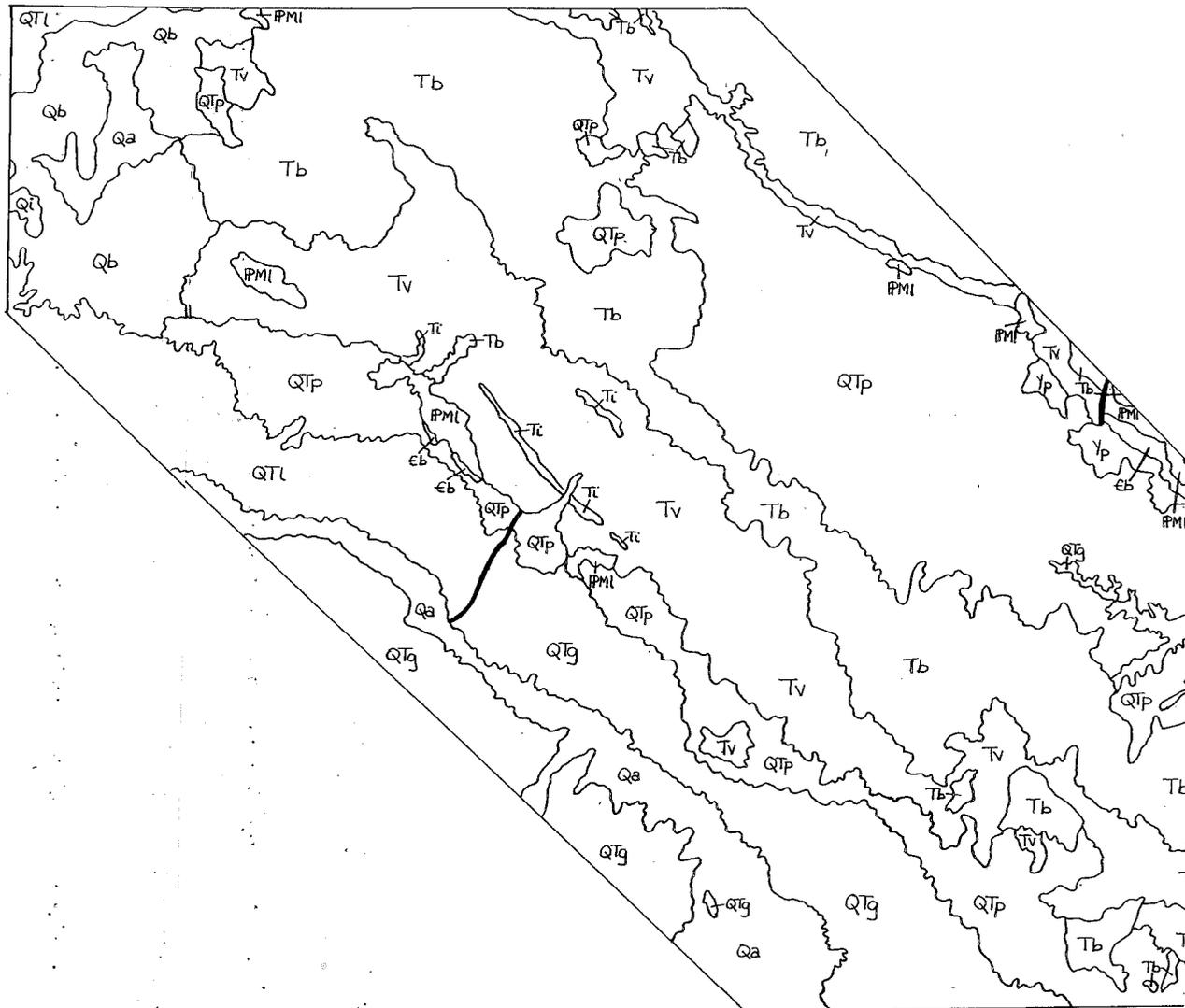
EXPLANATION

QUATERNARY	Qa	Younger alluvium; unconsolidated silt, sand, and gravel on flood plains and in stream channels.
	Qb	Basalt flows interbedded with, and overlying, Gila Congl type sedimentary rocks.
	Qc	Basaltic dikes and plugs.
QUATERNARY-TERCIARY	QTg	Weakly- to well-indurated conglomerate, fanglomerat breccia capping low terraces and ridges.
	QTL	Lake-deposited silt, sand, and limy sediments.
	QTP	Older alluvium and coluvium; coarse gravel, silt, and silt of older valley fill.
TERCIARY	TV	Rhyolite welded ash-flow tuff and coarse-grained porphyritic andesite flows.
	Tb	Basalt and basaltic andesite flows and pyroclastic deposits.
	Tc	Intrusive rocks, including granitic plutons and ap to porphyritic dikes and plugs.
CARBONIFEROUS-TERCIARY	TKv	Flows, tuffs, breccias, and volcanic conglomerates andesitic to rhyolitic composition.
PERMIAN	PMI	Fine-grained fossiliferous limestone; Horquilla or Escabrosa formations.
CHEROKEE	Eb	Bolsa Quartzite; orthoquartzite and grit with ba conglomerate unit.
PRECAMBRIAN	Yp	Coarse-grained porphyritic quartz monzonite, loca chloritized, and foliated.

— contact
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Sources of information include:
 Wilson, E.D., and R.T. Moore, 1958

GEOLOGY OF THE FISHHOOK - DRY MINE AREA
 GILA MOUNTAINS
 (4-14/4-16)



GEOLOGY OF THE FISHHOOK - DAY MINE AREA
 GILA MOUNTAINS
 (4-14/4-16)

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