Summary Table: Characteristics of the Ecoregions of New Mexico

20. COLORADO PLATEAUS

Level IV Ecoregions		Physiography		Geology	Soils			Climate			Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
20b. Shale Deserts and Sedimentary Basins	233	Nearly level basins and valleys, benches, low rounded hills, and badlands. Ephemeral washes and arroyos.	4900-6070/ 100-400	Quaternary colluvium with large areas of bedrock outcrop, colluvium with valley-fill alluvium, some river alluvium and eolian deposits. Cretaceous Mancos Shale.	Aridisols (Haplocambids), Entisols (Torriorthents, Torrifluvents)	Littlehat, Persayo, and Fordbutte on uplands; Ravola, Bebeevar, and Tocito on floodplains and terraces of San Juan River.	Mesic/ Aridic	8-10	140-150	15/42; 58/95	Salt desert scrub sparsely vegetated with mat saltbush, fourwing saltbush, Nuttall's saltbush, greasewood, and shadscale. Native grasses included alkali sacaton, galleta grass, poverty threeawn, sand dropseed, and Indian ricegrass. Badland areas have little to no vegetation cover.	Shrubland. Some low density livestock grazing, small areas of irrigated cropland of alfalfa, hay, wheat, or corn on floodplain and terraces of San Juan River. Most all is tribal land (Navajo).
20c. Semiarid Benchlands and Canyonlands	1231	Mesas, benches, cuestas, cliffs, and canyons. Mostly ephemeral and intermittent streams with a few larger rivers originating in Ecoregion 21.	5500-7100/ 300-800	Quaternary colluvium, block-rubble colluvium, valley-fill alluvium, and river alluvium. Tertiary (Eocene, Paleocene) and Cretaceous sandstone, shale, mudstone, and conglomerate. Some Cretaceous coal-bearing rock in the west.	Entisols (Torriorthents, Ustorthents), Alfisols (Haplustalfs), Aridisols (Haplargids)	Weska, Vessilla, Menefee, Orlie, Blancot, Persayo, Farb, Farview	Mesic/ Ustic Aridic, Aridic Ustic	10-16	120-140	17/41; 58/90	One-seed, Rocky Mountain, and Utah junipers, some pinyon pine at higher elevations, big sagebrush and Bigelow sagebrush, fourwing saltbush, shadscale, antelope bitterbrush, galleta, Indian ricegrass, and blue grama.	Evergreen woodland and shrubland. Livestock grazing, some irrigated cropland of hay and grain for livestock on floodplains and low terraces, recreation, wildlife habitat. Oil and gas production, coal mining. Mostly public land (BLM) and tribal land (Ute Mountain).
20d. Arid Canyonlands	54	In New Mexico, mostly the floodplain and terraces of the San Juan River. In the other Four Corner states, narrow canyons, cliffs, benches, mesas, and cuestas. Terrain deeply eroded by major rivers and their tributaries.	4650-5020/ 100-300	Quaternary river alluvium, colluvium with valley-fill alluvium. Cretaceous and Jurassic shale, siltstone, and sandstone.	Entisols (Torriorthents, Torrifluvents), Aridisols (Haplocalcids)	Claysprings, Tocito, Myton, Nakai, Nageezi, Fruitland, Bebeevar	Mesic/ Aridic	7-9	145-155	15/42; 58/95	Desert scrub with shadscale, mormon tea, four wing saltbush, sand sagebrush, and some drought tolerant grasses including galleta and Indian ricegrass. Blackbrush is common in Utah and Arizona. Floodplains may contain some New Mexico olive, willow, and Fremont cottonwood.	Shrubland. Low density livestock grazing, wildlife habitat. All in tribal land (Navajo).

