Ecological site R041XB203AZ
Clayey Upland 8-12" p.z.

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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): 041X–Madrean Archipelago

AZ 41.2 – Chihuahuan – Sonoran Desert Shrubs

Elevations range from 2600 to 4000 feet and precipitation ranges from 8 to 12 inches per year. Vegetation includes mesquite, palo verde, catclaw acacia, soaptree yucca, creosotebush, whitethorn, staghorn cholla, desert saltbush, Mormon tea, burroweed, snakeweed, tobosa, black grama, threeawns, bush muhly, dropseed, and burrograss. The soil temperature regime is thermic and the soil moisture regime is typic aridic. This unit occurs within the Basin and Range Physiographic Province and is characterized by numerous mountain ranges that rise abruptly from broad, plain-like valleys and basins. Igneous and metamorphic rock classes dominate the mountain ranges and sediments filling the basins represent combinations of fluvial, lacustrine, colluvial and alluvial deposits.

Associated sites

R041XB202AZ	**Clayey Swale 8-12" p.z.**
R041XB204AZ	**Clay Loam Upland 8-12" p.z.**
R041XB223AZ	**Basalt Hills 8-12" p.z.**

Similar sites

R040XA104AZ	**Clayey Upland 10"-13" p.z.**
R041XC304AZ	**Clayey Upland 12-16" p.z.**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Pleuraphis mutica*

Physiographic features

This site occurs in the lowest elevations of the Madrean Basin and Range province in southeastern Arizona. It occurs on rolling low ridges, fan terraces, mesas and gently sloping lava flows; usually associated with basalt and andesite mountains.

Table 2. Representative physiographic features

Landforms	(1) Lava flow (2) Fan piedmont (3) Mesa
Flooding frequency	None
Ponding frequency	None
Elevation	792–1,219 m
Slope	1–15%
Aspect	Aspect is not a significant factor

Climatic features

Precipitation ranges from 8-12 inches annually. More than half falls during Jul-Sep in brief, but often heavy, thunderstorms. The rest of the moisture comes as light rain or snow that falls slowly for a day or more, but rarely lasts more than a day. May and June are normally the driest months. Humidity is generally very low.

Temperatures are mild throughout most of the year. Freezing temperatures are common at night Dec-Feb; brief 0 F may be observed some nights. During June, July & August, some days may exceed 100 F.

In years of average or greater winter precipitation, annual grasses and forbs occur abundantly in the interspaces.

Table 3. Representative climatic features

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

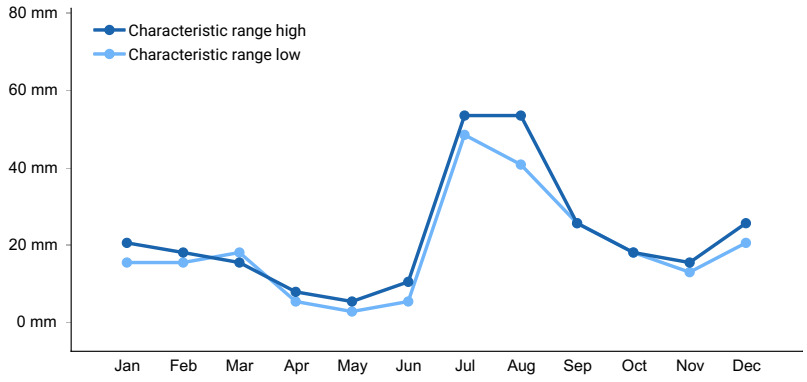


Figure 1. Monthly precipitation range

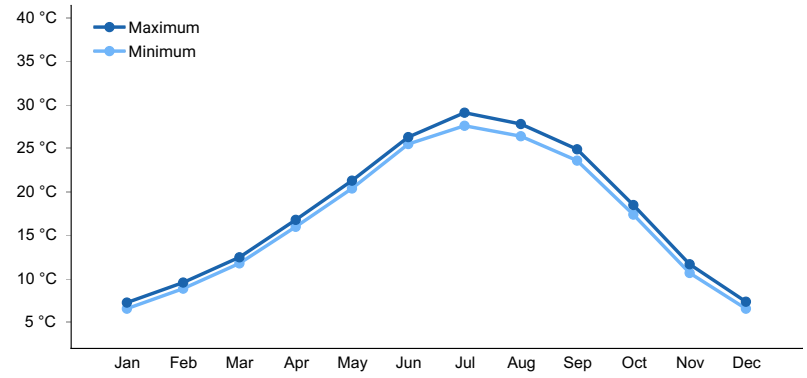


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

There are no water features associated with this site.

