USDA Natural Resources
Conservation Service

Ecological site R041XB225AZ
Sandstone / Mudstone Hills 8-12" p.z.

Accessed: 05/14/2025

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

R041XB207AZ	**Limy Slopes 8-12" p.z.**
R041XB208AZ	**Limy Upland 8-12" p.z.**
R041XB220AZ	**Limestone Hills 8-12" p.z.**

Similar sites

R041XB201AZ	**Breaks 8-12" p.z.**

Table 1. Dominant plant species

Tree	(1) *canotia holacantha*
Shrub	(1) *acamptopappus sphaerocephalus*
Herbaceous	(1) *tridens muticus* (2) *aristida*

Physiographic features

This site occurs in the lowest elevations of the Madrean Basin and Range province in southeastern Arizona. It occurs on steep escarpments, hill-slopes and ridge-tops. This site is characterized by highly eroded scarps with lenses of sandstone rock out-crop, intermingled with vegetated areas on more moderate slopes.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Ridge (3) Escarpment
Flooding frequency	None
Ponding frequency	None
Elevation	792–1,219 m
Slope	10–75%
Aspect	N, E, S

Climatic features

Precipitation ranges from 8-12 inches annually. More than half falls during July-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)	0 days
Precipitation total (average)	0 mm

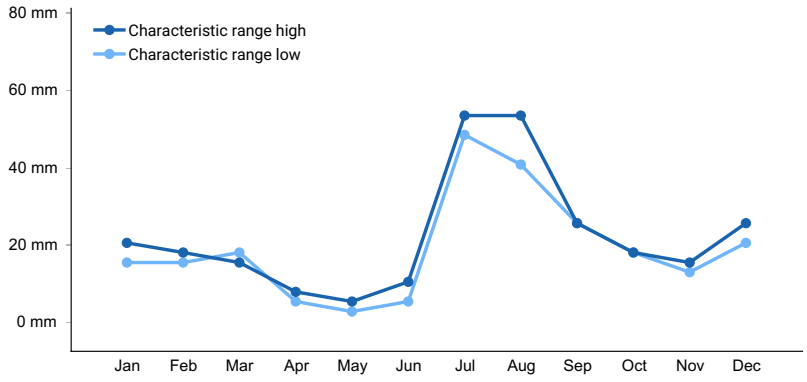

Figure 1. Monthly precipitation range

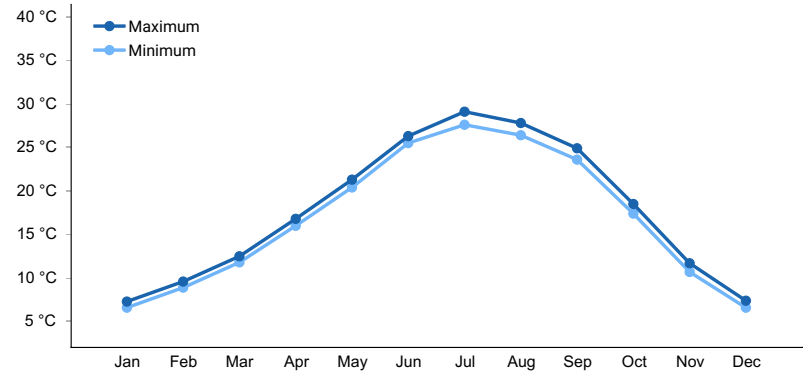

Figure 2. Monthly average minimum and maximum temperature

Influencing water features

There are no water features associated with this site.

Soil features

These are deep soils that are variable in texture, ranging from sandy loam to clayloam. They have formed in, mostly, unconsolidated mudstones and sandstones, formed on lacustrine deposits along the Gila river near San Carlos. The soils are calcareous and have soluble gypsum (1 to 10%) in the profile. Areas of sandstone rock outcrop occurs as thin (1-2 feet thick) ledges on steep slopes.

Soils mapped on this site include torriorthents and haplogypsids. THIS SITE is NOT CURRENTLY CORRELATED on a SOIL in any SSA in AZ.