21. SOUTHERN ROCKIES

Level IV Ecoregions		Physiography		Geology	Soils			Climate			Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation / Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
21a. Alpine Zone	95	Mostly glaciated. High mountains with steep slopes, ridges, and exposed rocky peaks above timberline. Some wetlands and glacial lakes. High gradient headwater streams with boulder, cobble, and bedrock substrates.	11000-13161/ 600-2000	Quaternary block rubble colluvium and glacial till. Exposed bedrock. Tertiary andesitic lava, basalt, breccia, tuff, and conglomerate. Precambrian schist, quartzite, granite, and granitic gneiss. Permian and Pennsylvanian conglomerate, sandstone, siltstone, and limestone.	Inceptisols (Dystrocryepts)	Penitente, Ptarmigan, Bross, rock outcrop	Cryic/ Udic	25-55 Deep winter snowpack	40-50	2/27; 38/69	Alpine meadows dominated by alpine avens, bistort, alpine sage, tufted hairgrass, alpine fescue, alpine bluegrass, kobresia, and various sedges. On rockfields, cushion plants such as alpine clovers, alpine forget-me-not, alpine sandwort. Willow thickets occur in depressions and wet meadows. At lower edges, krummholz ("twisted wood") with stunted, deformed Engelmann spruce, subalpine fir, and sometimes bristlecone pine.	Snow, ice, bare rock, alpine meadows. Recreation, wildlife habitat (including Rocky Mountain bighorn sheep, white-tailed ptarmigan, snowshoe hares, yellow-bellied marmots, and pika). Mostly public land (USDA-FS Carson and Santa Fe National Forests). Snowmelt provides water to lower-elevation ecoregions.
21b. Crystalline Subalpine Forests	617	High mountains with steep slopes. High gradient perennial streams with boulder, cobble, and bedrock substrates.	Mostly 9000-11500, maximum 12115/ 600-2000	Quaternary block-rubble colluvium, colluvium, and some glacial till. Tertiary intrusive rocks; Precambrian metasedimentary, metavolcanic, and intrusive rocks including pelitic schist, amphibolite, quartz-muscovite schist, quartzite, granitic gneiss, and granitic rocks.	Alfisols (Palecryalfs, Glossocryalfs, Haplocryalfs), Inceptisols (Dystrocryepts, Cryochrepts, Eutrocryepts)	Bundo, Angostura, Tolby, Marosa, Nambe, Bracos, Gromes	Cryic/ Udic, Ustic	24-40 Deep winter snowpack	50-70	6/30; 38/70	Engelmann spruce, corkbark fir or subalpine fir, often interspersed with aspen groves or mountain meadows. Some areas with limber pine and Rocky Mountain bristlecone pine. Douglas-fir, white fir, and blue spruce occur at lower elevations. Understories may contain myrtle huckleberry, bearberry honeysuckle, currants, grouse whortleberry, and many grass and forb species.	Evergreen and some deciduous forest. Timber production, recreation, hunting, wildlife habitat, and seasonal grazing. Some mineral mining. Snow cover is a major source of water for lower, more arid ecoregions. Mostly public land (USDA-FS Carson and Santa Fe National Forests).
21c. Crystalline Mid-Elevation Forests	728	Low mountain ridges, slopes, and outwash fans. Moderate to high gradient perennial streams with boulder, cobble, and bedrock substrates.	7600-10100/ 600-2000	Quaternary block rubble colluvium, colluvium with valley-fill alluvium, and alluvium. Tertiary intrusive rocks; Precambrian metasedimentary, metavolcanic, and intrusive rocks including pelitic schist, amphibolite, quartz-muscovite schist, quartzite, granitic gneiss, and granitic rocks.	Alfisols (Palecryalfs, Glossocryalfs, Haplustalfs), Inceptisols (Haplustepts, Dystrocryepts), Entisols (Ustorthents)	Bundo, Angostura, Tolby, Cypher, Abreu, Mirabal	Frigid, Cryic/ Udic, Ustic	18-28	70-110	9/36; 42/76	Mostly ponderosa pine forest; some areas with pinyon pine or junipers at low elevations and south slopes. Understory may include Gambel oak, mountain mahogany, antelope bitterbrush, wax currant, skunkbush, wood rose, kinnikinnick, mountain muhly, Junegrass, Arizona fescue, pine dropseed, and various sedges. Higher elevations include areas of Douglas-fir and white fir forests, limber pine, and a few small areas of aspen.	Evergreen and some deciduous forest. Wildlife habitat, livestock grazing, timber production, recreation, and mineral extraction. Mostly public land (USDA-FS Carson and Santa Fe National Forests).
21d. Foothill Woodlands and Shrublands	3787	Hills, ridges, and footslopes. Moderate to high gradient perennial, intermittent, and ephemeral streams with cobble, gravel, and sandy substrates.	Mostly 6000-8500, maximum 9600/ 300-1000	Quaternary block rubble colluvium, colluvium with valley-fill alluvium, colluvium, and alluvium. Tertiary and Cretaceous sandstone, shale, and conglomerate; some Permian and Pennsylvanian sandstone, mudstone, and conglomerates; some Quaternary tuffs, Tertiary basaltic to andesitic lava, and Tertiary intrusive rocks; Precambrian metasedimentary, metavolcanic, and plutonic rocks.	Alfisols (Haplustalfs, Paleustalfs), Inceptisols (Haplustepts), Entisols (Ustorthents), Mollisols (Argiustolls, Haplustolls)	Trampas, Mirand, Devisadero, Espiritu, Wauquie, Hogg, Mara, Rombo, Berryman, Ruson, Elpedro, Stout, Pinitos, Menefee, Montecito, Capillo, Apache	Frigid, Mesic/ Ustic, Aridic Ustic	12-20	90-100	12/40; 48/85	Pinyon-juniper woodlands, sagebrush and mountain mahogany shrublands, Gambel oak woodlands. Other common low shrubs are serviceberry, skunkbush, and sumac. Interspersed are some varied foothill-mountain grasslands with blue grama, prairie junegrass, or western wheatgrass.	Woodland, shrubland, some grassland. Livestock grazing and some irrigated hayland adjacent to perennial streams. Some public land (USDA-FS Carson and Santa Fe National Forests, BLM) and tribal land (Jicarilla Apache, Jemez, Picuris).
21e. Sedimentary Subalpine Forests	529	High mountains with steep slopes. High gradient perennial streams with boulder, cobble, and bedrock substrates.	8900-12000/ 600-2000	Quaternary block-rubble colluvium, colluvium, and some glacial till. Permian and Pennsylvanian conglomerate, sandstone, siltstone, and limestone; some Cretaceous sandstone and shale in the north. In west, Tertiary (Miocene to Eocene) sandstone and conglomerate, some Cretaceous shale and sandstone.	Alfisols (Haplocryalfs, Glossocryalfs, Palecryalfs)	Presa, Jaroso, Angostura, Diamante, Mascarenas	Cryic/ Udic, Ustic	24-40 Deep winter snowpack	50-70	6/30; 38/70	Englemann spruce, corkbark fir or subalpine fir, often interspersed with aspen groves or mountain meadows. Some areas with limber pine and Rocky Mountain bristlecone pine. Douglas-fir, white fir, and southwestern white pine occur at lower elevations. Understories may contain myrtle huckleberry, bearberry honeysuckle, currants, grouse whortleberry, and many grass and forb species.	Evergreen and some deciduous forest. Timber production, recreation, hunting, wildlife habitat, and seasonal grazing. Some mineral mining. Snow cover is a major source of water for lower, more arid ecoregions. Mostly public land (USDA-FS Carson and Santa Fe National Forests), some tribal land (Pueblo de Taos).
21f. Sedimentary Mid-Elevation Forests	2997	Low mountain ridges, slopes, and outwash fans. Moderate to high gradient perennial streams with boulder, cobble, and bedrock substrates.	6800-9900/ 400-1500	Quaternary block rubble colluvium, colluvium, colluvium with valley-fill alluvium, and alluvium. Tertiary and Cretaceous sandstone, mudstone, conglomerate, and shale; some Jurassic sandstone; Permian and Pennsylvanian conglomerate, sandstone, siltstone, and limestone.	Alfisols (Haplustalfs, Paleustalfs, Palecryalfs, Haplocryalfs), Entisols (Ustorthents), Mollisols (Argiustolls)	Dargol, Fuera, Vamer, Midnight, Capillo, Nabor, Maes, Etoe, Derecho, Diamante	Frigid, Cryic/ Udic, Ustic	16-29	70-110	10/37; 44/78	Mostly ponderosa pine forest; some areas with pinyon pine or junipers. Understory may include Gambel oak, mountain mahogany, antelope bitterbrush, wax currant, skunkbush, wood rose, kinnikinnick, mountain muhly, Junegrass, Arizona fescue, pine dropseed, and various sedges. Higher elevations include areas of Douglas-fir and white fir forests, and a few small areas of aspen.	Evergreen and some deciduous forest. Timber production, summer livestock grazing, wildlife habitat, and recreation. Some mineral mining. Some public land (USDA-FS Carson and Santa Fe National Forests) and tribal land (Jicarilla Apache, Pueblo de Taos).
21g. Volcanic Subalpine Forests	562	High mountains with steep slopes. High gradient perennial streams with boulder, cobble, and bedrock substrates.	9000-11953/ 600-2000	Quaternary block-rubble colluvium, colluvium, rhyolitic volcanics, and some glacial till. Quaternary and Tertiary pyroclastic material, breccia, and volcanic ash flows, including basalt, andesitic lavas, and water-laid volcanics and conglomerates.	Alfisols (Haplocryalfs, Haplustalfs) Mollisols (Argiustolls), Entisols (Cryorthents)	Redondo, Origo, Marosa, Burnac, Ess, Rusbach	Cryic, Frigid/ Udic, Ustic	24-38 Deep winter snowpack	50-70	6/30; 38/70	Englemann spruce, corkbark fir or subalpine fir, often interspersed with aspen groves or mountain meadows. Some areas with limber pine and Rocky Mountain bristlecone pine. Douglas-fir, white fir, and southwestern white pine occur at lower elevations. Understories may contain myrtle huckleberry, bearberry honeysuckle, currants, grouse whortleberry, and many grass and forb species.	Evergreen and some deciduous forest. Timber production, recreation, hunting, wildlife habitat, and seasonal grazing. Some gold mining. Snow cover is a major source of water for lower, more arid ecoregions. Some public land (USDA-FS Carson and Santa Fe National Forests).
21h. Volcanic Mid-Elevation Forests	690	Low mountain ridges, slopes, and outwash fans. Moderate to high gradient perennial streams with boulder, cobble, and bedrock substrates.	7500-10000/ 400-2000	Quaternary block-rubble colluvium, colluvium, colluvium with valley-fill alluvium, rhyolitic volcanics, some eolian deposits in the east. Quaternary and Tertiary pyroclastic material, breccia, and volcanic ash flows, including basalt, andesitic lavas, and water-laid volcanics and conglomerates.	Alfisols (Haplustalfs, Haplocryalfs), Mollisols (Haplustolls), Inceptisols (Haplustepts)	Jemez, Totavi, Cajete, Burnac, Palon, Origo, Calaveras	Frigid, Cryic/ Ustic	18-28	70-110	9/36; 42/76	Mostly ponderosa pine forest. Understories may include Gambel oak, mountain mahogany, antelope bitterbrush, wax currant, skunkbush, wood rose, kinnikinnick, mountain muhly, Junegrass, Arizona fescue, Parry's oatgrass, and various sedges. Blue spruce occurs on mesic sites. Douglas-fir and white fir forests and small areas of aspen are found at higher elevations.	Evergreen and some deciduous forest. Wildlife habitat, summer livestock grazing, timber production, and recreation. Some silver and gold mining. Mostly public land (USDA-FS Santa Fe National Forest).
21j. Grassland Parks	204	High intermontane valleys, some basalt mesa tops in the east. Moderate gradient perennial streams with cobble, gravel, and sandy substrates. Some wetlands.	7700-9820/ 100-400	Quaternary alluvium, colluvium with valley-fill alluvium, and on Johnson Mesa some discontinuous eolian deposits. Quaternary and Tertiary lavas and tuffs; in the Moreno Valley a complex mix of Mesozoic and Paleozoic sedimentary rocks, Tertiary intrusives, and Precambrian granite and gneiss.	Mollisols (Haplustolls, Argialbolls, Argiustolls, Hapludolls, Endoaquolls)	Jarmillo, Tranquilar, Jarolla, Vastine, and Cosey in the Jemez Mountains; Morval, Moreno, Brycan, and Frolic in the Moreno Valley; Raton and Barela on Johnson Mesa.	Frigid/ Ustic	17-24	80-100	6/37; 41/78	Grasslands with bunchgrasses are dominant and include Parry's oatgrass, Arizona fescue, Idaho fescue, Thurber fescue, mountain muhly, bluebunch wheatgrass, needle-and-thread grass, Junegrass, and slender wheatgrass.	Grassland. Recreation, livestock grazing, and wildlife habitat. Large elk herds in Moreno Valley, Valles Caldera, and Valle Vidal.