Soil features

These soils are moderately deep to deep and clayey textured. They have thin (1-2 inch) surface horizons that range from clayloam to silty clay in texture. They exhibit strong vertic soil properties. They can have well developed covers of surface gravels and cobbles. Surface soils (10 inches) are non-calcareous, but some soils have calcic horizons below the argillic horizon.

Soil series mapped on areas of this site include Vekol, Guest and Stellar (un-flooded). THIS SITE is NOT CURRENTLY CORRELATED to a SOIL in ANY SSA in AZ

Table 4. Representative soil features

Parent material	(1) Alluvium–basalt
Surface texture	(1) Gravelly clay loam (2) Clay loam (3) Loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Moderately slow to slow
Soil depth	152 cm
Surface fragment cover <=3"	0–15%
Surface fragment cover >3"	0–1%
Available water capacity (0-101.6cm)	19.05–24.38 cm
Calcium carbonate equivalent (0-101.6cm)	0–10%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–2
Soil reaction (1:1 water) (0-101.6cm)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–5%
Subsurface fragment volume >3" (Depth not specified)	0–1%

Ecological dynamics

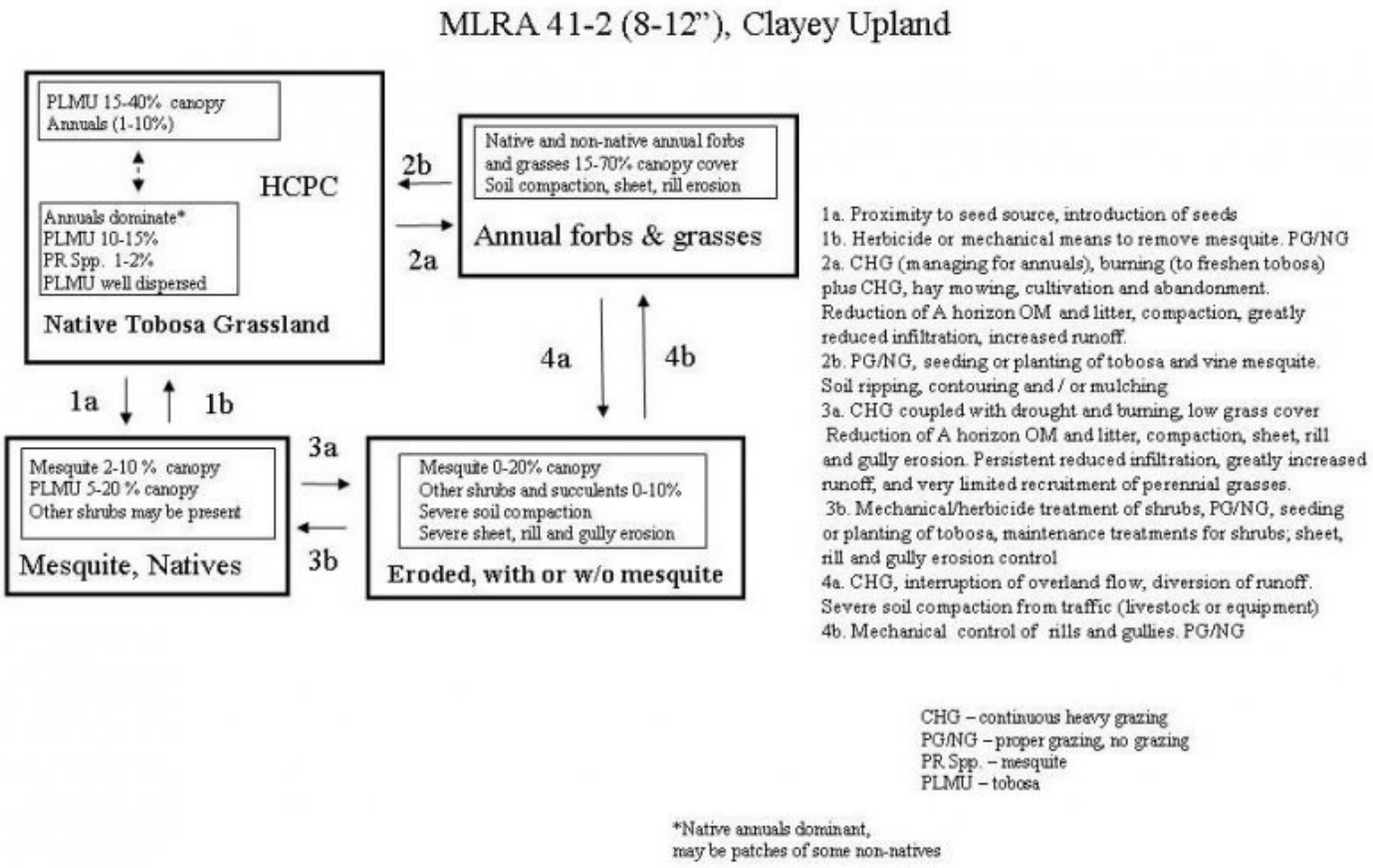
The plant communities found on an ecological site are naturally variable. Composition and production will vary with yearly conditions, location, aspect, and the natural variability of the soils. The historical climax plant community represents the natural potential plant communities found on relict or 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



