

Ecological site R041XB208AZ

Limy Upland

8-12" p.z.

Last updated: 7/28/2020
Accessed: 09/23/2026

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, soap tree yucca, creosote bush, 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

F041XB221AZ	Loamy Bottom 8-12" p.z. woodland
F041XB222AZ	Saline Bottom 8-12" p.z. woodland
R041XB206AZ	Limy Fan 8-12" p.z.
R041XB207AZ	Limy Slopes 8-12" p.z.

Similar sites

R040XA111AZ	Limy Upland 10"-13" p.z.
R041XC309AZ	Limy Upland 12-16" p.z.

Table 1. Dominant plant species

Tree	Not specified
------	---------------

Shrub	(1) <i>larrea tridentata</i>
Herbaceous	(1) <i>muhlenbergia porteri</i> (2) <i>aristida</i>

Physiographic features

This site occurs in the lowest elevations of the Madrean Basin and Range province in southeastern Arizona. It occurs on fan terraces and ridge-tops. It occurs in the Gila and San Pedro river valleys.

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont (2) Fan remnant (3) Ridge
Flooding frequency	None
Ponding frequency	None
Elevation	790 – 1,220 m
Slope	0 – 20 %
Aspect	Aspect is not a significant factor

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)	
Precipitation total (average)	

Influencing water features

There are no water features associated with this site.

Soil features

These soils are well drained, coarse textured, stratified and high in calcium carbonates. They are shallow and underlain by lime and/or silica cemented pans or very gravelly, lime cemented, conglomerate. They have formed in old fan deposits.

Soil series mapped on this site include: SSA-662 Safford area MU's BeB BpB PsB & ThC Bitter Spring, ChB ChE CkD & PuB Cave, WhA WkA & WkB Whitlock; SSA-663 Gila-Duncan area MU's 25 26 & 41 Piloncillo, 29 & 45 Whitlock; SSA-664 San Simon area MU 44 Vekol; SSA-666 Cochise county Northwest part MU's 8 Borderline and 27 Monzingo; SSA-671 Cochise county Douglas-Tombstone part MU's 15 Borderline FSL, 35 & 111 Monzingo, 47 Dona Ana; SSA-675 San Carlos IR area MU 17 Bylas.

Table 4. Representative soil features

Surface texture	(1) Very gravelly sandy loam (2) Very gravelly fine sandy loam (3) Sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately rapid to moderate
Soil depth	10 – 50 cm
Surface fragment cover <=3"	20 – 50 %
Surface fragment cover >3"	0 – 20 %
Available water capacity (0-101.6cm)	1.27 – 4.32 cm
Calcium carbonate equivalent (0-101.6cm)	10 – 30 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified

Soil reaction (1:1 water) (0-101.6cm)	7.4 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	20 – 60 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

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 and Transition, Limy Upland 8-12" p.z.

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Dominant perennial grasses			8-67	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	6-45	–
	blue threeawn	ARPUN	<i>Aristida purpurea</i> var. <i>nealleyi</i>	1-22	–
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	1-22	–
	black grama	BOER4	<i>Bouteloua eriopoda</i>	0-17	–
	slim tridens	TRMU	<i>Tridens muticus</i>	0-17	–
	Parish's threeawn	ARPUP5	<i>Aristida purpurea</i> var. <i>parishii</i>	0-11	–
2	Misc. perennial grasses			0-22	
	purple threeawn	ARPU9	<i>Aristida purpurea</i>	0-6	–
	spidergrass	ARTE3	<i>Aristida ternipes</i>	0-6	–