Table 4. Representative soil features

Surface texture	(1) Sandy loam (2) Silt loam (3) Clay loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately rapid to slow
Soil depth	152 cm
Surface fragment cover <=3"	5–35%
Surface fragment cover >3"	1–15%
Available water capacity (0-101.6cm)	9.4–14.22 cm
Calcium carbonate equivalent (0-101.6cm)	1–15%
Electrical conductivity (0-101.6cm)	0–3 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–3
Soil reaction (1:1 water) (0-101.6cm)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	5–35%
Subsurface fragment volume >3" (Depth not specified)	1–5%

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 community found on relict or relatively undisturbed areas of this site. Other plant communities described here represent plant communities that are known to occur when the site is disturbed by factors such as fire, grazing and 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 described in the 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 amount shown for that group. Divide the resulting total by the total, normal year, production shown in the plant community description. If the

rainfall has been significantly above or below normal, use the total production shown for above or below normal years. If the field data is not collected at the end of the summer growing season, then the field data must be corrected to the end of 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.

The historic native state includes the native plant communities that occur on the site, including the historic climax plant community. This state includes other plant communities that naturally occupy the site following fire, drought, flooding, herbivores and other natural disturbances. The historic climax plant community represents the natural climax community that eventually reoccupies the site with proper management and a return to near normal conditions and/or equilibrium.

