

Table 1. SUMMARY OF STRATA IN THE CENTRAL MINING DISTRICT, GRANT COUNTY, NEW MEXICO.

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SYSTEM	SERIES	FORMATION AND MEMBER	CHARACTER	THICKNESS (feet)
Quaternary	Recent and Pleistocene	Younger alluvium and colluvium	Practically unconsolidated alluvium and colluvium in valley floors, flat uplands, and on slopes. Cut by gullies locally. Mapped only where significant geology is covered. Includes sand, silt, gravel.	Variable
		Older alluvium and colluvium	Somewhat cemented alluvium in valleys and on minor divides; not always distinguishable from next older valley fill--the Mimbres (Gila) conglomerate. In places cemented by caliche and siliceous iron oxides. Contains Pleistocene mastodon remains locally.	Variable
Tertiary	Pliocene or Miocene (?)	Mimbres formation	UNCONFORMITY Somewhat lithified, poorly sorted, generally slightly bedded bolson deposits ranging from silts to boulder deposits. The general angularity of the fragments and the rock types present show material to be locally derived. Well sorted and thin-bedded sands and gravel lenses yield water but most of the beds have character of poor aquifer. Deeply eroded and beveled; cut by major faults. Essentially equivalent to the Gila conglomerate or the Santa Fe formation. Beyond district formation includes vesicular basalt flows and is intruded by basalt plugs.	0-1000 or more
		Basalt flows	Dark-gray stony aphanitic to finely crystalline matrix in which are sparse phenocrysts of iddingsite, olivine, magnetite, hypersthene, and augite. The matrix consists primarily of labradorite laths arranged in trachytic texture. The flows weather reddish brown especially at their vesicular upper part. About 800 feet of basalt, representing about 20 individual flows remain in the northern part of the district and about 500 feet, or 12 flows, in the southern part. South of the Chino pits a lens of rhyolite tuff lies within the basalt sequence. To the north, thick pebble conglomerates and gravels lie between groups of flows, and at the base are lenses of sandstone and basaltic tuff and coarse pebble conglomerates. To the south, the basalt rests directly on the deeply dissected and oxidized surface of the rhyolite tuffs. Farther east, in the Black Range, the rhyolite sequence is capped by hypersthene andesite and andesite flows.	About 850
	Miocene (?)	Rhyolite-quartz latite tuffs	In the southern part; divisible into an upper indurated crystal tuff member (0-65 feet) and a lower massive to crudely stratified crystal tuff member (400 to 600 feet). Between these two members of the Kneeling Nun tuff may be found sandstone and tuff beds as much as 30 feet thick underlain by a 10-foot thick layer of vesicular black pitchstone. In the northern part of the map area most of the tuff is eroded. However, northwestward it thickens abruptly and is underlain by a thin red-to-black pitchstone layer, not vesicular, contains angular rock fragments. Crystal fragments of quartz, sanidine, biotite, oligoclase and rock fragments are imbedded in compacted glass shards, in places completely devitrified or replaced by spherulitic growths of chalcedony. Characteristically pink to lavender.	About 700
		Lucky Bill formation	Well-cemented to friable, generally light-colored, well stratified and sorted gravel, sand, and pumiceous tuffs and conglomerates with variable amounts of crystal and lithic fragments. Upper contact gradational. Deposited on notably irregular surface. A 20-foot thick brown sandstone, with irregular lenses of angular conglomerate, provides a prominent key horizon within the thick sequence of gravels and tuffs.	50-600
		Rubio Peak formation	Not exposed in map area but appears in SE. corner of Santa Rita quadrangle and thickens rapidly southward to 5,000 feet. Type section includes andesite flows, agglomerates, tuffs, breccias, tuffaceous sandstones and conglomerates. The rocks are generally gray, brown, purple or black but some are cream or green.	0-5000
	Lower Tertiary	Wimsatville formation	UNCONFORMITY	
			Sand, gravel, conglomerate, and breccia deposited in steep-walled crater-like hole of elliptical outline between Hanover and Santa Rita. Marginal facie up to 300 feet wide is composed of indurated slump blocks and talus. Internal facie well-sorted and well-stratified sandstones and conglomerates including fragments of all older rocks, magnetite, pyrite, and skarn. No pyroclastic fragments found.	800-1000 ?