22. ARIZONA/NEW MEXICO PLATEAU

Level IV Ecoregions		Physiography		Geology	Soils			Climate			Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
22a. San Luis Shrublands and Hills	297	Plains, foothills, and some low mountains. Mostly ephemeral and some intermittent streams.	7500-9300/ 200-600	Quaternary colluvium and discontinuous eolian deposits. Tertiary (mostly Pliocene) basaltic to andesitic lava flows.	Aridisols (Haplocalcids, Calciargids)	Travelers, Garita, Luhon, Stunner	Frigid/ Ustic Aridic, Aridic	9-12	95-115	5/37; 47/80	Big sagebrush, rabbitbrush, winterfat, and broom snakeweed occur as well as grasslands of western wheatgrass, green needlegrass, blue grama, and needle-and-thread.	Shrubland and grassland. Low density livestock grazing, wildlife habitat. Mostly public lands (BLM, State).
22b. San Luis Alluvial Flats and Wetlands	67	Irregular plains. In Colorado, wetlands, springs, and areas with a high water table. A few large perennial streams which originate in nearby mountains.	7500-9020/ 100-400	Quaternary alluvium of gravel, sand, and silt. In New Mexico, mostly fan alluvium.	Aridisols (Haplargids, Calciargids)	Tenorio, Fernando, Silva	Mesic/ Aridic, Aridic Ustic	10-14	115-130	7/36; 49/82	Big sagebrush, blue grama, sand dropseed, some rabbitbrush and winterfat.	Shrubland, some grassland. Low density livestock grazing, some irrigated cropland for hay.
22f. Taos Plateau	839	Rolling to level plateau, some volcanic cones, deep river gorge. Mostly ephemeral and intermittent streams, a few perennial streams from nearby mountains.	Mostly 5900-8500, peaks to 10093/ 200-1000	Quaternary eolian deposits, colluvium, piedmont and fan alluvium, block-rubble colluvium. Tertiary (mostly Pliocene) basalt and volcanic rocks.	Aridisols (Haplocalcids, Haplargids), Alfisols (Haplustalfs)	Petaca, Servilleta, Chita, Montecito	Mesic/ Ustic Aridic, Aridic Ustic	11-14	100-130	8/38; 50/82	Big sagebrush with winterfat, rabbitbrush, and broom snakeweed; some grasses of western wheatgrass, blue grama, galleta, alkali sacaton, and sand dropseed; a few pinyon pine and juniper.	Shrubland. Rangeland with low density grazing, wildlife habitat, and some small areas of irrigated cropland. Some public land (USDA-FS Carson National Forest, BLM, State) and tribal land (Pueblo de Taos).
22g. Rio Grande Floodplain	363	River channel and floodplain, low terraces, levees.	4690-6000/ 10-20	Quaternary river alluvium and terrace deposits of sand, silt, and gravel.	Entisols (Torrifluvents, Ustifluvents, Torripsamments)	Gilco, Peralta, Aga, Abiquiu, Alcalde in north; Gila, Brazito, Vinton, Glendale in south.	Mesic in north; thermic to the south/ Ustic, Aridic	8-9	160-190	20/48; 60/92	Bosque of cottonwood and willow with understories of coyote willow, New Mexico olive, false indigo, and seepwillow widely replaced by invasive saltcedar and Russian olive.	Pasture, cropland, orchards, vineyards, livestock grazing, and urban. Water flows and habitat are a concern for recovery of the endangered Rio Grande silvery minnow.
22h. North Central New Mexico Valleys and Mesas	1387	Mesas, valleys, piedmont slopes, deep canyons, a few scattered hills. Some perennial and many intermittent streams from surrounding mountain ecoregions.	5300-8052/ Mostly 200-600, maximum 1000	Quaternary colluvium, colluvium with valley-fill alluvium, and fan alluvium. Tertiary sedimentary, Tertiary and Quaternary volcanic rocks, and some small areas of Cretaceous, Jurassic, or Triassic sedimentary rocks.	Aridisols (Haplocambids, Haplargids, Calciargids, Paleargids), Entisols (Torriorthents, Torripsamments, Ustipsamments), Alfisols (Haplustalfs)	Parida, Palacid, Florita, Pinavetes, Penistaja, Razito, Fruitland, Silver, Pojoaque, Panky, El Rancho, Scholle, Hagerman, Vibo, Royosa, rock outcrop	Mesic/ Ustic Aridic, Aridic Ustic	10-16	135-170	16/43; 55/87	Pinyon-juniper woodland and juniper savanna with grasses of galleta, Indian ricegrass, blue grama, black grama, threeawns, and sand dropseed.	Grassland, shrubland, evergreen woodland, some urban. Livestock grazing. Some public (USDA-FS, BLM) and tribal land (San Juan, Santa Clara, San Ildefonso, Pojoaque, Nambe, Tesuque, Cochiti).
22i. San Juan/Chaco Tablelands and Mesas	6753	Plateaus, mesas, benches, cuestas, hogback ridges, cliffs, canyons, and valleys. Mostly ephemeral and some intermittent streams.	4800-7785/ 200-900	Quaternary discontinuous, thin, sandy eolian deposits; colluvium with large areas of bedrock outcrop, colluvium with valley-fill alluvium. Tertiary (Eocene, Paleocene) and Cretaceous sandstone, shale, mudstone, and conglomerate, including Cretaceous coal-bearing formations.	Aridisols (Haplocambids, Haplargids, Calciargids, Haplocalcids), Entisols (Torriorthents, Torripsamments, Torrifluvents)	Shiprock, Doak, Littlehat, Persayo, Sheppard, Sparank, Farb, Kimbeto, Denazar, Blancot, Tsosie, Doakum, Betonnie	Mesic/ Aridic, some Ustic Aridic	6-10	130-160	18/42; 57/90	Mix of desert scrub, semi-desert shrub-steppe, and semi-desert grasslands. Shadscale, fourwing saltbush, mat saltbush, greasewood, ephedra, Indian ricegrass, alkali sacaton, galleta, blue and black gramas. Some one-seed, Utah, or Rocky Mountain junipers on higher mesas.	Shrubland, some areas of sparse grassland, or barren. Low-density livestock grazing of cattle, sheep, goats, and horses; coal, oil, and gas production. Some irrigated agriculture of hay, alfalfa, corn, potatoes, wheat, and apples along and south of San Juan River. Mostly tribal (Navajo) and public (BLM) land.
22j. Semiarid Tablelands	8509	Mesas, plateaus, cliffs, canyons, and valleys. Mostly ephemeral and some intermittent streams.	5200-8748/ 300-1500	Quaternary colluvium with valley-fill alluvium, basalt flows, colluvium, discontinuous eolian deposits. Cretaceous, Jurassic, and Triassic sedimentary rocks of sandstone, shale, and mudstone, some areas of Tertiary and Quaternary volcanic fields.	Alfisols (Haplustalfs), Entisols (Torrifluvents, Ustorthents), Aridisols (Haplargids, Paleargids), Mollisols (Argiustolls)	Flugle, Pinitos, Silkie, Navajo, Atarque, Celacy, Datil, Jacee, Goesling, Hubbell, Vessilla, Viuda, Veteado, Cabezon, rock outcrop	Mesic/ Aridic Ustic, Ustic Aridic	10-15	120-150	15/45; 52/86	Scattered juniper and pinyon-juniper woodland, with alkali sacaton, shadscale, fourwing saltbush, mixed gramas, western wheatgrass, and some winterfat.	Shrubland, woodland, some grassland. Livestock grazing, wildlife habitat. Some tribal land (Zuni, Navajo, Acoma, Laguna) and public land (BLM, State).
22k. Lava Malpais	239	Irregular plains of lava flows, cinder cones, lava tubes, caves.	6300-8200/ 20-100	Holocene basaltic volcanic flows. Pleistocene volcanic flows.	Aridisols (Haplargids), Mollisols (Argiustolls)	Lava flows and lava rockland, mostly devoid of soils. Variable soils occur in small pockets that may include Viuda or Raton.	Mesic/ Ustic Aridic, Ustic	11-13	140-150	14/48; 54/89	Some bare areas, some grasses of blue grama and sideoats grama; shrubs of Apache plume and New Mexico olive; some stunted pinyon pine, Douglas-fir, and ponderosa pine. Some plants indicative of a "mesic island" i.e., moister than the land around it. Ferns may grow in small cracks in shady exposures.	Bare rock, shrubland, woodland. Wildlife habitat, recreation. Most all is public land (NPS-El Malpais National Monument, BLM-El Malpais National Conservation Area).
22l. Plains of San Agustin	1017	Closed basin, playa lake, alluvial fans, piedmont slopes. Ephemeral washes and streams near the margins from surrounding foothills.	6060-7740/ Mostly 20-100, maximum 700	Deep Holocene and Pleistocene playa alluvium, shoreline deposits, colluvium and alluvium, and eolian deposits. Tertiary lavas and tuffs.	Inceptisols (Haplustepts), Vertisols (Haplusterts), Entisols (Ustifluvents), Mollisols (Argiustolls), Alfisols (Haplustalfs)	Telescope, Catman, Hickman, Loarc, Augustine	Mesic/ Aridic Ustic	11-13	130-150	18/47; 55/85	In low areas: alkali sacaton, fourwing saltbush, and greasewood. Some western wheatgrass, blue grama, sand dropseed, vine-mesquite. On higher slopes: juniper and some pinyon.	Shrubland, grassland, some barren land. Livestock grazing. Some public land (State, BLM). Space observation (Very Large Array Radio Astronomy Observatory).
22m. Albuquerque Basin	2884	Plains and piedmont plains with alluvial fans and some scattered hills. Mostly ephemeral and intermittent streams.	Mostly 4800-6600, peaks to 7292/ Mostly 200-600, maximum 1000	Quaternary fan alluvium, colluvium. Deep Quaternary and Tertiary sediments, small areas of Quaternary basalt.	Aridisols (Haplocalcids, Calciargids, Haplocambids, Haplargids), Entisols (Torrifluvents, Torriorthents, Ustorthents)	Wink, Turney, Madurez, Pajarito, Gila, Kokan, Embudo, Tijeras, Clovis, Zia, Grieta; in the north, Pinavetes, San Mateo, Ildefonso, Silver, Harvey, Witt, Sedillo, Placitas, Royosa, Waumac.	Thermic, Mesic in north/ Aridic,Ustic Aridic	8-11	170-200	19/49; 62/92	Sand scrub and desert grassland including black grama, sand dropseed, mesa dropseed, blue grama, galleta, sand sage, alkali sacaton, and threeawns.	Shrubland and grassland, urban and suburban, barren land. Some livestock grazing. Water withdrawals have lowered groundwater levels in many areas. Some tribal land (Zia, Santa Ana, Santo Domingo, San Felipe, Sandia, Isleta).
22n. Near-Rockies Valleys and Mesas	986	Mesas, benches, cuestas, cliffs, and canyons. Ephemeral and intermittent streams.	5780-7570/ 200-800	Quaternary block-rubble colluvium and colluvium with valley-fill alluvium. Tertiary (Eocene, Paleocene) sandstone, shale, and mudstone, small area of Cretaceous sandstone and shale in the far south.	Entisols (Ustorthents, Torriorthents), Alfisols (Haplustalfs), Aridisols (Haplargids)	Vesilla, Menefee, Orlie, Florita, Penistaja, Travessilla, Weska	Mesic/ Aridic Ustic, Ustic Aridic	10-13	120-140	13/40; 54/85	One-seed and Rocky Mountain junipers, Indian ricegrass, big sagebrush, sand dropseed, galleta, threeawns, blue grama, and rabbitbrush.	Shrubland, evergreen woodland and savanna. Livestock grazing, wildlife habitat, some natural gas production. Mostly public (BLM) and tribal land (Jicarilla Apache).