State 1
Native Tobosa Grassland

Community 1.1
Historic Climax Plant Community

The native potential plant community on this site is grassland with a scattering of desert shrubs and cacti. Annual forbs and grasses, of both winter and summer seasons, are very important in the plant community in their respective (wet) seasons. Tobosa is the dominant perennial grass. The cover of shallow rooted grass species, like curly mesquite, fluctuate widely from wet to dry years.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	235	504	779
Forb	6	56	196
Shrub/Vine	2	6	34
Total	**243**	**566**	**1009**

Table 6. Soil surface cover

Tree basal cover	0%
Shrub/vine/liana basal cover	0%
Grass/grasslike basal cover	2-5%
Forb basal cover	1-2%
Non-vascular plants	0%
Biological crusts	1-5%
Litter	20-60%
Surface fragments >0.25" and <=3"	5-35%
Surface fragments >3"	0-15%
Bedrock	0%
Water	0%
Bare ground	5-65%

Table 7. Canopy structure (% cover)

Height Above Ground (M)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.15	–	0-1%	10-20%	1-15%
>0.15 <= 0.3	–	0-2%	10-25%	1-10%
>0.3 <= 0.6	–	0-1%	10-20%	0-2%
>0.6 <= 1.4	–	0-1%	0-5%	0-1%
>1.4 <= 4	–	–	–	–
>4 <= 12	–	–	–	–
>12 <= 24	–	–	–	–
>24 <= 37	–	–	–	–
>37	–	–	–	–

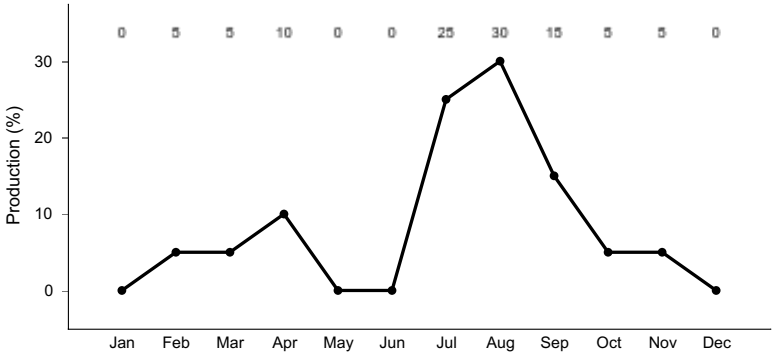


Figure 4. Plant community growth curve (percent production by month). AZ4121, 41.2 7-12" p.z. all sites. Growth begins in the late winter to early spring, semi-dormancy occurs during the May through June drought, most growth occurs during the summer rainy season..

State 2
Annual Forbs & Grasses

Community 2.1
Annuals

This state occurs where the cover of tobosa has been depleted due to the interactions of fire, drought and continuous grazing. Native and non-native annual grasses and forbs. Tobosa will not recruit back into the plant community because it lacks seed persistence in the soil seed bank. Other causes for this state could include cultivation for irrigation and subsequent abandonment, and burning during severe drought resulting in high mortality of tobosa.

State 3
Mesquite, tobosa

Community 3.1
Mesquite, tobosa

This state occurs where mesquite has invaded and increased in the plant community. Mesquite cover ranges from 2 to 10%, and trees are well established and will sprout readily after fire. Tobosa cover is still intact and production is high.