	Upper Cretaceous	Laramide volcanic sequence	UNCONFORMITY	
			The "Andesite breccia" of Paige. Purple, dark, andesite flows, andesite breccias and agglomerates intercalated with greenish brown to white sandstones, shales, arkoses, and conglomerates similar to beds in underlying Colorado formation. Coarse boulder deposits faintly bedded. Locally severely altered and generally lithified, in places cemented by stilbite and hematite. Also abundant epidote, chlorite and calcite. Rests with angular unconformity in nearby areas of Colorado formation.	0-1500 ?
	Cretaceous	Upper Cretaceous	Colbrado formation Sandstone member	About 800 feet of tan, greenish-brown and white sandstone and arkose beds alternating with dark-green, brown and black shale beds. Occasional brown or gray, 2-4-foot beds of limestone, locally fossiliferous; also calcareous sandstones are common. A prominent pebble conglomerate about 600 feet above the shale member makes a convenient marker bed and is shown on the map.
Colorado formation Shale member			About 200 feet of gray to black fissile shale except for few thin sandy layers and locally, 80 feet above the base, for a 20-25-foot bed of sandstone, absent north of Barringer fault. One or more gryphaea-rich beds make convenient key beds, one overlies the 25-foot sandstone unit.	200
Upper (?) Cretaceous		Beartooth quartzite	Fine-grained quartzite with thin shale partings; generally massive vitreous but locally thin or crossbedded and sandy. Light gray on fresh fracture, but weathers reddish brown. Near Three Brothers mine upper part is sandstone and shale--some gray to black and fissile, much like the shale member of the Colorado formation. Throughout district a conglomerate layer as much as 3 feet thick generally lies within 5 feet of the upper contact. The Bear-tooth quartzite probably is a near-shore facies of the Colorado formation.	50-140
Permian	Wolfcamp	UNCONFORMITY		
		Abo formation	Predominantly red shale, siltstone and limy mudstone with intraformational conglomerate lenses characterized by fragments of gray limestone, red shale, and chert in red mudstone matrix. Thin beds of olive green to brown limestone occur in calcareous massive mudstone and red shales with ovoid calcareous nodules. Nonfossiliferous in the district. Eroded from SW. part of district. Thickens to the northeast and east.	0-500; maximum in district about 200; 640 in Black Range
Pennsylvanian		Syrena formation (Magdalena group)	At the base: 35-40 feet of blocky to fissile, black, fetid silty limestone (weathers brown locally) containing long fossiliferous gray limestone lenses 3-5 feet thick and/or lenses of limestone conglomerate containing algal-coated pebbles and cobbles; overlain by 30 feet of 3-4-inch nodules of blue-gray limestone set in a dense dark-gray silty limestone matrix or mortar whose weathered tan surface is porous silt, leached of carbonate. Overlain by 10-40 feet of olive-green to brown fissile shale and limy shale. Remainder of Syrena is composed of alternating groups of beds of pure gray limestone (some crinoidal), silty limestone, and brown, yellow, and red, shales. Gray limestone nodules in tan matrix characteristic. Generally fossiliferous. Pronounced lateral variation in detailed lithology.	170-390
		Oswaldo formation (Magdalena group)	Predominantly blue-gray dense, thick-bedded, cherty limestone beds with shale partings ranging in thickness from a few inches to a few feet--one or two beds, may be 10 feet. Small to large lenses of coarse grained sandstone appear locally in the section 70 to 125 feet above the base. These are shown on the map (Coss). A 20-40-foot gray or reddish shale occurs at the base, the so-called "Parting Shale member." Top 3-5 feet dense cherty but pure limestone--otherwise top 50-80 feet consists of thin alternating beds of pure limestone, in part crinoidal, and silty limestone. Weathered, these beds form a banded or striped zone of light-gray and tan beds. The limestone between the basal parting shale and a persistent quartz diorite sill (commonly 80-100 feet above the shale) is locally called "the middle blue limestone". Above the sill, but below the striped beds, is the "upper blue limestone".	330-420
Mississippian	Osage	UNCONFORMITY		