23. ARIZONA/NEW MEXICO MOUNTAINS

Level IV Ecoregions		Physiography		Geology	Soils			Climate			Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
23a. Chihuahuan Desert Slopes	766	Lower slopes of Guadalupe and Sacramento Mountains, cut by steep canyons. Moderate gradient ephemeral streams that carry water only after periodic storms.	4500-6500/ 800-2000	Quaternary block-rubble colluvium, colluvium with valley-fill alluvium, and alluvium of gravels and sands in drainages. Mostly Permian limestones, sandstones, and claystones, some Pennsylvanian sedimentary rocks on west side of Sacramento Mountains.	Mollisols (Calciustolls), Aridisols (Haplocalcids, Petrocalcids), Entisols (Torriorthents)	Ector, Lozier, rock outcrop, Tencee, Tome	Thermic/ Ustic, Aridic	15-18	180-210	29/52; 62/85	On benches and slopes with deeper soil: grasses such as blue, black, and sideoats gramas, purple threeawn, lovegrass, curlyleaf muhly. On rocky slopes and in disturbed grasslands: succulent desert shrubs such as sotol, lechuguilla, yucca, ocotillo, and cacti.	Shrubland and grassland. Wildlife habitat, livestock grazing. Mostly public land (USDA-FS Lincoln National Forest, BLM, NPS-Carlsbad Caverns National Park, State), some tribal land (Mescalero Apache) and military land (Fort Bliss).
23b. Madrean Lower Montane Woodlands	4528	High hills and low mountains, some deep canyons. Mostly moderate to high gradient intermittent streams with bedrock, cobble, gravel, and sandy substrates; a few perennial rivers.	4200-8408/ 400-2500	Quaternary colluvium with valley-fill alluvium, some block-rubble colluvium. In the east, Permian and some Pennsylvanian limestone, sandstone, and shale. In the west, Quaternary and Tertiary sandstone and conglomerate, Tertiary volcanic tuffs and lavas.	Mollisols (Calciustolls, Argiustolls, Haplustolls), Aridisols (Haplocalcids, Haplargids)	In the east, Deama, Darvey, Asparas, Pena, rock outcrop. In the west, Luzena, Faraway, Muzzler, Jonale, Lonti, Ruidoso, White House, rock outcrop.	Mesic/ Aridic Ustic, Ustic Aridic	13-20	150-200	23/53; 56/87	Mostly Mexican pinyon, one-seed juniper, alligator juniper, gray oak, Gambel oak, Emory oak, manzanita, mixed gramas, and threeawn. Some ponderosa pine at higher elevations.	Evergreen woodland, shrubland, some grassland. Livestock grazing, recreation, wildlife habitat. Some public land (USDA-FS Lincoln and Gila National Forests, BLM, NPS-Carlsbad Caverns National Park) and tribal land (Mescalero Apache).
23c. Montane Conifer Forests	4382	Open low mountains and high mountains with steep slopes, numerous canyons. Mostly moderate to high gradient intermittent and some perennial streams with bedrock, cobble, gravel, and sandy substrates.	Mostly 7000-9600, maximum 10244/ 400-2000	Quaternary colluvium, block-rubble colluvium, and colluvium with vally-fill alluvium. Tertiary (Miocene and Oligocene) volcanic lavas, tuffs, breccias, volcaniclastic sedimentary rocks, and Tertiary intrusives in south; Tertiary (Pliocene and Miocene) basaltic to andesitic lava flows on Mt. Taylor and Cebolleta Mesa; Permian sandstone, siltstone, limestone, Precambrian granite, granitic gneiss, schist, and some Triassic sandstone, shale, and mudstone in Zuni Mountains; Tertiary (Oligocene) sandstone and small areas of Tertiary (Miocene and Oligocene) andesite and basaltic andesite in Chuska Mountains.	Mollisols (Haplustolls, Argiustolls, Haplocryolls), Alfisols (Haplustalfs), Entisols (Ustorthents), Inceptisols (Haplustepts)	Chuska Mountains: Akhoni, Tunitcha, Klizhin. Zuni Mountains: Mirabal, Zuni, Tampico, Cinnadale, Heckly, Fortwingate, Osoridge, Jekley. Cebolleta Mesa: Cebolleta, Charo. Gila Mountains area: Smilo, Raton.	Frigid/ Ustic	14-30	90-140	12/44; 47/81	Ponderosa pine and Gambel oak, mountain mahogany, Arizona sycamore. Some Douglas-fir, southwestern white pine, and white fir. Blue spruce occasionally found in cool, moist canyons. Some areas of aspen at higher elevations. In the south, silverleaf oak, netleaf oak, Arizona white oak, and Emory oak.	Evergreen forest and woodlands. Timber production, livestock grazing, wildlife habitat, and recreation. Mostly public land (USDA-FS Gila and Cibola National Forests) and tribal land (Navajo, Acoma).
23d. Arizona/New Mexico Subalpine Forests	217	High mountains with steep slopes. Some high gradient perennial and intermittent streams with boulder, cobble, and bedrock substrates.	Mostly 9500-11301, minimum 9000/ 600-1800	Quaternary colluvium and block-rubble colluvium. Mostly Tertiary volcanic lavas and tuffs, some Tertiary intrusive rocks, and small areas of Precambrian granitic plutonic rocks.	Inceptisols (Dystrochrepts, Cryochrepts), Alfisols (Glossoboralfs, Cryoboralfs)	Not mapped to series level by USDA-FS.	Frigid, some Cryic/ Ustic, some Udic	20-40	70-90	9/38; 45/76	Engelmann spruce, corkbark fir, blue spruce, white fir, and aspen. Some Douglas-fir occurs at lower elevations.	Evergreen and some deciduous forest. Recreation, wildlife habitat, some designated wilderness. All in public land (USDA-FS Gila and Cibola National Forests).
23e. Conifer Woodlands and Savannas	6513	High hills and low mountains, numerous canyons. Mostly moderate to high gradient intermittent streams with bedrock, cobble, gravel, and sandy substrates; a few perennial rivers.	6000-9220/ 300-1500	Quaternary colluvium, block-rubble colluvium, colluvium with valley-fill alluvium. Chuska Mountains: Cretaceous and Jurassic sandstone, shale, and mudstone. Zuni Mountains: Triassic and Permian sandstone, limestone, shale. San Mateo Mountains and Cebolleta Mesa: Tertiary basaltic to andesitic lava and Cretaceous sandstone and shale. In south: Tertiary (Miocene and Oligocene) volcanic lavas, tuffs, breccias, volcaniclastic sedimentary rocks.	Alfisols (Haplustalfs, Paleustalfs), Inceptisols (Haplustepts), Entisols (Ustorthents), Mollisols (Argiustolls, Calciustolls)	Chuska Mountains: Narbona, Yahmore, Kunz, Iwela, Nomrah, Wetherill. Zuni Mountains: Simitarq, Celevar, Fikel, Tuces, Vessilla. San Mateo Mountains: Amcec, Montillo, Tsoodzil, Cabezon. Cebolleta Mesa: Hackroy, Paguate. Gila Mountains: Datil, Motoqua, Abrazo, Smilo, Pleioville, Loarc, Muzzler, Thunderbird. Sandia/Manzano Mountains: Wilcoxson, Andrews, Jekley, Escabosa, Pinata, Salas	Frigid, Mesic/ Ustic, Aridic Ustic	13-20	120-160	17/46; 52/84	Pinyon-juniper woodlands with one-seed juniper, alligator juniper, Rocky Mountain juniper at higher latitudes and elevations, pinyon pine, blue grama, junegrass, galleta, and bottlebrush squirreltail. Some areas with Gambel oak. Utah juniper and big sagebrush in Chuska Mtns. Some ponderosa pine, mountain muhly, and Arizona fescue at highest elevations, mostly northern San Mateo Mtns. On lower and drier sites, areas of yucca and opuntia.	Evergreen woodland, shrubland, grassland. Livestock grazing, wildlife habitat, recreation. Some public land (USDA-FS Gila and Cibola National Forests, BLM) and tribal land (Navajo, Acoma, Zuni).
23f. Rocky Mountain Conifer Forests	1657	Open low mountains and high mountains with steep slopes, numerous canyons. Mostly moderate to high gradient intermittent and some perennial streams with bedrock, cobble, and gravel substrates.	7000-9600, maximum 10098/ 500-2000	Quaternary block-rubble colluvium, colluvium with valley-fill alluvium. Permian and Pennsylvanian limestone, sandstone, and shale; some Tertiary volcanics, Tertiary intrusive rocks, small areas of Cretaceous sandstone and shale, and Precambrian granite, granitic gneiss, schist, and quartzite.	Mollisols (Argiustolls, Paleustolls, Haplustolls), Alfisols (Haplustalfs, Paleustalfs)	Sandia/Manzano Mountains: Jekley, Pinata, Crest, Osha, rock outcrop. Sacramento and southern mountains: Caballo, Peso, Gaines, Telefono, Mescalero, Firo, Gavilan, Monjeau, Docdee, rock outcrop	Frigid, some Mesic/ Ustic	18-28	90-140	17/43; 47/77	Mostly ponderosa pine and Gambel oak with pinyon pine, mountain mahogany, Arizona sycamore and a dense understory. Forests of Douglas-fir, white fir, southwestern white pine, and aspen occur. Blue spruce occasionally found in cool, moist canyons. In the southern Sacramento Mountains, silverleaf, netleaf, and wavyleaf oaks also occur.	Evergreen forest and some deciduous forest. Timber production, recreation, wildlife habitat, some livestock grazing. Source of water and groundwater for lower, more arid ecoregions. Mostly public land (USDA-FS Cibola and Lincoln National Forests) and tribal land (Isleta, Mescalero Apache).
23g. Rocky Mountain Subalpine Forests	45	High mountain peaks and ridges with steep slopes. Some glaciation (Sierra Blanca: southernmost glaciated peak in conterminous U.S.). A few small, high-gradient streams with boulder, cobble, and bedrock substrates.	9500–11973/ 900-2000	Quaternary block-rubble colluvium, small area of glacial till on Sierra Blanca. Sandia Mountains: Precambrian granitic rocks capped by Pennsylvanian limestone and shale. Sierra Blanca and Capitan Mountains: Tertiary intrusives and volcanics.	Mollisols (Haplustolls, Haplocryolls)	Caballo, Blanca, Supervisor	Cryic, Frigid/ Ustic	20-30	70-90	13/27; 45/66	Engelmann spruce, corkbark fir, blue spruce, white fir, and aspen. Some Douglas-fir occurs at lower elevations. Numerous shrub and forb species.	Evergreen and some deciduous forest. Recreation, wildlife habitat. Mostly public land (USDA-FS Cibola and Lincoln National Forests) and tribal land (Mescalero Apache).