	spidergrass	ARTEG	<i>Aristida ternipes</i> var. <i>gentilis</i>	0-6	–
	tobosagrass	PLMU3	<i>Pleuraphis mutica</i>	0-6	–
	Hall's panicgrass	PAHA	<i>Panicum hallii</i>	0-2	–
	whiplash pappusgrass	PAVA2	<i>Pappophorum vaginatum</i>	0-2	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	0-2	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	0-2	–
	mesa dropseed	SPFL2	<i>Sporobolus flexuosus</i>	0-2	–
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	0-2	–
	Arizona cottontop	DICA8	<i>Digitaria californica</i>	0-1	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	0-1	–
	nineawn pappusgrass	ENDE	<i>Enneapogon desvauxii</i>	0-1	–
	Arizona muhly	MUAR3	<i>Muhlenbergia arizonica</i>	0-1	–
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	0-1	–
	burrograss	SCBR2	<i>Scleropogon brevifolius</i>	0-1	–
	plains bristlegrass	SEVU2	<i>Setaria vulpiseta</i>	0-1	–
3	Annual grasses			0-34	
	prairie threeawn	AROL	<i>Aristida oligantha</i>	0-11	–
	needle grama	BOAR	<i>Bouteloua aristoides</i>	0-11	–
	sixweeks grama	BOBA2	<i>Bouteloua barbata</i>	0-11	–
	Rothrock's grama	BORO2	<i>Bouteloua rothrockii</i>	0-6	–
	witchgrass	PACA6	<i>Panicum capillare</i>	0-6	–
	sixweeks threeawn	ARAD	<i>Aristida adscensionis</i>	0-6	–
	delicate muhly	MUFR	<i>Muhlenbergia fragilis</i>	0-2	–
	littleseed muhly	MUMI	<i>Muhlenbergia microsperma</i>	0-2	–
	Bigelow's bluegrass	POBI	<i>Poa bigelovii</i>	0-2	–
	Arizona signalgrass	URAR	<i>Urochloa arizonica</i>	0-2	–
	sixweeks fescue	VUOC	<i>Vulpia octoflora</i>	0-2	–
	Mexican panicgrass	PAHI5	<i>Panicum hirticaule</i>	0-1	–
	Arizona brome	BRAR4	<i>Bromus arizonicus</i>	0-1	–
	canyon cupgrass	ERLE7	<i>Eriochloa lemmonii</i>	0-1	–
	desert lovegrass	ERPEM	<i>Eragrostis pectinacea</i> var. <i>miserrima</i>	0-1	–
	tufted lovegrass	ERPEP2	<i>Eragrostis pectinacea</i> var. <i>pectinacea</i>	0-1	–
	Mexican sprangletop	LEFUU	<i>Leptochloa fusca</i> ssp. <i>uninervia</i>	0-1	–
	mucronate sprangletop	LEPAB	<i>Leptochloa panicea</i> ssp. <i>brachiata</i>	0-1	–
Forb					
4	Perennial Forbs			1-11	
	dwarf desertpeony	ACNA2	<i>Acourtia nana</i>	1-6	–
	pricklyleaf dogweed	THAC	<i>Thymophylla acerosa</i>	0-2	–
	rue of the mountains	THTE2	<i>Thamnosma texana</i>	0-2	–
	wealeaf bur ragweed	AMCO3	<i>Ambrosia confertiflora</i>	0-2	–
	leatherweed	CRPO5	<i>Croton pottsii</i>	0-2	–
	bluedicks	DICA14	<i>Dichelostemma capitatum</i>	0-1	–
	desert trumpet	ERIN4	<i>Eriogonum inflatum</i>	0-1	–
	Parry's false prairie-clover	MAPA7	<i>Marina parryi</i>	0-1	–
	lacy tansyaster	MAPIP4	<i>Machaeranthera pinnatifida</i> ssp. <i>pinnatifida</i> var. <i>pinnatifida</i>	0-1	–
	wishbone-bush	MILAV	<i>Mirabilis laevis</i> var. <i>villosa</i>	0-1	–