State 4
Eroded, with or w/o mesquite

Community 4.1
Eroded

This state occurs where the interaction of fire, drought and continuous grazing has depleted the cover of tobosa and caused compaction and trailing. Other causes, on a limited scale, include the diversion of overland flow and concentration of runoff by roads, culverts and borrow ditches. Rill and gully erosion has left a drainage

Transition T1B
State 1 to 2

continuous heavy grazing (managing for annuals), burning (to freshen tobosa) plus CHG, hay mowing, cultivation and abandonment

Transition T1A
State 1 to 3

proximity to seed source, introduction of seeds

Restoration pathway R2A
State 2 to 1

Prescribed grazing/no grazing, seeding or planting of tobosa and vine mesquite, mechanical land treatment (ripping, contouring)

Transition T2A
State 2 to 4

continuous heavy grazing, interruption of overland flow, diversion of runoff; severe soil compaction from traffic (livestock or equipment)

Restoration pathway R3A
State 3 to 1

Brush management, prescribed grazing/no grazing

Transition T3A
State 3 to 4

continuous heavy grazing coupled with drought and/or burning

Restoration pathway R4A
State 4 to 2

mechanical control of rills and gullies, prescribed grazing/no grazing

Restoration pathway R4B
State 4 to 3

Brush management, seeding or planting of tobosa, mechanical control of rills and gullies, prescribed grazing/no grazing

Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Dominant Perennial Grass**			224–448	
	tobosagrass	PLMU3	*Pleuraphis mutica*	224–448	–
2	**Miscellaneous Perennial Grasses**			6–84	
	curly-mesquite	HIBE	*Hilaria belangeri*	0–34	–
	vine mesquite	PAOB	*Panicum obtusum*	6–22	–
	burrograss	SCBR2	*Scleropogon brevifolius*	0–11	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	0–11	–
	green sprangletop	LEDU	*Leptochloa dubia*	0–11	–
	Hall's panicgrass	PAHA	*Panicum hallii*	0–11	–
	sideoats grama	BOCU	*Bouteloua curtipendula*	0–11	–
	black grama	BOER4	*Bouteloua eriopoda*	0–11	–
	blue grama	BOGR2	*Bouteloua gracilis*	0–11	–
	cane bluestem	BOBA3	*Bothriochloa barbinodis*	0–6	–
	squirreltail	ELEL5	*Elymus elymoides*	0–2	–
3	**Perennial threeawns**			0–22	
	Fendler threeawn	ARPUL	*Aristida purpurea var. longiseta*	0–17	–
	poverty threeawn	ARDI5	*Aristida divaricata*	0–6	–
	spidergrass	ARTE3	*Aristida ternipes*	0–6	–
	spidergrass	ARTEG	*Aristida ternipes var. gentilis*	0–2	–
	purple threeawn	ARPU9	*Aristida purpurea*	0–2	–
	Parish's threeawn	ARPUP5	*Aristida purpurea var. parishii*	0–2	–
4	**Annual grasses**			6–224	
	little barley	HOPU	*Hordeum pusillum*	1–112	–