24. CHIHUAHUAN DESERTS

Level IV Ecoregions		Physiography		Geology	Soils			Climate			Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
24a. Chihuahuan Basins and Playas	14029	Deep depressions or grabens filled with sediment to form flat to rolling basins. Basins either alluvial basins surrounding major river (Pecos, Rio Grande) or internally drained. Streams ephemeral.	2842-5749/ 25-500	Quaternary and some late Tertiary alluvium and erosional materials from surrounding mountains, including unconsolidated basin deposits of silt, sand, and gravel. Includes piedmont and fan alluvium, river alluvium, lacustrine and playa deposits, eolian deposits, and calcretes.	Aridisols (Haplocalcids, Petrocalcids, Calciargids, Calcigypsids, Haplogypsids, Haplocambids), Entisols (Torriorthents, Torripsamments)	Holloman, Reeves, Bluepoint, Wink, Hueco, Pintura, Dona Ana, Cruces, Berino, Nickel, Tres Hermanos, Caliza, Malargo, Largo, Mimbres, Stellar	Thermic/ Aridic, Ustic Aridic	9-13	190-220	25/57; 66/95	Saline flats and alkaline playa margins: fourwing saltbush, seepweed, pickleweed, and alkali sacaton. Gypsum land: gyp grama, gyp mentzelia, and Torrey ephedra. Desert shrub land: creosotebush, tarbush, yuccas, sandsage, viscid acacia, tasajillo, lechuguilla, mesquite, and ceniza.	Shrubland, some remnant grassland, barren land. Wildlife habitat, limited livestock grazing, public (BLM, State) and military land (Fort Bliss). Some irrigated cropland of mostly hay and alfalfa, with some cotton, chile peppers, onions, pecans, and corn or sorghum for silage or greenchop. Dairy farms occur near Roswell. Some urban land.
24b. Chihuahuan Desert Grasslands	8019	Plateaus, high intermountain basins, alluvial fans, and bajadas. Stream segments from occasional spring sources, otherwise ephemeral, flowing only after storm events.	3150-7280/ mostly 100-500, isolated hills to 1000	Quaternary colluvium with valley-fill alluvium, alluvium and piedmont alluvium, discontinuous eolian deposits. Permian sandstone, siltstone, gypsum, dolomite, and limestone; Tertiary igneous and volcaniclastic rocks, and some Tertiary sandstones and conglomerates.	Aridisols (Haplocalcids, Petrocalcids, Haplocambids, Calciargids), Entisols (Torriorthents, Torripsamments), Mollisols (Calciustolls)	Philder, Reyab, Armesa, Reakor, Ector, Tome, Delnorte, Tres Hermanos, Hap, Eba, Kermit, Berino, Pajarito, Stellar, Turney	Thermic/ Aridic, Ustic Aridic	10-15	180-220	24/53; 62/92	Low elevations: black, blue, and sideoats grama, dropseeds, and bush muhly, with scattered creosotebush, acacias, beargrass, and cacti. Ancient lakebeds and alluvial areas: some black grama grass, tobosa grass, tarbush. Mountain grassland: blue, hairy, and sideoats grama, little and silver bluestem, threeawns. Scattered yuccas, lechuguilla, sotol, and junipers.	Grassland and some shrubland. Grazing, ranching, recreation, and wildlife habitat. The ecoregion has a high diversity of reptiles. Some endemic fish occur, such as the threatened Chihuahua chub in the spring-fed Mimbres River. Mostly public land (BLM, State) and military land (Fort Bliss).
24c. Low Mountains and Bajadas	3249	Numerous, mid-elevation mountain ranges separated by basins. Streams ephemeral; scattered springs.	3700-7475/ 300-2000	Quaternary colluvium with valley-fill alluvium, piedmont and fan alluvium, some block-rubble colluvium. Permian sandstone, limestone, and shale, Tertiary volcanic and intrusive rocks, Precambrian granitic plutonic rocks.	Aridisols (Haplocalcids, Haplargids, Petrocalcids), Mollisols (Argiustolls), Entisols (Torriorthents)	Lozier, Lehmans, Upton, Graham, Ledru, Chamberino, Tencee, Akela, Gilland, Delnorte, Elbutte, rock outcrop	Thermic/ Aridic, Ustic Aridic	10-14	170-220	25/56; 62/92	Desert shrubs, such as sotol, lechuguilla, yucca, ocotillo, lotebush, tarbush, and pricklypear, with a sparse cover of gramas and other grasses. At higher elevations, scattered one-seeded juniper and pinyon pine. Strips of gray oak, velvet ash, and little walnut along intermittent and ephemeral drainages, and oaks may spread up north-facing slopes from the riparian zones.	Shrubland, some sparse woodland. Ranching, wildlife habitat, some mining. Mostly public land (BLM, State) and military land (White Sands Missile Range, Fort Bliss).
24d. Chihuahuan Montane Woodlands	451	Upper peaks, slopes and canyons of mountain ranges. Streams ephemeral; scattered springs.	4600-8958/ 900-3000	Quaternary colluvium with valley-fill alluvium, block-rubble colluvium. Permian and Pennsylvanian sandstone, siltstone, limestone, and shale; some older Paleozoic sedimentary rocks, Tertiary intrusives, Tertiary pyroclastics, and Precambrian granite, gneiss, and volcanic schist.	Aridisols (Haplocalcids, Haplocambids), Mollisols (Calciustolls)	Gilland, Deama, Ponciano, rock outcrop	Thermic, Mesic/ Ustic Aridic, Aridic Ustic	13-20	160-210	23/48; 61/86	Evergreen woodland with Emory oak, gray oak, alligator juniper, Mexican pinyon, and bunchgrasses. Some ponderosa pine or Douglas-fir at high elevations. Grasses include gramas, bluestems, muhlys, and threeawns.	Mixed and evergreen woodland and forest. Military, wildlife habitat, livestock grazing. Most all is military land (White Sands Missile Range) or public land (BLM, State, USFWS).
24f. Rio Grande Floodplain	522	River channel and floodplain, low terraces, levees.	3730-4900/ 10-30	Quaternary river alluvium and terrace deposits of sand, silt, and gravel.	Entisols (Torrifluvents, Torripsamments), Vertisols (Haplotorrerts)	Glendale, Harkey, Armijo, Popotosa	Thermic/ Aridic	8-10	190-230	26/55; 65/94	Cottonwood-willow, velvet ash, screwbean mesquite, seep willow, alkali sacaton, skunkbush, creosotebush, invasive salt cedar.	Cropland, pasture, orchards, vineyards, livestock grazing, and urban. Crops include hay and alfalfa, chili peppers, onions, cotton, pecans, and corn for silage.
24g. Gypsiferous Dunes	371	Dune field with dome, transverse, barchan, and parabolic dunes. World's largest expanse of gypsum sand dunes.	3895-4125/ 20-65	Quaternary gypsiferous eolian deposits of sand and silt.	Entisols (Torriorthents), Aridisols (Haplogypsids, Calcigypsids)	Mostly gypsum land. Some Holloman, Yesum, Reeves.	Thermic/ Aridic	9-10	180-200	22/56; 64/96	Mostly barren. Scattered soaptree yucca, sand verbena, mormon tea, skunkbush sumac, fourwing saltbush, gyp moonpod, gyp grama, alkali sacaton, sandhill muhly, hoary rosemary mint, and a few Rio Grande cottonwoods.	Barren land, some grassland and shrubland. Military land (White Sands Missile Range) and public land (NPS-White Sands National Monument).
24h. Lava Malpais	284	Irregular plains of lava flows, cinder cones, lava tubes, collapse pits, caves.	4150-5679/ 20-100	Quaternary basaltic to andesitic lava flows.	Entisols (Torriorthents)	Lava flows and lava rockland, mostly devoid of soils. Variable soils occur in small pockets, such as Akela.	Thermic/ Aridic	10-12	190-200	24/54; 62/93	Mixed shrubs, cacti, and grasses including creosote, mesquite, sotol, yuccas, beargrass, cholla, prickly pear, and hedgehog cactus. A few scattered juniper.	Bare rock, shrubland. Wildlife habitat, recreation. Mostly public (BLM, State) and military land (White Sands Missile Range).

