LATE PLIOCENE AND QUATERNARY GEOLOGY, LUKEVILLE/SONOYTA QUADRANGLE

by

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Arizona Geological Survey
Open-File Report 84-3

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scale 1:250,000

EXPLANATION: MAPS OF QUATERNARY DEPOSITS OF ARIZONA

AGE	MAP UNIT NUMBER	SHORT DESCRIPTION	PARTICLE SIZE/ LITHOLOGY	TOPOGRAPHIC OCCURRENCE	THICKNESS	SOIL-PROFILE DEVELOPMENT
			ALLUVIAL DEPOSITS			
Holocene and late Pleistocene	11	Alluvium, late Quaternary (Holocene & late Pleistocene).	Mostly sand, silt, and pebbly sand; minor clay locally; however, in and near highlands, mostly gravel (pebble, cobble, &/or boulder gravel).	Valley lowlands along present stream channels; lower parts of some piedmonts.	2 to generally <10 m; locally 10 to >15 m along larger streams.	Nil to moderate.
Middle Pleistocene	12	Alluvial gravel and sand, middle Pleistocene.	Pebbly sand, sand, and pebble to cobble gravel; boulder gravel locally in & near highlands.	Alluvial fans, piedmonts, and pediments; terraces along larger streams; commonly moderately dissected by streams.	2 to generally <10 m, rarely 15 m.	Strong to very strong.
Early Pleistocene (in places some late Pliocene)	13	Alluvial gravel, early Pleistocene.	Gravel (pebble, cobble, & boulder gravel).	Alluvial fans, piedmonts, & pediments; moderately to deeply dissected; locally underlies mesa-like landsurfaces.	3 to generally <10 m.	Very strong, commonly much truncated.
Holocene to middle Pleistocene	15	Alluvium, late & middle Quaternary (units 11 & 12 combined).	See units 11 and 12.	Lower parts of piedmonts and interiors of intermontane basins; valley lowlands in highlands.	2 to generally <10 m.	Nil to strong
Early-late to early Pleistocene	16	Alluvial gravel, mixed late to early Pleistocene.	Like unit 12.	Like units 12 and 13.	Ditto	Strong to very strong.
			ALLUVIUM (mainly) WITH SOME EOLIAN SAND			
Holocene to middle Pleistocene (early Pleistocene locally)	54	Alluvium (mid-Pleistocene, locally early Pleistocene) with some overlying eolian sand (Holocene to mid-Pleistocene).	Alluvium: Pebble to cobble gravel & pebbly sand. Eolian sand: fine to medium sand.	Gently sloping mesas (middle Pleistocene to Pliocene landsurfaces); piedmonts.	Ditto	Nil to very strong.

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AGE	MAP UNIT NUMBER	SHORT DESCRIPTION	PARTICLE SIZE/ LITHOLOGY	TOPOGRAPHIC OCCURRENCE	THICKNESS	SOIL-PROFI DEVELOPMEN
		ALLUVIUM (MOSTLY) WITH SOME EXPOSED BEDROCK				
Holocene and late Pleistocene	21	Alluvium like unit 11, with bedrock exposed in places.	See unit 11.	Like unit 11.	2 to generally <10 m.	Nil to moderat
Middle Pleistocene	22	Alluvium like unit 12, with bedrock exposed in places.	Like unit 12.	Like unit 12.	Ditto.	Strong to very strong.
Early Pleistocene (in places some late Pliocene)	23	Alluvial gravel like unit 13, with bedrock exposed in places.	Like unit 13.	See unit 13.	3 to generally <10 m.	Very strong; commonly much truncated.
Holocene to middle Pleistocene	24	Alluvium like unit 15, with bedrock exposed in places.	Like units 11 and 12.	Like unit 15.	2 to generally <10 m.	Nil to strong.
Early-late to early Pleistocene	25	Alluvial gravel like unit 16, with bedrock exposed in places.	Like unit 12.	Like units 12 and 13.	Ditto.	Strong to very strong.
[illegible]	26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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AGE	MAP UNIT NUMBER	SHORT DESCRIPTION	PARTICLE SIZE/ LITHOLOGY	TOPOGRAPHIC OCCURRENCE	THICKNESS	SOIL-PROFILE DEVELOPMENT
		ALLUVIAL VENEERS (IN PLACES) OVER PRE-QUATERNARY BASIN-FILL SEDIMENTS				
Middle Pleistocene	32	Middle Pleistocene gravel (capping) like unit 12	Pebble, cobble, and boulder gravel.	Alluvial fans & piedmonts, moderately dissected, in intermontane basins.	2 to generally <12 m.	Strong to very strong.
Early Pleistocene (in places some late Pliocene)	33	Early Pleistocene gravel (capping) like unit 13.	Ditto.	Ditto.	Ditto.	Very strong; commonly much truncated.
Holocene to middle Pleistocene	35	Quaternary capping like unit 15.	See units 11 and 12.	Ditto.	Ditto.	Nil to strong.
Early-late to early Pleistocene	36	Pleistocene gravel capping like unit 16.	See units 12 and 13.	Ditto.	Ditto.	Moderate to very strong.
Holocene to middle Pleistocene	38	Quaternary capping like unit 15, over basin-fill sediments that range locally into early Pleistocene (?).	See units 11 and 12.	Ditto.	Ditto.	Nil to strong.
			EOLIAN UNITS			
Holocene (mostly) to middle Pleistocene	56	Eolian sand (mostly); alluvial and colluvial sand and silt locally.	Mostly sand, some silt locally.	Piedmonts, pediments, mesas; valley sides & bottoms; lowlands of intermontane basins. Dune forms prevalent	Ditto.	Ditto.
Ditto.	28	Eolian sand, with pre-Quaternary bedrock exposed in places.	Ditto.	Ditto.	Ditto.	Ditto.
Ditto.	27	Eolian sand (mostly); alluvial & colluvial sand & silt locally; bedrock exposed in places, mainly [illegible]	Mostly sand; some silt and/or pebble gravel and pebbly sand locally.	Ditto.	Ditto.	Ditto.