	desert tobacco	NIOB	<i>Nicotiana obtusifolia</i>	0-1	–
	slender poreleaf	POGR5	<i>Porophyllum gracile</i>	0-1	–
	glandleaf milkwort	POMA7	<i>Polygala macradenia</i>	0-1	–
	Coues' cassia	SECO10	<i>Senna covesii</i>	0-1	–
	silverleaf nightshade	SOEL	<i>Solanum elaeagnifolium</i>	0-1	–
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	0-1	–
	brownplume wirelettuce	STPA4	<i>Stephanomeria pauciflora</i>	0-1	–
	tuber anemone	ANTU	<i>Anemone tuberosa</i>	0-1	–
	New Mexico silverbush	ARNE2	<i>Argythamnia neomexicana</i>	0-1	–
	dense ayenia	AYMI	<i>Ayenia microphylla</i>	0-1	–
	hairyseed bahia	BAAB	<i>Bahia absinthifolia</i>	0-1	–
	desert marigold	BAMU	<i>Baileya multiradiata</i>	0-1	–
	scarlet spiderling	BOCO	<i>Boerhavia coccinea</i>	0-1	–
	whitemargin sandmat	CHAL11	<i>Chamaesyce albomarginata</i>	0-1	–
	branched noseburn	TRRA5	<i>Tragia ramosa</i>	0-1	–
	brownfoot	ACWR5	<i>Acourtia wrightii</i>	0-1	–
	poreleaf dogweed	ADPO2	<i>Adenophyllum porophyllum</i>	0-1	–
	trailing windmills	ALIN	<i>Allionia incarnata</i>	0-1	–
5	Annual forbs			0-56	
	cryptantha	CRYPT	<i>Cryptantha</i>	0-17	–
	Esteve's pincushion	CHST	<i>Chaenactis stevioides</i>	0-11	–
	flatcrown buckwheat	ERDE6	<i>Eriogonum deflexum</i>	0-11	–
	combseed	PECTO	<i>Pectocarya</i>	0-11	–
	manybristle chinchweed	PEPA2	<i>Pectis papposa</i>	0-11	–
	phacelia	PHACE	<i>Phacelia</i>	0-11	–
	bristly fiddleneck	AMTE3	<i>Amsinckia tessellata</i>	0-11	–
	exserted Indian paintbrush	CAEXE	<i>Castilleja exserta</i> ssp. <i>exserta</i>	0-11	–
	desert Indianwheat	PLOV	<i>Plantago ovata</i>	0-11	–
	chia	SACO6	<i>Salvia columbariae</i>	0-6	–
	lyreleaf jewelflower	STCA5	<i>Streptanthus carinatus</i>	0-6	–
	thelypody	THELY	<i>Thelypodium</i>	0-6	–
	woolly tdestromia	TILA2	<i>Tidestromia lanuginosa</i>	0-6	–
	yellow tackstem	CAPA7	<i>Calycoseris parryi</i>	0-6	–
	white tackstem	CAWR	<i>Calycoseris wrightii</i>	0-6	–
	Nuttall's povertyweed	MONU	<i>Monolepis nuttalliana</i>	0-6	–
	Gordon's bladderpod	LEGO	<i>Lesquerella gordonii</i>	0-6	–
	shaggyfruit pepperweed	LELA	<i>Lepidium lasiocarpum</i>	0-6	–
	intermediate pepperweed	LEVIM	<i>Lepidium virginicum</i> var. <i>medium</i>	0-6	–
	coastal bird's-foot trefoil	LOSAB	<i>Lotus salsuginosus</i> var. <i>brevivexillus</i>	0-6	–
	slender goldenweed	MAGR10	<i>Machaeranthera gracilis</i>	0-6	–
	miniature woollystar	ERDI2	<i>Eriastrum diffusum</i>	0-6	–
	western tansymustard	DEPI	<i>Descurainia pinnata</i>	0-6	–
	Coulter's spiderling	BOCO2	<i>Boerhavia coulteri</i>	0-6	–
	hairy prairie clover	DAMO	<i>Dalea mollis</i>	0-2	–
	fringed redmaids	CACI2	<i>Calandrinia ciliata</i>	0-2	–
	American wild carrot	DAPU3	<i>Daucus pusillus</i>	0-2	–

	sorrel buckwheat	ERPO4	<i>Eriogonum polycladon</i>	0-2	–
	Texas stork's bill	ERTE13	<i>Erodium texanum</i>	0-2	–
	California poppy	ESCAM	<i>Eschscholzia californica ssp. mexicana</i>	0-2	–
	tanseyleaf tansyaster	MATA2	<i>Machaeranthera tanacetifolia</i>	0-2	–
	hairy desertsunflower	GECA2	<i>Geraea canescens</i>	0-2	–
	star gilia	GIST	<i>Gilia stellata</i>	0-2	–
	Coulter's lupine	LUSP2	<i>Lupinus sparsiflorus</i>	0-2	–
	green carpetweed	MOVE	<i>Mollugo verticillata</i>	0-2	–
	brittle spineflower	CHBR	<i>Chorizanthe brevicornu</i>	0-2	–
	hyssopleaf sandmat	CHHY3	<i>Chamaesyce hyssopifolia</i>	0-2	–
	woollyhead neststraw	STMI2	<i>Stylocline micropoides</i>	0-2	–
	Arizona poppy	KAGR	<i>Kallstroemia grandiflora</i>	0-2	–
	desert evening primrose	OEPR	<i>Oenothera primiveris</i>	0-2	–
	Florida pellitory	PAFL3	<i>Parietaria floridana</i>	0-2	–
	doubleclaw	PRPA2	<i>Proboscidea parviflora</i>	0-1	–
	New Mexico plumeseed	RANE	<i>Rafinesquia neomexicana</i>	0-1	–
	sawtooth sage	SASU7	<i>Salvia subincisa</i>	0-1	–
	spreading fanpetals	SIAB	<i>Sida abutifolia</i>	0-1	–
	sleepy silene	SIAN2	<i>Silene antirrhina</i>	0-1	–
	Coulter's globemallow	SPCO2	<i>Sphaeralcea coulteri</i>	0-1	–
	sand fringe pod	THCU	<i>Thysanocarpus curvipes</i>	0-1	–
	southwestern pricklypoppy	ARPL3	<i>Argemone pleiacantha</i>	0-1	–
	milkvetch	ASTRA	<i>Astragalus</i>	0-1	–
	wheelscale saltbush	ATEL	<i>Atriplex elegans</i>	0-1	–
	annual agoseris	AGHE2	<i>Agoseris heterophylla</i>	0-1	–
	carelessweed	AMPA	<i>Amaranthus palmeri</i>	0-1	–
	bristly nama	NAHI	<i>Nama hispidum</i>	0-1	–
	glandular threadplant	NEGL	<i>Nemacladus glanduliferus</i>	0-1	–
	Arizona popcornflower	PLAR	<i>Plagiobothrys arizonicus</i>	0-1	–
	crestrib morning-glory	IPCO2	<i>Ipomoea costellata</i>	0-1	–
	Mexican fireplant	EUHE4	<i>Euphorbia heterophylla</i>	0-1	–
	sanddune wallflower	ERCA14	<i>Erysimum capitatum</i>	0-1	–
	common woolly sunflower	ERLA6	<i>Eriophyllum lanatum</i>	0-1	–
	soft prairie clover	DAMO2	<i>Dalea mollissima</i>	0-1	–
	hoary bowlesia	BOIN3	<i>Bowlesia incana</i>	0-1	–
	scrambled eggs	COAU2	<i>Corydalis aurea</i>	0-1	–