State and transition model

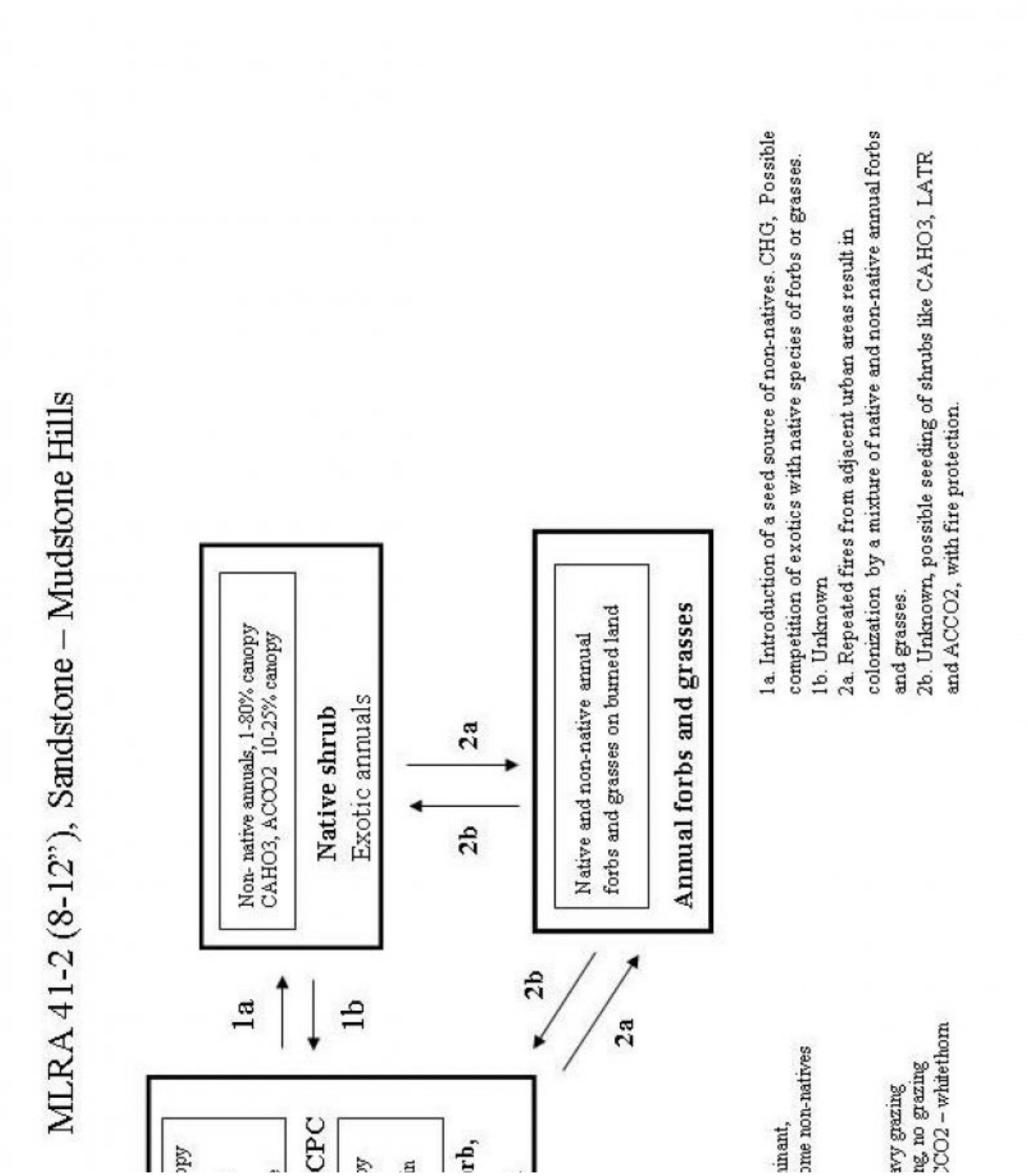

Figure 3. State & Transition, Sandstone/Mudstone Hills 8-12

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

Figure 4. Sandstone / Mudstone Hills 8-12" pz., HCPC

The native potential plant community found on this site is dominated by desert trees, especially canotia, and shrubs. Perennial grasses and herbs are found in minor amounts and 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)
Tree	6	39	224
Grass/Grasslike	19	62	191
Shrub/Vine	57	112	163
Forb	1	11	73
Total	**83**	**224**	**651**

Table 6. Soil surface cover

Tree basal cover	0-1%
Shrub/vine/liana basal cover	1-2%
Grass/grasslike basal cover	0-1%
Forb basal cover	0-1%
Non-vascular plants	0%
Biological crusts	1-10%
Litter	5-35%
Surface fragments >0.25" and <=3"	5-15%
Surface fragments >3"	1-5%
Bedrock	1-5%
Water	0%
Bare ground	30-85%

Table 7. Canopy structure (% cover)

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

State 2
Shrubs, exotic annuals

Community 2.1
Shrubs, exotic annuals

This state occurs where non-native annual forbs and grasses have increased to dominate the herbaceous component of the plant community. Species include red brome, cheatgrass, filaree, purslane and Sahara mustard. Native annuals and perennial grasses and forbs exist in the plant community but are diminished in cover and diversity. The native tree and shrub cover is intact.

State 3
Annuals

Community 3.1
Annuals

Figure 6. Sandstone / Mudstone Hills 8-12" pz., annuals

This state occurs where repeated fires have eliminated desert shrubs and trees from the plant community. It occurs near residential areas where the chances of fires are much greater. Native and non-native annual forbs and grasses dominate the plant community.

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 grasses**			17–112	
	blue threeawn	ARPUN	*Aristida purpurea var. nealleyi*	6–56	–
	tobosagrass	PLMU3	*Pleuraphis mutica*	6–56	–
	slim tridens	TRMU	*Tridens muticus*	1–22	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	6–17	–
	Parish's threeawn	ARPUP5	*Aristida purpurea var. parishii*	0–11	–
2	**Misc. perennial grasses**			1–22	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	0–11	–
	desert needlegrass	ACSP12	*Achnatherum speciosum*	0–11	–
	low woollygrass	DAPU7	*Dasyochloa pulchella*	1–11	–

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	alkali sacaton	SPAI	*Sporobolus airoides*	0–6	–
	spike dropseed	SPCO4	*Sporobolus contractus*	0–6	–
	purple threeawn	ARPU9	*Aristida purpurea*	0–6	–
	spidergrass	ARTE3	*Aristida ternipes*	0–6	–
	spidergrass	ARTEG	*Aristida ternipes var. gentilis*	0–6	–
	sideoats grama	BOCU	*Bouteloua curtipendula*	0–6	–
	black grama	BOER4	*Bouteloua eriopoda*	0–6	–
	burrograss	SCBR2	*Scleropogon brevifolius*	0–6	–
	big sacaton	SPWR2	*Sporobolus wrightii*	0–6	–
	false Rhodes grass	TRCR9	*Trichloris crinita*	0–2	–
	poverty threeawn	ARDI5	*Aristida divaricata*	0–2	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–2	–
	mesa dropseed	SPFL2	*Sporobolus flexuosus*	0–2	–
	New Mexico feathergrass	HENE5	*Hesperostipa neomexicana*	0–2	–
	whiplash pappusgrass	PAVA2	*Pappophorum vaginatum*	0–2	–
	Arizona cottontop	DICA8	*Digitaria californica*	0–1	–
	nineawn pappusgrass	ENDE	*Enneapogon desvauxii*	0–1	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	0–1	–
3	**Annual grasses**			1–56	
	needle grama	BOAR	*Bouteloua aristidoides*	0–22	–
	sixweeks grama	BOBA2	*Bouteloua barbata*	0–22	–
	Rothrock's grama	BORO2	*Bouteloua rothrockii*	0–11	–
	Eastwood fescue	VUMIC	*Vulpia microstachys var. ciliata*	0–11	–
	desert fescue	VUMIM	*Vulpia microstachys var. microstachys*	0–11	–
	sixweeks fescue	VUOC	*Vulpia octoflora*	1–11	–
	sixweeks threeawn	ARAD	*Aristida adscensionis*	0–6	–
	prairie threeawn	AROL	*Aristida oligantha*	0–6	–
	mucronate sprangeltop	LEPAB	*Leptochloa panicea ssp. brachiata*	0–6	–
	delicate muhly	MUFR	*Muhlenbergia fragilis*	0–2	–
	littleseed muhly	MUMI	*Muhlenbergia microsperma*	0–2	–
	witchgrass	PACA6	*Panicum capillare*	0–2	–
	Mexican panicgrass	PAHI5	*Panicum hirticaule*	0–2	–
	Bigelow's bluegrass	POBI	*Poa bigelovii*	0–2	–
	Arizona signalgrass	URAR	*Urochloa arizonica*	0–2	–
	Arizona brome	BRAR4	*Bromus arizonicus*	0–2	–
	feather fingergrass	CHVI4	*Chloris virgata*	0–2	–
	canyon cupgrass	ERLE7	*Eriochloa lemmonii*	0–2	–
	Mexican lovegrass	ERME	*Eragrostis mexicana*	0–2	–
	desert lovegrass	ERPEM	*Eragrostis pectinacea var. miserrima*	0–2	–
	tufted lovegrass	ERPEP2	*Eragrostis pectinacea var. pectinacea*	0–2	–
	Mexican sprangletop	LEFUU	*Leptochloa fusca ssp. uninervia*	0–1	–
Forb					
4	**Perennial forbs**			1–17	