		Lake Valley formation	Divisible into 4 mappable units. Basal member (Andreito of Laudon and Bowsher 1949) 15-41 feet, thin-bedded, slabby, bryozoan, crinoidal limestone with thin shale partings. Above this, a cliff forming member (Alamogordo member) 20-44 feet light to dark gray, generally thick-bedded, fine grained, fossiliferous limestone with many loaf-like masses of black chert; overlain by a weak member consisting of 170 feet more or less of alternating crinoidal, or dark-gray bryozoan limestone and shaly limestones, marls and slabby limestones; and a top member variously referred to as the "Hanover limestone" or the "Crinoidal limestone"; consists of about 100 feet of massive white to light-gray crinoidal limestone, largely marble with sparse white to light-gray chert nodules up to a foot in length. This unit, principal host rock of zinc ores, is differentiated on the district map. The lower members are the "lower blue" of the local miners.	300-400
Devonian	Upper Devonian	Percha shale Box member Ready Pay member	Readily divided into two mappable units: Lower member, named the Ready Pay member by F. V. Stevenson (1945) is composed of predominantly black fissile shale but one-eighth-inch blue argillaceous limestone beds and tan calcareous shales with white calcite layers one-eighth-inch thick appear in the lower 25 feet. These calcareous basal beds locally are converted to porcelain-like material. The upper or Box member consists of about 95 feet of gray shales and limy shales with abundant one- to four-inch fossiliferous limestone nodules and one or two 6-inch beds of limestone, in part crinoidal. Members differentiated west of Hanover-Fierro stock.	230-315
		UNCONFORMITY		
Silurian	Lower to middle Silurian	Fusselman limestone	Gray limestone and dolomite in unmetamorphosed areas. Fossils destroyed by dolomitization and alteration. Base not recognized in mining district, hence included in underlying Montoya limestone; weathered surface resembles tan shark skin. Fresh rock is brownish gray to gray fine-grained massive dolomite. Sparse chert nodules. Chief host of silver-lead ores in numerous mining districts, possibly because overlain by Percha shale. Scarcely prospected in the Central mining district in spite of known deposits in adjoining Georgetown district.	30-40; near Silver City
Ordovician	Upper Ordovician (Cincinnatian)	Montoya limestone	Basal unit medium- to coarse-grained sandstone grading upward into a sandy dolomite. Ranges from a few feet to 28 feet, and 35 feet in neighboring districts. Only 1 to 2 feet thick along east margin of Hanover-Fierro stock, but 28 feet east of Georgetown; grains up to 5 mm. of milky white opalescent quartz. This distinct unit has been called Cable Canyon sandstone. A middle member, 200 feet thick more or less, is composed of dark gray to black, (weathering light gray to brown) fine-grained massive dolomite (and limestone probably) in which prominent chert zones occur at differing horizons above the base. Layers and nodules of gray, pink, or brown chert 15, 26, 45, and 75 feet thick are known 8, 15, 40, 55 and 90 feet above the sandstone in 3 measured sections; only 1 or 2 prominent zones occur in any one locale. Above the highest chert zone this member consists of black--very fine-grained crystalline dolomite with chert nodules, some incompletely filled. The upper member, about 200 feet is dominantly white to light gray, finely crystalline, thin-bedded limestone with irregular chert in upper part.	370-430 or 470
		Lower Ordovician (Canadian)	El Paso limestone	Lower 400 feet predominantly thin- to medium-bedded light gray to gray-tan limestone or dolomite with abundant thin crinkled and reticulated siliceous layers; some dark gray beds; mostly finely crystalline--abundant branching bryozoan, gastropods, cystoid plates in lower 150 feet, occasional 3-4-foot shales and thin crinoidal limestone beds. Forms moderate slope with ledges. Upper 100 is massive to thick-bedded, very finely crystalline light gray limestone. Very few wavy siliceous bands--sparse white irregular nodular chert becoming very abundant in top few feet. Flower, R. H. (1953) divides the section into two members: a basal 160-foot Sierrite limestone and the Bat Cave formation--400 feet.
Cambrian	Upper Cambrian to Lower Ordovician (Croixian)	Bliss formation	Poorly sorted conglomerate with boulders of Precambrian greenstone up to 4 feet long locally at the base; grades upward to cobble and gravel beds. Overlain by dolomite, conglomerates, and thin glauconite beds and limestone beds with shale partings. Base of rusty-brown crossbedded ortho-quartzite 25 feet thick about 50 feet from base. A 17-20-foot similar quartzite occurs at the top. Between the quartzites are 50 feet of thin-bedded, yellow-brown glauconitic limestone and limestone conglomerate.	146
		UNCONFORMITY		
Precambrian		Basement complex	Granite, gneiss, muscovite-schists, greenstone, biotite spotted hornfels.	