25. HIGH PLAINS

Level IV Ecoregions		Physiography		Geology	Soils			Climate			Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
25b. Rolling Sand Plains	1384	Flat to rolling plains with stabilized dunes, active sand dunes or sand hills. Low drainage density; occasional intermittent or spring fed streams.	3600-5500/ 20-200	Quaternary sandy and loamy eolian deposits, eolian dune sand, and alluvium. Tertiary (Pliocene and Miocene) gravel, sand, silt, clay, siltstone, sandstone, caliche layers, and caliche caprock of the Ogallala Formation.	Alfisols (Paleustalfs, Haplustalfs)	Dallam, Vingo, Rickmore, Dalhart	Mesic/ Aridic Ustic	15-17	170-180	20/48; 61/90	Sand sagebrush, some Havard shin oak, with grasses of big sandreed, little bluestem, sand dropseed, and sand bluestem. Some sideoats grama, blue grama, buffalograss, switchgrass, yellow Indiangrass, and yucca.	Grassland and shrubland. Ranching and livestock grazing, some cropland of wheat and grain sorghum.
25c. Moderate Relief Plains	992	Irregular, rolling to broken, moderately sloping plains. Some ephemeral and intermittent drainages and small depressional wetland playas.	4700-6675/ 50-200	Quaternary sandy and loamy eolian deposits, discontinuous eolian deposits over caprock calcrete, deflational depression fills, and colluvium. Tertiary (Pliocene and Miocene) gravel, sand, silt, clay, siltstone, sandstone, caliche layers, and caliche caprock of the Ogallala Formation.	Mollisols (Argiustolls, Paleustolls, Calciustolls), Alfisols (Paleustalfs), Aridisols (Aquicambids)	La Brier, Spurlock, Gruver, Texline, Dioxice, Church	Mesic/ Aridic Ustic, Ustic Aridic	15-17	160-175	19/47; 59/87	Shortgrass prairie with blue grama, buffalograss, fringed sage, and western wheatgrass.	Grassland. Ranching and livestock grazing, wildlife habitat. Some public land (USDA-FS Kiowa National Grassland, State).
25e. Canadian/ Cimarron High Plains	701	Level to rolling plains, some dissection by ephemeral and intermittent stream channels. Some small depressional wetland playas.	4300-5105/ 20-200	Quaternary discontinuous eolian deposits over caprock calcrete, sandy and loamy eolian deposits, and deflational depression fills. Tertiary (Pliocene and Miocene) gravel, sand, silt, clay, siltstone, sandstone, caliche layers, and caliche caprock of the Ogallala Formation.	Mollisols (Paleustolls, Calciustolls), Alfisols (Paleustalfs)	Gruver, Sherm, Sunray, Spurlock, Texline, Dioxice	Mesic/ Aridic Ustic	15-17	170-180	19/48; 61/89	Shortgrass prairie: blue, black, and hairy grama, buffalograss, silver bluestem. Mid-grasses: sideoats grama, western wheatgrass. Forbs: scarlet globe-mallow, sunflowers, stiffstem flax. Invading shrubs: mesquite, narrowleaf yucca, juniper.	Grassland, cropland of wheat and grain sorghum, shrubland. Ranching and livestock grazing.
25i. Llano Estacado	4090	Level, elevated plain, decreasing in elevation from west to east. Few to no streams. Surface water in numerous ephemeral pools or playas.	3750-5300/ 10-150	Quaternary sandy and loamy eolian deposits, discontinuous eolian deposits over caprock calcrete, and lacustrine-eolian complexes. Tertiary (Pliocene and Miocene) gravel, sand, silt, clay, siltstone, sandstone, caliche layers, and caliche caprock of the Ogallala Formation.	Mollisols (Paleustolls, Argiustolls, Haplustolls, Calciustolls), Alfisols (Paleustalfs), Vertisols (Epiaquerts, Haplusterts), Inceptisols (Calciustepts, Haplustepts), Aridisols (Haplocalcids)	Olton, Acuff, Amarillo, Estacado, Pullman, Zita, Potter, Gomez. In playas and shallow depressions: Randall, Lazbuddie, Lofton, Portales. On sandy sites: Brownfield, Patricia. Footslope and alluvial soils: Berda, Mansker, Bippus.	Thermic/ Aridic Ustic, some Ustic Aridic	15-18	180-200	23/51; 62/91	Shortgrass prairie of buffalograss, blue and sideoats grama, and little and silver bluestem. Sandy sites: Sand bluestem, sand dropseed. Forbs: dalea, scarlet globe-mallow, sunflower, stiffstem flax. Invading shrubs: mesquite, narrowleaf yucca. Playas: Grasses, or willow, rushes, and aquatic plants.	Grassland; cropland with cotton, corn, and wheat; ranching and livestock grazing; some urban. Endemic playa lake flora and fauna has been altered by agricultural activities.
25j. Shinnery Sands	3182	Smooth plains, sand hills and dunes. Intermittent or spring-fed streams are rare, mostly little or no stream network.	3000-4650/ 15-100	Quaternary eolian dune sands and piedmont and escarpment footslope alluvium deposits. Tertiary (Pliocene and Miocene) gravel, sand, silt, clay, siltstone, sandstone, caliche layers, and caliche caprock of the Ogallala Formation.	Entisols (Ustipsamments, Torripsamments), Alfisols (Paleustalfs, Haplustalfs), Inceptisols (Calciustepts), Aridisols (Haplargids, Petrocalcids, Haplocalcids)	Nutivoli, Spantara, Arch, Jalmar, Douro, Penwell, Triomas, Wickett, Brownfield, Malstrom, Roswell, Kermit	Thermic/ Aridic Ustic, Ustic Aridic	13-17	190-210	24/55; 63/93	Shrubs: Havard shin oak, fourwing saltbush, sand sagebrush, and yucca. (In north, mostly sand sagebrush). Tall and mid- grasses: Sand dropseed, sand bluestem, big sandreed, little bluestem, switchgrass, sideoats grama. Shortgrass: Buffalograss, alkali sacaton, black grama. Forbs: sand verbena, bush sunflower, hoary rosemary-mint, fringed sagewort.	Grassland and shrubland. Ranching, livestock grazing, wildlife habitat, some cropland to the north in flat areas with cotton and grain sorghum. Oil and gas production.
25k. Arid Llano Estacado	2190	Level, elevated plain, decreasing in elevation from west to east. Few to no streams. Surface water in numerous ephemeral pools.	3550-4450/ 10-100	Quaternary caprock calcretes formed in alluvial and eolian deposits, some lacustrine-eolian complexes in the north. Tertiary (Pliocene and Miocene) gravel, sand, silt, clay, siltstone, sandstone, caliche layers, and caliche caprock of the Ogallala Formation.	Mollisols (Paleustolls), Aridisols (Petrocalcids, Calciargids, Petroargids)	Lea, Kimbrough, Sharvana, Douro, Faskin, Stegall, Slaughter, Conger	Thermic/ Ustic Aridic, Aridic Ustic	14-16	200-220	26/55; 65/92	Shortgrass prairie: blue, black, and hairy grama, buffalograss, silver bluestem, sand dropseed, threeawn, Arizona cottontop, hairy tridens, muhly, bottlebrush squirreltail, sand sagebrush. Increasers with grazing: Burrograss, threeawns, tobosa, broom snakeweed. Forbs: bush sunflower, gray goldaster, dalea, gayfeather. Invading shrubs: mesquite, narrowleaf yucca, juniper, ephedra, tarbush.	Grassland and shrubland. Ranching and livestock grazing, oil and gas production, some small areas of irrigated cropland of cotton, grain sorghum, and wheat. Endemic playa lake flora and fauna has been altered by oil industry and agricultural activities.