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	dwarf desertpeony	ACNA2	*Acourtia nana*	1–6	–
	lacy tansyaster	MAPIP4	*Machaeranthera pinnatifida ssp. pinnatifida var. pinnatifida*	0–6	–
	pricklyleaf dogweed	THAC	*Thymophylla acerosa*	0–6	–
	glandleaf milkwort	POMA7	*Polygala macradenia*	0–2	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	0–2	–
	weakleaf bur ragweed	AMCO3	*Ambrosia confertiflora*	0–2	–
	stinging serpent	CESI	*Cevallia sinuata*	0–2	–
	whitemargin sandmat	CHAL11	*Chamaesyce albomarginata*	0–1	–
	leatherweed	CRPO5	*Croton pottsii*	0–1	–
	bluedicks	DICA14	*Dichelostemma capitatum*	0–1	–
	spreading fleabane	ERDI4	*Erigeron divergens*	0–1	–
	desert trumpet	ERIN4	*Eriogonum inflatum*	0–1	–
	southwestern mock vervain	GLGO	*Glandularia gooddingii*	0–1	–
	paleface	HIDE	*Hibiscus denudatus*	0–1	–
	San Pedro daisy	LAPO4	*Lasianthaea podocephala*	0–1	–
	Fendler's bladderpod	LEFE	*Lesquerella fendleri*	0–1	–
	tuber anemone	ANTU	*Anemone tuberosa*	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	–
	desert mariposa lily	CAKE	*Calochortus kennedyi*	0–1	–
	sego lily	CANU3	*Calochortus nuttallii*	0–1	–
	brownplume wirelettuce	STPA4	*Stephanomeria pauciflora*	0–1	–
	Coues' cassia	SECO10	*Senna covesii*	0–1	–
	silverleaf nightshade	SOEL	*Solanum elaeagnifolium*	0–1	–
	wishbone-bush	MILAV	*Mirabilis laevis var. villosa*	0–1	–
	desert tobacco	NIOB	*Nicotiana obtusifolia*	0–1	–
	brownfoot	ACWR5	*Acourtia wrightii*	0–1	–
	trailing windmills	ALIN	*Allionia incarnata*	0–1	–
	rue of the mountains	THTE2	*Thamnosma texana*	0–1	–
	branched noseburn	TRRA5	*Tragia ramosa*	0–1	–
5	**Annual forbs**			0–56	
	western tansymustard	DEPI	*Descurainia pinnata*	0–11	–
	flatcrown buckwheat	ERDE6	*Eriogonum deflexum*	0–11	–
	desert Indianwheat	PLOV	*Plantago ovata*	0–11	–
	miniature woollystar	ERDI2	*Eriastrum diffusum*	0–6	–
	cryptantha	CRYPT	*Cryptantha*	0–6	–
	Gordon's bladderpod	LEGO	*Lesquerella gordonii*	0–6	–
	shaggyfruit pepperweed	LELA	*Lepidium lasiocarpum*	0–6	–
	intermediate pepperweed	LEVIM	*Lepidium virginicum var. medium*	0–6	–

