Ecological site R038XB222AZ
Volcanic Hills, Clayey
16-20

Last updated: 9/05/2019
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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 038X–Mogollon Transition South

AZ 38.2 - Middle Mogollon Transition Elevations range from 4,000 to 5,500 feet and precipitation averages 16 to 20 inches per year. Vegetation includes turbinella oak, Wright silktassel, hollyleaf buckthorn, desert buckbrush, one-seed juniper, alligator juniper, pinyon, algerita, sugar sumac, prairie junegrass, blue grama, curly mesquite, bottlebrush squirreltail, muttongrass, cane beardgrass, plains lovegrass, and bullgrass. The soil temperature regime ranges from thermic to mesic and the soil moisture regime is aridic ustic. This MLRA occurs within the Transition Zone Physiographic Province and is characterized by canyons and structural troughs or valleys. Igneous, metamorphic, and sedimentary rock classes occur on rough mountainous terrain in association with less extensive sediment filled valleys exhibiting little integrated drainage.

Ecological site concept

The Volcanic Hills, Clayey ecological site occurs on the sideslopes of volcanic hills. Soil textures range from clay loam to clay.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

The Volcanic Hills, Clayey ecological site occurs on sideslopes of volcanic hills.

Table 2. Representative physiographic features

Elevation	1,220 − 1,680 m

Climatic features

Precipitation in this common resource area averages 16 to 20 inches annually. The winter/summer rainfall ratio ranges from about 60/40 percent in the western part of the area to 45/55 percent in the eastern part. Summer rains fall July through September; and are from high-intensity, convective, thunderstorms. This moisture originates primarily from the Gulf of Mexico, but can come from the remnants of Pacific hurricanes in September. Winter moisture is frontal, originates in the north Pacific, and falls as rain or snow in widespread storms of low intensity and long duration. Snowfall ranges from 5 to 35 inches per year and can occur from November through April. Snow seldom persists for more than a week. May and June are the driest months of the year. Humidity is moderate to low all year. Average annual air temperatures range from 51 to 60 degrees F (thermic temperature regime). Daytime temperatures in the summer are

commonly in the low 90’s. Freezing temperatures are common from October through April. The actual precipitation, available moisture and temperature vary, depending on region, elevation, rain shadow effect, and aspect.

Table 3 Representative climatic features

Frost-free period (average)	180 days
Freeze-free period (average)	240 days
Precipitation total (average)	510 mm

Influencing water features

Soil features

Soils are derived from volcanic parent material. Soil textures range from clay loam to clay.

Ecological dynamics

The plant communities found on an ecological site are naturally variable. Composition and production will vary with yearly conditions, location, aspect, and the natural variability of the soils. The historical climax plant community represents the natural potential plant communities found on relict or relatively undisturbed sites. Other plant communities described here represent plant communities that are known to occur when the site is disturbed by factors such as grazing, fire, or drought.

Production data provided in this site description is standardized to air-dry weight at the end of the summer growing season. The plant communities described in this site description are based on near normal rainfall years.

NRCS uses a Similarity Index to compare existing plant communities to the plant communities described here. Similarity Index is determined by comparing the production and composition of a plant community to the production and composition of a plant community described in this site description. To determine Similarity Index, compare the production (air-dry weight) of each species to that shown in the plant community description. For each species, count no more than the maximum amount shown for the species, and for each group, count no more than the maximum shown for the group. Divide the resulting total by the total normal year production shown in the plant community description. If rainfall has been significantly above or below normal, use the total production shown for above or below normal years. If field data is not collected at the end of the summer growing season, then the field data must be corrected to the end of the year production before comparing it to the site description. The growth curve can be used as a guide for estimating production at the end of the summer growing season.

State and transition model

Figure 3. MLRA 38.2 (16-20"), Volcanic Hills, Clayey

Additional community tables

Contributors

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Approval

Scott Woodall, 9/05/2019

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be

verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	Globe ESS, Dan Robinett, Wilma Renken
Contact for lead author	Globe MLRA Soil Survey Office
Date	07/01/2014
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills: A few natural rills are present and seem to follow fault lines and bedding planes in the volcanic parent materials.**

2. **Presence of water flow patterns: Water flow patterns occupy about 10% of the area. They are very short (2-5 ft.) in length and discontinuous where gravel/cobble covers are high (>35%). They are terminated by gravel/cobble cover and/or terracettes of perennial grasses, shrubs and cacti. They are longer (10-15ft.) where gravel/cobble cover is low (<20%).**

3. **Number and height of erosional pedestals or terracettes: Erosional pedestals are very uncommon. High cover values of gravel, cobble and stones result in surface stability. Terracettes are uncommon, cover less than 5% of the area and usually are formed by a combination of cobbles, perennial grasses, cacti and shrubs. They are from 30 to 60 feet apart and have elevation differences of 2 to 4 inches.**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): 1 to 10% (cover from 200 plot pace frequency transect)**

5. **Number of gullies and erosion associated with gullies: None**

6. **Extent of wind scoured, blowouts and/or depositional areas: None**

7. **Amount of litter movement (describe size and distance expected to travel): All litter is staying in place.**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Slake test values 4, 5, and 6 evenly distributed across the area. Soil surface has high organic content both under plant canopies and in pockets of bare soil surrounded by cobbles.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is granular. The A horizon is 2-4 inches thick and is very dark colored (10YR 3/2) and very high in organic matter.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Cover of perennial grasses range from 20-50%, cover of shrubs and cacti range from 10-25%. Basal cover of perennial plants ranges from 5-8%. Covers of gravels, cobbles and stones range from 30 to 75%. Cover of all types of plants are well distributed across the area.

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant: Perennial grasses> shrubs

    Sub-dominant: annual forbs and grasses >= perennial forbs > succulents > trees.

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Both shrubs and perennial mid-grasses show partial signs of decadence over several years of severe drought; however, nearly all plants have some live canopy remaining. Green sprangletop most affected by drought.

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** From ecological site description annual production is; 820 lbs/ac(drought), 1300 lbs/ac(average year), 2450 lbs/ac (wet year).

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** turbinella oak, wait a bit

mimosa, mesquite, juniper species, singleleaf pinyon, snakeweed, prickley pear, red brome, cheatgrass, wild oats.

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17. **Perennial plant reproductive capability:** **Not impaired.**