AGE	MAP UNIT NUMBER	SHORT DESCRIPTION	PARTICLE SIZE/ LITHOLOGY	TOPOGRAPHIC OCCURRENCE	THICKNESS	SOIL-PROFILE DEVELOPMENT
			LACUSTRINE DEPOSITS			
Holocene and late Pleistocene	41	Pluvial-lake deposits in and around present-day playas.	In playas, mainly lacustrine silt & clay, some silty to sandy alluvium locally; in shore areas, mostly sand, pebbly sand, and some pebble gravel; sandy to silty alluvium locally.	Playas (dry lake beds) and semi-playas in basin interiors.	1 to generally < 15 m.	Nil to weak.
Ditto.	50	Mainly lacustrine, partly alluvial deposits.	Mostly silt, sand, and clay, some pebbly sand in places.	Marginal to playas and semi-playas in basin interiors.	2 to generally <10 m.	Nil to moderate.
Middle Pleistocene	43	Deltaic gravel of ancestral Gila River.	Mostly pebble and cobble gravel, with red granite and many other rock types.	Piedmonts bordering Gila River at eastern end of Safford (Gila) Valley, at west edge of Peloncillo Mts.	2 to >60 m.	Strong; commonly truncated.
			COLLUVIAL DEPOSITS			
Late to middle Pleistocene	61	Landslide debris	Rock masses & blocks <1 m to many m in dimension; poorly sorted.	Escarpment slopes and valley sides.	2 to >30 m.	Moderate to strong.
			GLACIAL DEPOSITS			
Holocene to middle Pleistocene	90	Till (bedrock exposed in places).	Silt, sand, gravel, with boulders/blocks commonly >1 m in diameter; poorly sorted.	Cirque basins and upper parts of a few valleys in the highest parts of the San Francisco & White Mts. End-moraines generally inconspicuous.	1 to ≥10 m.	Weak to strong.

AGE	MAP UNIT NUMBER	SHORT DESCRIPTION	PARTICLE SIZE/ LITHOLOGY	TOPOGRAPHIC OCCURRENCE	THICKNESS	SOIL-PROFILE DEVELOPMENT
			VOLCANIC ROCKS			
Holocene and later late Pleistocene (<100,000 ybp)	80	Basalt and basaltic andesite flows & cinders; <100,000 years old.	Cinder cones/sheets & lava flows; basaltic lapilli & cinders widespread at surface.	Rolling plateaus between San Francisco Mts. and Little Colorado R; locally in valley lowlands (e.g., of Little Colorado R.).	Generally 2 to <30 m.	Very weak to moderate.
Middle Pleistocene	81	Basalt & basaltic andesite flows & cinders.	Basalt & basaltic andesite lapilli, cinders, and flows.	Cinder cones/sheets and lava flows on plateaus and in intermontane basins	Generally 2 to <30 m; but some cinder cones are >60 m high.	Moderate to strong.
Late and middle Pleistocene	82	Ditto.	Ditto.	Ditto.	Ditto.	Ditto.
~~Middle and~~ Late ? early Pleistocene	83	Trachyte, dacite, & rhyolite flows & pyroclastics; small areas of basaltic rocks locally.	See 'description'	Hills and mountains in San Francisco Mts. area.	Probably 10 to >100 m.	Strong to very strong; commonl truncated.
Early Pleistocene	84	Basalt and basaltic andesite flows and cinders.	See 'description'.	Lava flows and cinder cones/sheets on plateaus and in intermontane basins	Generally 2 to <60 m, but some cinder cones are >60 m high.	Very strong; truncated in places.