	coastal bird's-foot trefoil	LOSAB	*Lotus salsuginosus var. brevivexillus*	0–6	–
	Nuttall's povertyweed	MONU	*Monolepis nuttalliana*	0–6	–
	slender goldenweed	MAGR10	*Machaeranthera gracilis*	0–6	–
	carelessweed	AMPA	*Amaranthus palmeri*	0–6	–
	bristly fiddleneck	AMTE3	*Amsinckia tessellata*	0–6	–
	wheelscale saltbush	ATEL	*Atriplex elegans*	0–6	–
	Coulter's spiderling	BOCO2	*Boerhavia coulteri*	0–6	–
	fringed redmaids	CACI2	*Calandrinia ciliata*	0–2	–
	tanseyleaf tansyaster	MATA2	*Machaeranthera tanacetifolia*	0–2	–
	phacelia	PHACE	*Phacelia*	0–2	–
	desert evening primrose	OEPR	*Oenothera primiveris*	0–2	–
	Florida pellitory	PAFL3	*Parietaria floridana*	0–2	–
	combseed	PECTO	*Pectocarya*	0–2	–
	green carpetweed	MOVE	*Mollugo verticillata*	0–2	–
	Coulter's lupine	LUSP2	*Lupinus sparsiflorus*	0–2	–
	hairy prairie clover	DAMO	*Dalea mollis*	0–2	–
	American wild carrot	DAPU3	*Daucus pusillus*	0–2	–
	hairy desertsunflower	GECA2	*Geraea canescens*	0–2	–
	star gilia	GIST	*Gilia stellata*	0–2	–
	Arizona poppy	KAGR	*Kallstroemia grandiflora*	0–2	–
	sorrel buckwheat	ERPO4	*Eriogonum polycladon*	0–2	–
	Texas stork's bill	ERTE13	*Erodium texanum*	0–2	–
	California poppy	ESCAM	*Eschscholzia californica ssp. mexicana*	0–2	–
	white tackstem	CAWR	*Calycoseris wrightii*	0–2	–
	brittle spineflower	CHBR	*Chorizanthe brevicornu*	0–2	–
	hyssopleaf sandmat	CHHY3	*Chamaesyce hyssopifolia*	0–2	–
	Esteve's pincushion	CHST	*Chaenactis stevioides*	0–2	–
	woollyhead neststraw	STMI2	*Stylocline micropoides*	0–2	–
	woolly tidestromia	TILA2	*Tidestromia lanuginosa*	0–2	–
	doubleclaw	PRPA2	*Proboscidea parviflora*	0–1	–
	New Mexico plumeseed	RANE	*Rafinesquia neomexicana*	0–1	–
	sleepy silene	SIAN2	*Silene antirrhina*	0–1	–
	Coulter's globemallow	SPCO2	*Sphaeralcea coulteri*	0–1	–
	common woolly sunflower	ERLA6	*Eriophyllum lanatum*	0–1	–
	Mexican fireplant	EUHE4	*Euphorbia heterophylla*	0–1	–
	bristly nama	NAHI	*Nama hispidum*	0–1	–
	glandular threadplant	NEGL	*Nemacladus glanduliferus*	0–1	–
	manybristle chinchweed	PEPA2	*Pectis papposa*	0–1	–
	Arizona popcornflower	PLAR	*Plagiobothrys arizonicus*	0–1	–
	whitestem blazingstar	MEAL6	*Mentzelia albicaulis*	0–1	–
	exserted Indian	CAEXE	*Castilleja exserta ssp. exserta*	0–1	–