26. SOUTHWESTERN TABLELANDS

Level IV Ecoregions		Physiography		Geology	Soils			Climate			Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
26d. Semiarid Canadian Breaks	2472	Tablelands, terraces, and broken topography bordering Canadian River and tributary canyons. Streams mostly ephemeral and intermittent.	3500-5350/ 100-500	Quaternary colluvium, colluvium with valley-fill alluvium, block-rubble colluvium, escarpment footslope alluvium, and some discontinuous eolian deposits and stabilized dunes. Triassic mudstone, sandstone, and shale; some Jurassic and Cretaceous sandstone and shale, and small areas of Tertiary (Pliocene and Miocene) sedimentary layers and caliche caprock of the Ogallala Formation.	Aridisols (Haplocalcids, Haplocambids, Calciargids, Haplargids), Entisols (Torriorthents), Vertisols (Haplotorrerts), Inceptisols (Haplustepts)	Quay, Glenrio, Redona, Ima, Tucumcari, San Jon, Lacita, Montoya, Gallegos, Canez, Conchas, Mobeetie, Berda	Thermic/ Ustic Aridic, Aridic Ustic	14-17	180-200	23/51; 65/93	Short and midgrass prairie including sideoats, black, and blue gramas, sand dropseed, buffalograss, western wheatgrass, galleta, alkali sacaton, and fringed sagewort. Some areas with juniper, sand sagebrush, skunkbush sumac, four-wing saltbush, yucca, honey mesquite, cholla cactus. Canadian River riparian areas with cottonwood, willow, hackberry, and alien saltcedar.	Shrubland and grassland. Livestock grazing, wildlife habitat, small areas of cropland near Tucumcari.
26f. Mesa de Maya/ Black Mesa	642	Broad mesas, knobs, and dissected plains with deep canyons. Rough, rocky, steep slopes are common.	4350-7320/ 200-900	Quaternary colluvium-landslide complexes, block-rubble colluvium, colluvium with valley-fill alluvium, and river alluvium. Tertiary basalt capping mesas; Cretaceous sandstone and shale, Jurassic and Triassic sandstone, siltstone, limestone.	Entisols (Torriorthents), Mollisols (Argiustolls, Haplustolls), Aridisols (Camborthids)	Travessilla, Carnero, Manzano, Alicia	Mesic/ Aridic Ustic	15-17	150-165	19/48; 59/88	Pinyon-juniper woodland and some shortgrass prairie; Rocky Mountain and Great Plains flora intergrade. Pinyon and oneseed juniper in canyons and north-facing slopes, some scrub oaks; upland grasslands of sideoats grama, little bluestem, blue grama, black grama, New Mexico feathergrass, sand dropseed, yucca, broom snakeweed. Some riparian cottonwood and willow.	Woodland and grassland. Rangeland, wildlife habitat.
26h. Pinyon-Juniper Woodlands and Savannas	3227	Dissected plains and tablelands with some scattered ridges and hills. Mostly intermittent streams and some perennial streams that are spring-fed or that originate in mountain ecoregions.	5000-8720/ 100-1000	Quaternary colluvium, piedmont alluvium, and colluvium with valley-fill alluvium. Cretaceous, Jurassic, Triassic, Permian, and Pennsylvanian sandstone, siltstone, shale, limestone, dolomite, mudstone, and conglomerate. Some Tertiary volcanic rocks and Tertiary intrusives.	Alfisols (Haplustalfs), Aridisols (Haplargids, Haplocalcids, Calciargids, Haplogypsids, Haplocambids), Mollisols (Calciustolls, Haplustolls, Argiustolls), Inceptisols (Haplustepts), Entisols (Torriorthents)	Sombordoro, Vibo, Ribera, Penistaja, Pinon, Deama, Harvey, Tuloso, Travessilla, Hagerman, Tapia, Netoma, Puice, Ponciano, Cuate, rock outcrop. In the north, Apache, Des Moines, Dargol, Fuera, Vamer.	Mesic, some Frigid in north/ Ustic Aridic, Aridic Ustic, small areas of Ustic	12-16	160-180	19/49; 57/89	Pinyon-juniper woodlands with pinyon pine, Rocky Mountain juniper, and oneseed juniper. Grasses include blue grama, sideoats grama, and black grama.	Woodlands, some grassland. Rangeland, wildlife habitat.
26l. Upper Canadian Plateau	5647	Broad, rolling plains, piedmonts, tablelands, and stream valleys. Some volcanic cones and hills. Mostly intermittent streams and some perennial streams from mountain sources. Some flatter areas with small depressional wetlands or intermittent playas.	4600-8180, mostly 5500-7000/ 200-900	Quaternary piedmont alluvium, colluvium with valley-fill alluvium, colluvium, discontinuous eolian deposits in the east, eolian loamy sand to sandy clay loam. Cretaceous sandstone and shale, often buried by Tertiary (Pliocene) basaltic to andesitic lava flows or penetrated by Tertiary and Quaternary volcanic cones.	Mollisols (Haplustolls, Argiustolls), Entisols (Torriorthents), Aridisols (Haplocambids)	Colmor, Swastika, Mion, Vermejo, Litle, Capulin, Torreon, Apache	Mesic/ Aridic Ustic, Ustic Aridic	14-17	140-160	15/47; 53/84	Shortgrass prairie, some midgrass prairie, scattered juniper savanna, and juniper woodland on hills. Blue grama-western wheatgrass with bottlebrush squirreltail, threeawn, ring muhly, winterfat, fringed sage; mixed grama-little bluestem with some western wheatgrass, galleta, buffalograss.	Grassland. Ranching and livestock grazing. Some scattered public land (State).
26m. Canadian Canyons	1539	Escarpments, canyons, gorges. Moderate and some high gradient intermittent streams and some perennial rivers.	4000-6300/ 500-1000	Quaternary block-rubble colluvium, colluvium, colluvium with valley-fill alluvium. Cretaceous, Jurassic, and Triassic sandstone and shale.	Alfisols (Haplustalfs), Inceptisols (Haplustepts), Mollisols (Argiustolls), Entisols (Torriorthents)	Rock outcrop, Sombordoro, Tuloso, Bernal, Travessilla	Mesic/ Ustic, Ustic Aridic	14-16	150-165	19/47; 56/86	Pinyon pine, one-seed juniper, some ponderosa pine at higher elevations, scrub oaks, skunkbush sumac, blue grama, sideoats grama.	Shrubland and evergreen woodland. Wildlife habitat, recreation. Some public land (USDA-FS Kiowa National Grassland, BLM, State).
26n. Conchas/Pecos Plains	4093	Broad, rolling plains, tablelands, piedmonts, river valleys. Mostly ephemeral and some intermittent streams; a few perennial rivers cross the ecoregion. The Pecos River is often dry in places due to diversions and permeable geology.	3800-5790/ 100-500	Quaternary colluvium with valley-fill alluvium, piedmont alluvium, discontinuous eolian deposits, and river alluvium. Triassic and Permian sandstone, siltstone, dolomite, mudstone, and shale.	Aridisols (Calciargids, Haplocambids, Haplocalcids, Petrocalcids), Entisols (Torriorthents)	Redona, Conchas, Quay, Chispa, Lacoca, La Lande, Berwolf, Pojo, Kolar, Regnier	Thermic/ Ustic Aridic	13-16	180-200	22/53; 63/92	Shortgrass and some midgrass prairie with blue grama, galleta, sand dropseed, threeawns, ring muhly, broom snakeweed, cacti, yucca, and cholla. Some areas of sideoats grama and little bluestem, with blue grama, western wheatgrass, galleta, and buffalograss. Some areas of scattered juniper.	Grassland. Ranching and livestock grazing. Some irrigated cropland of mostly hay and alfalfa near Fort Sumner.
26o. Central New Mexico Plains	7299	Broad, rolling plains, tablelands, and piedmonts. Ephemeral drainages.	3800-7565/ 100-400	Quaternary colluvium with valley-fill alluvium, piedmont alluvium, discontinuous eolian deposits, and some calcretes. Mostly Permian sandstone, siltstone, limestone, dolomite, and shale; minor areas of Triassic sedimentary rocks, and some Tertiary Ogallala Formation sediments.	Aridisols (Petrocalcids, Haplocalcids, Calciargids), Mollisols (Calciustolls)	Pastura, Darvey, Deama, Tapia, Dean, Harvey, Clovis, Palma, Cardenas, Pojo, Kolar	Mesic/ Ustic Aridic	12-14	140-180	20/48; 56/87	Mostly shortgrass prairie with black grama, hairy grama, sideoats grama, blue grama, New Mexico feathergrass, threeawns, some little bluestem, soapweed, broom snakeweed, and areas of scattered juniper near hills or in rougher topography.	Grassland. Ranching and livestock grazing.
26p. Pluvial Lake Basins	515	Flat plains, lake basins.	6050-6250/ 20-50	Quaternary lacustrine deposits of clay, sand, and pebble gravel.	Aridisols (Haplocalcids), Entisols (Torriorthents), Mollisols (Haplustolls)	Willard, Karde, Manzano	Mesic/ Ustic Aridic, Aridic Ustic	12-13	140-150	15/49; 52/89	Black grama, western wheatgrass, sideoats grama, and fourwing saltbush. Alkali sacaton, giant sacaton, and inland saltgrass may occur in saline areas.	Grassland, barren land, some open water seasonally. Rangeland, some agriculture and cropland in Estancia basin of mostly hay, alfalfa, and some corn.
26q. Southern New Mexico Dissected Plains	2038	Well dissected irregular plains, numerous draws and canyons.	3800-5950/ 100-500	Quaternary colluvium with valley-fill alluvium. Permian limestone, dolomite, shale, sandstone.	Mollisols (Calciustolls)	Ector, Deama, rock outcrop	Thermic, some Mesic/ Ustic Aridic, Aridic Ustic	12-13	180-200	25/56; 59/89	Short and mid grasses, blue grama, black grama, hairy grama, sideoats grama, tridens, threeawn; shrubs of yucca, acacias, some juniper in draws and at higher elevations.	Shrubland and grassland. Rangeland for livestock grazing.