OTHER MAP SYMBOLS

Special map symbol

R	"Bedrock." Pre-Quaternary sedimentary, volcanic, plutonic, and metamorphic rocks, undifferentiated. In places includes areas mantled by colluvium and/or alluvium that are too small to be mapped separately. As a general rule, areas mapped R have bedrock within 1 meter of the land surface over at least 60% of the area.
A or F	Artificial fill -- mine dumps, tailings ponds, etc. Shown only where total area exceeds 5 sq km.
E	Meteorite impact ejecta (around Meteor Crater, southeast of Flagstaff).

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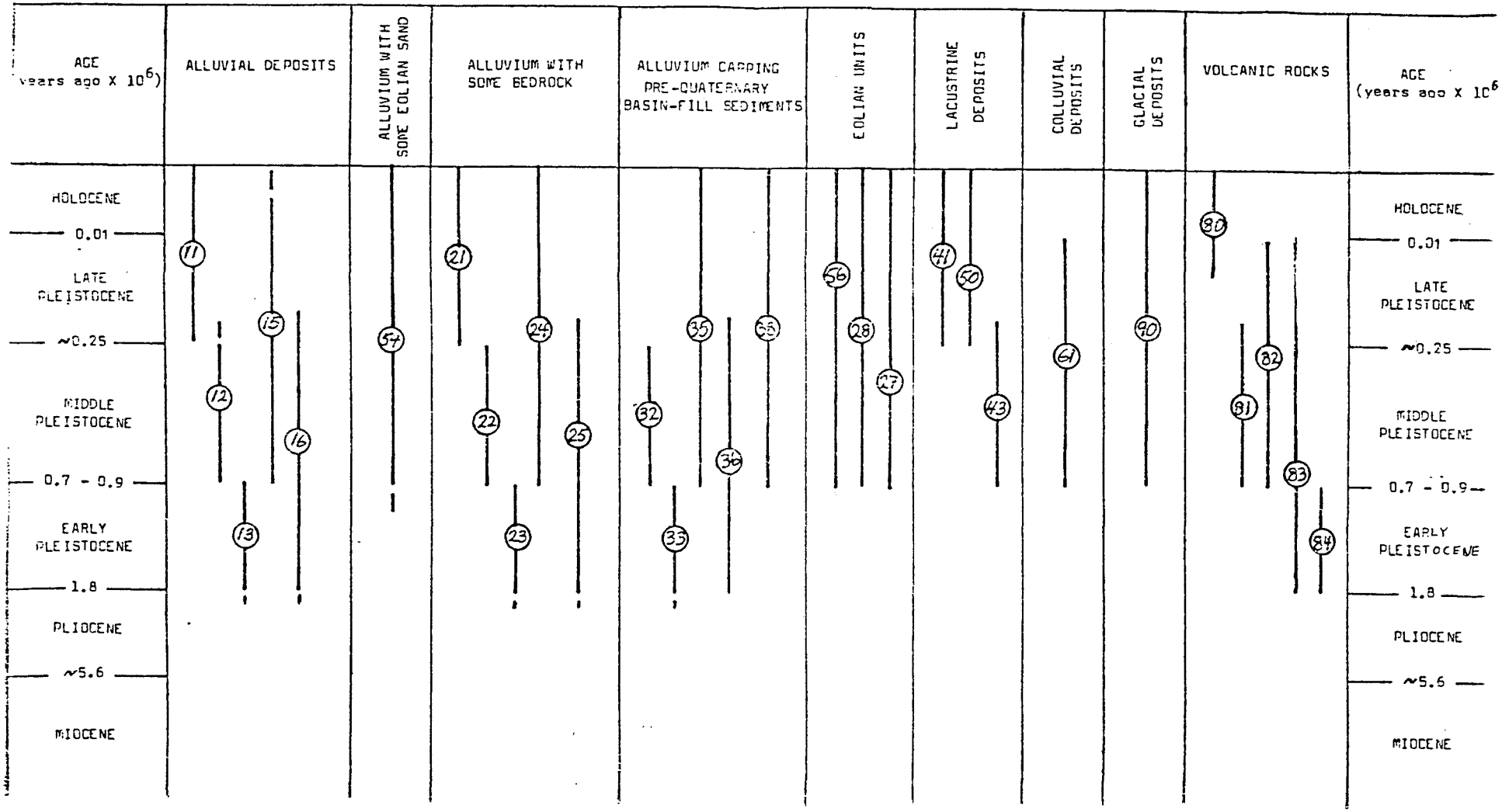
AGE RELATIONS OF LITHOGENETIC/STRATIGRAPHIC UNITS SHOWN ON MAP "QUARTERNARY DEPOSITS OF ARIZONA" (Scale 1:1,000,000) by R. B. Morrison and C. M. Menges, 1982



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