	paintbrush				
	yellow tackstem	CAPA7	*Calycoseris parryi*	0–1	–
	hoary bowlesia	BOIN3	*Bowlesia incana*	0–1	–
	milkvetch	ASTRA	*Astragalus*	0–1	–
Shrub/Vine					
6	**Dominant shrubs**			56–112	
	whitethorn acacia	ACCO2	*Acacia constricta*	11–56	–
	creosote bush	LATR2	*Larrea tridentata*	11–56	–
	catclaw acacia	ACGR	*Acacia greggii*	1–22	–
	viscid acacia	ACNE4	*Acacia neovernicosa*	0–22	–
	longleaf jointfir	EPTR	*Ephedra trifurca*	0–11	–
	ocotillo	FOSP2	*Fouquieria splendens*	0–11	–
	jojoba	SICH	*Simmondsia chinensis*	0–11	–
7	**Miscellaneous shrubs**			0–17	
	Wright's beebrush	ALWR	*Aloysia wrightii*	0–6	–
	mariola	PAIN2	*Parthenium incanum*	0–6	–
	western honey mesquite	PRGLT	*Prosopis glandulosa var. torreyana*	0–2	–
	Parish's goldeneye	VIPA14	*Viguiera parishii*	0–1	–
	lotebush	ZIOB	*Ziziphus obtusifolia*	0–1	–
	fourwing saltbush	ATCA2	*Atriplex canescens*	0–1	–
	cattle saltbush	ATPO	*Atriplex polycarpa*	0–1	–
	brittlebush	ENFA	*Encelia farinosa*	0–1	–
	button brittlebush	ENFR	*Encelia frutescens*	0–1	–
	American tarwort	FLCE	*Flourensia cernua*	0–1	–
	crown of thorns	KOSP	*Koeberlinia spinosa*	0–1	–
	water jacket	LYAN	*Lycium andersonii*	0–1	–
	pale desert-thorn	LYPA	*Lycium pallidum*	0–1	–
8	**Half shrubs**			1–22	
	Eastern Mojave buckwheat	ERFA2	*Eriogonum fasciculatum*	0–17	–
	rayless goldenhead	ACSP	*Acamptopappus sphaerocephalus*	0–11	–
	fairyduster	CAER	*Calliandra eriophylla*	0–6	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	0–6	–
	littleleaf ratany	KRER	*Krameria erecta*	0–6	–
	desert zinnia	ZIAC	*Zinnia acerosa*	0–6	–
	rough menodora	MESC	*Menodora scabra*	0–6	–
	whitestem paperflower	PSCO2	*Psilostrophe cooperi*	0–2	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	0–1	–
	threadleaf snakeweed	GUMI	*Gutierrezia microcephala*	0–1	–
	burrobush	AMDU2	*Ambrosia dumosa*	0–1	–
	resinleaf brickellbush	BRBA2	*Brickellia baccharidea*	0–1	–
9	**Succulents**			0–11	
	banana yucca	YUBA	*Yucca baccata*	1–11	–
	common sotol	DAWH2	*Dasylirion wheeleri*	0–6	–

	common sotol	DAWH2	*Dasylirion wheeleri*	0–3	–
	soaptree yucca	YUEL	*Yucca elata*	0–2	–
	Engelmann's hedgehog cactus	ECEN	*Echinocereus engelmannii*	0–1	–
	candy barrelcactus	FEWI	*Ferocactus wislizeni*	0–1	–
	devil's cholla	GRKU	*Grusonia kunzei*	0–1	–
	cactus apple	OPEN3	*Opuntia engelmannii*	0–1	–
	purple pricklypear	OPMA8	*Opuntia macrocentra*	0–1	–
	tulip pricklypear	OPPH	*Opuntia phaeacantha*	0–1	–
	nightblooming cereus	PEGR3	*Peniocereus greggii*	0–1	–
	buck-horn cholla	CYAC8	*Cylindropuntia acanthocarpa*	0–1	–
	Christmas cactus	CYLE8	*Cylindropuntia leptocaulis*	0–1	–
	walkingstick cactus	CYSP8	*Cylindropuntia spinosior*	0–1	–
Tree					
10	**Dominant tree**			6–224	
	crucifixion thorn	CAHO3	*Canotia holacantha*	11–202	–
	oneseed juniper	JUMO	*Juniperus monosperma*	0–28	–

Animal community

This site is a poor producer of livestock forage. Steep slopes and lack of perennial forage plants limit utilization of the site.
Wildlife on the site are limited mainly to small mammals and birds and their associated predators. At the higher elevations in this CRA, mule deer use this site for cover and forage. Water developments are very important for both livestock and wildlife on the site.

Hydrological functions

These are medium to heavy textured soils with steep slopes making them good producers of runoff and sediment.

Recreational uses

Hunting, horseback riding, hiking, photography, bird watching

Wood products

Limited wood from shrubby mesquite and canotia.

Other products

Sandstone slabs for building blocks and flag-stone.

Contributors

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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	
Approved by	
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:**