Shrub/Vine

6	Dominant shrub			84-224	
	creosote bush	LATR2	<i>Larrea tridentata</i>	84-224	–
7	Miscellaneous shrubs			1-22	
	jojoba	SICH	<i>Simmondsia chinensis</i>	0-6	–
	whitethorn acacia	ACCO2	<i>Acacia constricta</i>	0-6	–
	mariola	PAIN2	<i>Parthenium incanum</i>	0-6	–
	western honey mesquite	PRGLT	<i>Prosopis glandulosa var. torreyana</i>	0-2	–
	whitethorn acacia	ACCOP9	<i>Acacia constricta var. paucispina</i>	0-2	–
	viscid acacia	ACNE4	<i>Acacia neovernicosa</i>	0-2	–

	Wright's beebrush	ALWR	<i>Aloysia wrightii</i>	0-1	–
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	0-1	–
	cattle saltbush	ATPO	<i>Atriplex polycarpa</i>	0-1	–
	crucifixion thorn	CAHO3	<i>Canotia holacantha</i>	0-1	–
	longleaf jointfir	EPTR	<i>Ephedra trifurca</i>	0-1	–
	American tarwort	FLCE	<i>Flourensia cernua</i>	0-1	–
	ocotillo	FOSP2	<i>Fouquieria splendens</i>	0-1	–
	crown of thorns	KOSP	<i>Koeberlinia spinosa</i>	0-1	–
	water jacket	LYAN	<i>Lycium andersonii</i>	0-1	–
	pale desert-thorn	LYPA	<i>Lycium pallidum</i>	0-1	–
	lotebush	ZIOB	<i>Ziziphus obtusifolia</i>	0-1	–
	catclaw acacia	ACGR	<i>Acacia greggii</i>	0-1	–
8	Half shrubs			1-22	
	desert zinnia	ZIAC	<i>Zinnia acerosa</i>	1-11	–
	rough menodora	MESC	<i>Menodora scabra</i>	1-6	–
	whitestem paperflower	PSCO2	<i>Psilostrophe cooperi</i>	0-6	–
	littleleaf ratany	KRER	<i>Krameria erecta</i>	1-6	–
	rayless goldenhead	ACSP	<i>Acamptopappus sphaerocephalus</i>	0-6	–
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	0-6	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	0-2	–
	woody crinklemat	TICA3	<i>Tiquilia canescens</i>	0-1	–
	shortleaf baccharis	BABR	<i>Baccharis brachyphylla</i>	0-1	–
	fairyduster	CAER	<i>Calliandra eriophylla</i>	0-1	–
	featherplume	DAFO	<i>Dalea formosa</i>	0-1	–
	threadleaf snakeweed	GUMI	<i>Gutierrezia microcephala</i>	0-1	–
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	0-1	–
	burroweed	ISTE2	<i>Isocoma tenuisecta</i>	0-1	–
9	Succulents			1-11	
	Christmas cactus	CYLE8	<i>Cylindropuntia leptocaulis</i>	0-2	–
	purple pricklypear	OPMA8	<i>Opuntia macrocentra</i>	0-2	–
	tulip pricklypear	OPPH	<i>Opuntia phaeacantha</i>	0-2	–
	banana yucca	YUBA	<i>Yucca baccata</i>	0-2	–
	soaptree yucca	YUEL	<i>Yucca elata</i>	0-1	–
	nightblooming cereus	PEGR3	<i>Peniocereus greggii</i>	0-1	–
	walkingstick cactus	CYSP8	<i>Cylindropuntia spinosior</i>	0-1	–
	Engelmann's hedgehog cactus	ECEN	<i>Echinocereus engelmannii</i>	0-1	–
	redspine fishhook cactus	ECER2	<i>Echinomastus erectocentrus</i>	0-1	–
	pinkflower hedgehog cactus	ECFA	<i>Echinocereus fasciculatus</i>	0-1	–
	candy barrelcactus	FEWI	<i>Ferocactus wislizeni</i>	0-1	–
	devil's cholla	GRKU	<i>Grusonia kunzei</i>	0-1	–
	Graham's nipple cactus	MAGR9	<i>Mammillaria grahamii</i>	0-1	–
	cactus apple	OPEN3	<i>Opuntia engelmannii</i>	0-1	–
	buck-horn cholla	CYAC8	<i>Cylindropuntia acanthocarpa</i>	0-1	–

Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
-------	-------------	--------	-----------------	----------------------	------------------

Animal community

This site offers little in the way of perennial forage for livestock. Annual grasses and forbs offer limited grazing in wet winters. High pH, due to calcium carbonates in the soil, lower the availability of essential plant nutrients and reduce the palatability of grasses to livestock. Adjacent, non-limy sites will be overused before appreciable use is made of this site. Wildlife on this site is limited to small mammals and birds and their associated predators.

Hydrological functions

Coarse textured soils with very gravelly surfaces make this site a poor producer of runoff.

Recreational uses

Hunting, horseback riding, hiking, photography, bird watching.

Other products

Gravel

Contributors

Dan Robinett
Larry D. Ellicott

Approval

Scott Woodall, 7/28/2020

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)	Wilma Renken, Dan Robinett, Larry Humphrey
Contact for lead author	USDA-NRCS Tucson MLRA Soil Survey Office
Date	11/05/2012
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills: None

2. Presence of water flow patterns: Water flow paths are not distinct but occur between clumps of creosote bush. They occupy 30-40% of the area and are discontinuous, averaging 20-30 feet in length.

3. Number and height of erosional pedestals or terracettes: Terrecettes do not occur. Pedestals occur on creosote bush and are 2-3 inches in height.

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): Bare ground from the reference site was 36% with 45% gravel cover. Non-vegetated areas are plant/ shrub interspaces; soil is well armored with gravel. Actual exposed soil areas are small (<2' in diameter) and not connected.

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): None observed, but in some years fine litter classes can move short distances (2 -3 feet). All coarse litter classes stay in place.

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values): Average value from soil slake test is 3. The average value from areas without canopy cover is 2 and average values from areas with creosote canopy is 4.3

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): A horizon is two inches thick with a weak granular structure. Surface soil colors are 10 YR 5/3 dry and 10YR 3/4 moist.

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: 13% canopy cover. Shrubs are evenly distributed across site. Perennial grasses are generally confined within shrub canopies.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): None. Abrupt change in texture from the B2tk horizon to the Ck horizon (at 12 inches) can be mistaken for a compaction zone. This is a laminar cap of cemented calcium carbonates on top of the Ck horizon. Average depth of penetration from a field penetrometer with a 2 kg sliding hammer is 7.6 cm.

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: Dom.Shrub (creosote) >>

Sub-dominant: Dom.Per.Grasses > Misc.Shrubs = Half Shrubs = Succulents > Misc.Per.Grasses = Annuals = Per.Forbs

Other:

Additional: Annuals fluctuate based on weather cycles.

13. **Amount of plant mortality and decadence** (include which functional groups are expected to show mortality or decadence): Complete mortality of perennial grasses and sub-shrubs in past several years due to severe drought since 2002.
-

14. **Average percent litter cover (%) and depth (in):** Litter is mainly from annual grasses like needle grama, annual threeawn and six weeks grama. Coarse litter is all from creosote bush and tends to stay under the canopy.
-

15. **Expected annual annual-production** (this is TOTAL above-ground annual-production, not just forage annual-production): 86 lbs/ac for a below average year; 200 lbs/ac for an average year; 400 lbs/ac for an above average year;
-

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: None
-

17. **Perennial plant reproductive capability:** Can be severely impaired for perennial grasses like bush muhly, threeawn, fluffgrass and black grama from severe drought. All desert zinnia plants on site are dead except those in small associated drainage ways.
-