79. MADREAN ARCHIPELAGO

Level IV Ecoregions		Physiography		Geology	Soils			Climate			Natural Vegetation	Land Cover and Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max (°F)		
79a. Apachian Valleys and Low Hills	1072	Broad, level to rolling valley plains, alluvial fans, and some low hills. Surface water scarce; ephemeral and intermittent creeks with gravel, sand, and silt substrates.	3950-5500/ Mostly 100-300, some hills to 600	Quaternary alluvium and erosional materials from surrounding mountains, including unconsolidated basin deposits of silt, sand, and gravel. Includes piedmont and fan alluvium, lacustrine and playa deposits, and eolian deposits. Tertiary lavas and tuffs.	Aridisols (Calciargids), Mollisols (Argiustolls)	Eba, Cloverdale, Forrest, Eicks	Thermic/ Aridic, Ustic Aridic, Aridic Ustic	12-16, monsoonal influence, maximums July to September	200-220	27/58; 64/95	Semi-desert grassland and shrub steppe. Mostly black grama and tobosa, with sideoats grama, burro grass, cane beardgrass, plains lovegrass, blue grama, hairy grama, ring muhly, sand dropseed, vine mesquite, curly mesquite, false mesquite, ephedra, mimosa, sotol, yucca, ocotillo, cacti, and agave.	Grassland and shrubland. Livestock grazing, wildlife habitat.
79b. Lower Madrean Woodlands	521	Mid-elevation mountain ridges, slopes, and hills. Mostly ephemeral and intermittent streams with bedrock, boulder, and cobble substrates. Some springs occur.	4500-7100/ 600-1500	Quaternary colluvium with valley-fill alluvium, piedmont and fan alluvium, some block-rubble colluvium. Tertiary volcanics, some Tertiary intrusives, some Mesozoic and Paleozoic sedimentary rocks.	Mostly Aridisols and Alfisols	Rough broken land and rock land, some Lehmans	Thermic/ Aridic, Ustic Aridic	14-19, monsoonal influence, maximums July to September	200-210	25/56; 60/90	Madrean encinal, or evergreen oak woodlands and Madrean juniper-pinyon woodland. Emory, silverleaf, netleaf, Tourney, and Arizona white oaks, some pinyon (including border pinyon and Mexican pinyon), alligator juniper, one-seed juniper, Arizona madrone, New Mexico locust, and chaparral species. Understory grasses of blue grama, sideoats grama, hairy grama, little bluestem, and plains lovegrass. Some cacti and agave. Riparian areas with cottonwood, sycamore, and willow.	Woodlands and shrublands. Livestock grazing, wildlife habitat, some mining. Some public land (BLM, State, USDA-FS Coronado National Forest).
79c. Madrean Pine-Oak and Mixed Conifer Forests	29	Steep mountain ridges, peaks, and slopes (along the continental divide in the Animas Mountains). Mostly ephemeral and intermittent streams with bedrock, boulder, and cobble substrates.	6800-8531/ 1000-1500	Quaternary colluvium with valley-fill alluvium, some block-rubble colluvium. Tertiary volcanics of lavas and tuffs in the Animas Mountains, mostly Permian and Pennsylvanian sedimentary rocks over a core of Cambrian and Precambrian granites in the Big Hatchet Mountains.	Mostly Inceptisols and Alfisols	Rough broken land and rock land	Mesic/ Ustic, Aridic Ustic	20-24, monsoonal influence, maximums July to September	180-200	24/51; 57/84	Pine-oak, pine, montane fir, and mixed conifer forests. Ponderosa pine, southwestern white pine, Apache pine, and Chihuahuan pine, along with some Douglas-fir. Arizona white oak, Emory oak, silverleaf oak, Gambel oak, and alligator juniper.	Evergreen and mixed forest and woodland. Wildlife habitat.

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