	mucronate sprangeltop	LEPAB	*Leptochloa panicea ssp. brachiata*	1–112	–
	Arizona signalgrass	URAR	*Urochloa arizonica*	1–56	–
	Mexican panicgrass	PAHI5	*Panicum hirticaule*	0–34	–
	sixweeks fescue	VUOC	*Vulpia octoflora*	1–28	–
	sticky sprangletop	LEVI5	*Leptochloa viscida*	0–28	–
	sixweeks threeawn	ARAD	*Aristida adscensionis*	1–28	–
	needle grama	BOAR	*Bouteloua aristidoides*	0–22	–
	sixweeks grama	BOBA2	*Bouteloua barbata*	0–22	–
	Rothrock's grama	BORO2	*Bouteloua rothrockii*	0–17	–
	prairie threeawn	AROL	*Aristida oligantha*	1–11	–
	witchgrass	PACA6	*Panicum capillare*	0–11	–
	Bigelow's bluegrass	POBI	*Poa bigelovii*	0–6	–
	Arizona brome	BRAR4	*Bromus arizonicus*	0–6	–
	feather fingergrass	CHVI4	*Chloris virgata*	0–6	–
	tapertip cupgrass	ERACA	*Eriochloa acuminata var. acuminata*	0–6	–
	desert lovegrass	ERPEM	*Eragrostis pectinacea var. miserrima*	0–6	–
	tufted lovegrass	ERPEP2	*Eragrostis pectinacea var. pectinacea*	0–6	–
	Mexican sprangletop	LEFUU	*Leptochloa fusca ssp. uninervia*	0–6	–
	delicate muhly	MUFR	*Muhlenbergia fragilis*	0–2	–
	littleseed muhly	MUMI	*Muhlenbergia microsperma*	0–2	–
Forb					
5	**Perennial Forbs**			6–28	
	dwarf desertpeony	ACNA2	*Acourtia nana*	1–11	–
	bluedicks	DICA14	*Dichelostemma capitatum*	0–6	–
	weakleaf bur ragweed	AMCO3	*Ambrosia confertiflora*	1–6	–
	Indian rushpea	HOGL2	*Hoffmannseggia glauca*	1–6	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	1–6	–
	brownplume wirelettuce	STPA4	*Stephanomeria pauciflora*	0–6	–
	slender poreleaf	POGR5	*Porophyllum gracile*	1–6	–
	Coues' cassia	SECO10	*Senna covesii*	0–1	–
	silverleaf nightshade	SOEL	*Solanum elaeagnifolium*	0–1	–
	pricklyleaf dogweed	THAC	*Thymophylla acerosa*	0–1	–
	Rocky Mountain zinnia	ZIGR	*Zinnia grandiflora*	0–1	–
	ragged nettlespurge	JAMA	*Jatropha macrorhiza*	0–1	–
	San Pedro daisy	LAPO4	*Lasianthaea podocephala*	0–1	–
	Parry's false prairie-clover	MAPA7	*Marina parryi*	0–1	–
	lacy tansyaster	MAPIP4	*Machaeranthera pinnatifida ssp. pinnatifida var. pinnatifida*	0–1	–
	plains blackfoot	MELE2	*Melampodium leucanthum*	0–1	–
	wishbone-bush	MILAV	*Mirabilis laevis var. villosa*	0–1	–
	desert tobacco	NIOB	*Nicotiana obtusifolia*	0–1	–

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	tuber anemone	ANTU	*Anemone tuberosa*	0–1	–
	narrowleaf silverbush	ARLA12	*Argythamnia lanceolata*	0–1	–
	New Mexico silverbush	ARNE2	*Argythamnia neomexicana*	0–1	–
	perennial rockcress	ARPE2	*Arabis perennans*	0–1	–
	dense ayenia	AYMI	*Ayenia microphylla*	0–1	–
	hairyseed bahia	BAAB	*Bahia absinthifolia*	0–1	–
	desert marigold	BAMU	*Baileya multiradiata*	0–1	–
	scarlet spiderling	BOCO	*Boerhavia coccinea*	0–1	–
	desert mariposa lily	CAKE	*Calochortus kennedyi*	0–1	–
	sego lily	CANU3	*Calochortus nuttallii*	0–1	–
	whitemargin sandmat	CHAL11	*Chamaesyce albomarginata*	0–1	–
	leatherweed	CRPO5	*Croton pottsii*	0–1	–
	fingerleaf gourd	CUDI	*Cucurbita digitata*	0–1	–
	coyote gourd	CUPA	*Cucurbita palmata*	0–1	–
	spreading fleabane	ERDI4	*Erigeron divergens*	0–1	–
	desert trumpet	ERIN4	*Eriogonum inflatum*	0–1	–
	southwestern mock vervain	GLGO	*Glandularia gooddingii*	0–1	–
	brownfoot	ACWR5	*Acourtia wrightii*	0–1	–
	poreleaf dogweed	ADPO2	*Adenophyllum porophyllum*	0–1	–
	trailing windmills	ALIN	*Allionia incarnata*	0–1	–
	largeflower onion	ALMA4	*Allium macropetalum*	0–1	–
6	**Annual forbs**			0–168	
	California poppy	ESCAM	*Eschscholzia californica ssp. mexicana*	0–28	–
	western tansymustard	DEPI	*Descurainia pinnata*	0–22	–
	Arizona popcornflower	PLAR	*Plagiobothrys arizonicus*	0–22	–
	desert Indianwheat	PLOV	*Plantago ovata*	0–22	–
	combseed	PECTO	*Pectocarya*	0–22	–
	tanseyleaf tansyaster	MATA2	*Machaeranthera tanacetifolia*	0–17	–
	shaggyfruit pepperweed	LELA	*Lepidium lasiocarpum*	0–17	–
	intermediate pepperweed	LEVIM	*Lepidium virginicum var. medium*	0–17	–
	coastal bird's-foot trefoil	LOSAB	*Lotus salsuginosus var. brevivexillus*	0–17	–
	bristly fiddleneck	AMTE3	*Amsinckia tessellata*	0–17	–
	Arizona poppy	KAGR	*Kallstroemia grandiflora*	0–11	–
	miniature woollystar	ERDI2	*Eriastrum diffusum*	0–11	–
	Coulter's lupine	LUSP2	*Lupinus sparsiflorus*	0–11	–
	manybristle chinchweed	PEPA2	*Pectis papposa*	0–11	–
	New Mexico plumeseed	RANE	*Rafinesquia neomexicana*	0–6	–
	Nuttall's povertyweed	MONU	*Monolepis nuttalliana*	0–6	–

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	slender goldenweed	MAGR10	*Machaeranthera gracilis*	0–6	–
	sorrel buckwheat	ERPO4	*Eriogonum polycladon*	0–6	–
	Texas stork's bill	ERTE13	*Erodium texanum*	0–6	–
	Gordon's bladderpod	LEGO	*Lesquerella gordonii*	0–6	–
	longleaf false goldeneye	HELOA2	*Heliomeris longifolia var. annua*	0–6	–
	foothill deervetch	LOHU2	*Lotus humistratus*	0–6	–
	wedgeleaf draba	DRCU	*Draba cuneifolia*	0–6	–
	flatcrown buckwheat	ERDE6	*Eriogonum deflexum*	0–6	–
	cryptantha	CRYPT	*Cryptantha*	0–6	–
	pitseed goosefoot	CHBE4	*Chenopodium berlandieri*	0–6	–
	milkvetch	ASTRA	*Astragalus*	0–6	–
	wheelscale saltbush	ATEL	*Atriplex elegans*	0–6	–
	Coulter's spiderling	BOCO2	*Boerhavia coulteri*	0–6	–
	carelessweed	AMPA	*Amaranthus palmeri*	0–6	–
	white tackstem	CAWR	*Calycoseris wrightii*	0–2	–
	fringed redmaids	CACI2	*Calandrinia ciliata*	0–2	–
	brittle spineflower	CHBR	*Chorizanthe brevicornu*	0–2	–
	hyssopleaf sandmat	CHHY3	*Chamaesyce hyssopifolia*	0–2	–
	Esteve's pincushion	CHST	*Chaenactis stevioides*	0–2	–
	hairy prairie clover	DAMO	*Dalea mollis*	0–2	–
	American wild carrot	DAPU3	*Daucus pusillus*	0–2	–
	Arizona lupine	LUAR4	*Lupinus arizonicus*	0–2	–
	hairy desertsunflower	GECA2	*Geraea canescens*	0–2	–
	star gilia	GIST	*Gilia stellata*	0–2	–
	woolly tidestromia	TILA2	*Tidestromia lanuginosa*	0–2	–
	woollyhead neststraw	STMI2	*Stylocline micropoides*	0–2	–
	sleepy silene	SIAN2	*Silene antirrhina*	0–2	–
	green carpetweed	MOVE	*Mollugo verticillata*	0–2	–
	phacelia	PHACE	*Phacelia*	0–2	–
	desert evening primrose	OEPR	*Oenothera primiveris*	0–2	–
	Florida pellitory	PAFL3	*Parietaria floridana*	0–2	–
	chia	SACO6	*Salvia columbariae*	0–1	–
	sawtooth sage	SASU7	*Salvia subincisa*	0–1	–
	spreading fanpetals	SIAB	*Sida abutifolia*	0–1	–
	bristly nama	NAHI	*Nama hispidum*	0–1	–
	glandular threadplant	NEGL	*Nemacladus glanduliferus*	0–1	–
	Fendler's desertdandelion	MAFE	*Malacothrix fendleri*	0–1	–
	whitestem blazingstar	MEAL6	*Mentzelia albicaulis*	0–1	–
	Coulter's globemallow	SPCO2	*Sphaeralcea coulteri*	0–1	–
	doubleclaw	PRPA2	*Proboscidea parviflora*	0–1	–
	sand fringepod	THCU	*Thysanocarpus curvipes*	0–1	–

	tumblemustard	THELY3	*Thelypodiopsis*	0–1	–
	Mexican fireplant	EUHE4	*Euphorbia heterophylla*	0–1	–
	common woolly sunflower	ERLA6	*Eriophyllum lanatum*	0–1	–
	camphorweed	HESU3	*Heterotheca subaxillaris*	0–1	–
	crestrib morning-glory	IPCO2	*Ipomoea costellata*	0–1	–
	scrambled eggs	COAU2	*Corydalis aurea*	0–1	–
	whitemouth dayflower	COER	*Commelina erecta*	0–1	–
	exserted Indian paintbrush	CAEXE	*Castilleja exserta ssp. exserta*	0–1	–
	yellow tackstem	CAPA7	*Calycoseris parryi*	0–1	–
	hoary bowlesia	BOIN3	*Bowlesia incana*	0–1	–
	southwestern pricklypoppy	ARPL3	*Argemone pleiacantha*	0–1	–
	annual agoseris	AGHE2	*Agoseris heterophylla*	0–1	–
Shrub/Vine					
7	**Miscellaneous Shrubs**			0–11	
	fourwing saltbush	ATCA2	*Atriplex canescens*	0–6	–
	western honey mesquite	PRGLT	*Prosopis glandulosa var. torreyana*	0–6	–
	lotebush	ZIOB	*Ziziphus obtusifolia*	0–1	–
	whitethorn acacia	ACCO2	*Acacia constricta*	0–1	–
	catclaw acacia	ACGR	*Acacia greggii*	0–1	–
	spiny hackberry	CEEH	*Celtis ehrenbergiana*	0–1	–
	longleaf jointfir	EPTR	*Ephedra trifurca*	0–1	–
	American tarwort	FLCE	*Flourensia cernua*	0–1	–
	creosote bush	LATR2	*Larrea tridentata*	0–1	–
	water jacket	LYAN	*Lycium andersonii*	0–1	–
	pale desert-thorn	LYPA	*Lycium pallidum*	0–1	–
	catclaw mimosa	MIACB	*Mimosa aculeaticarpa var. biuncifera*	0–1	–
8	**Half shrubs**			1–11	
	bastardsage	ERWR	*Eriogonum wrightii*	0–6	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	0–2	–
	fairyduster	CAER	*Calliandra eriophylla*	0–2	–
	turpentine bush	ERLA12	*Ericameria laricifolia*	0–1	–
	burroweed	ISTE2	*Isocoma tenuisecta*	0–1	–
	littleleaf ratany	KRER	*Krameria erecta*	0–1	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	0–1	–
	rough menodora	MESC	*Menodora scabra*	0–1	–
	threadleaf snakeweed	GUMI	*Gutierrezia microcephala*	0–1	–
9	**Succulents**			1–11	
	tulip pricklypear	OPPH	*Opuntia phaeacantha*	0–6	–
	banana yucca	YUBA	*Yucca baccata*	0–2	–

	soaptree yucca	YUEL	*Yucca elata*	0–2	–
	cactus apple	OPEN3	*Opuntia engelmannii*	0–2	–
	Christmas cactus	CYLE8	*Cylindropuntia leptocaulis*	0–2	–
	walkingstick cactus	CYSP8	*Cylindropuntia spinosior*	0–2	–
	candy barrelcactus	FEWI	*Ferocactus wislizeni*	0–1	–
	devil's cholla	GRKU	*Grusonia kunzei*	0–1	–
	buck-horn cholla	CYAC8	*Cylindropuntia acanthocarpa*	0–1	–

Animal community

This site produces some perennial forage for livestock. Tobosa is very poor quality forage when cured and only fair forage when green. In wet (El Nino) winters the site produces a tremendous amount of annual forbs and grasses, all of which are excellent forage. The site is home to a variety of small mammals and grassland bird species and their associated predators. It is mainly a foraging area for larger mammals like mule deer and javalina.

Hydrological functions

These soils are heavy textured and good producers of runoff.

Recreational uses

Hunting, horseback riding, hiking, wildlife observation, photography, rock hounding and bird watching.

Other products

Red clay for pot making. Herbs like grass nuts, wild onions and hog potatos.

Contributors

Dan Robinett
Larry D. Ellicott

Approval

Curtis Talbot, 4/09/2021

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)	
Contact for lead author	
Date	04/09/2021
Approved by	Curtis Talbot
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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

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:

    Sub-dominant:

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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:**

17. **Perennial plant reproductive capability:**