

## Standards of Public Land Health Evaluation of 64021 SALT CREEK Allotment [ 12/05/2006 ]

The Roswell Field Office conducted (RHA) Rangeland Health Assessments at 6 study sites within Salt Creek, allotment #64021. These assessments evaluated Soil/Site Stability, Hydrologic Function and Biotic Integrity indicators within each study site vicinity. Existing monitoring data was incorporated into and used in support of this field assessment. A summary of each assessment is attached and shown in the following table.

Study Area or Assessment Area	UPLAND			BIOTIC			RIPARIAN		
	Meets	Monitor an Indicator	Does Not Meet	Meets	Monitor an Indicator	Does Not Meet	Meets	Monitor an Indicator	Does Not Meet
64021-#1-F276	X			X			N/A		
64021-CHALK BLUFF-F272	X	*		X	*		N/A		
64021-CONNELL WELL-F275 (*)	X	*		X	*		N/A		
64021-RED TANK-F274	X			X			N/A		
64021-SALT CREEK-F273	X			X			N/A		
64021-TIO GAVILAN #1-F277							N/A		

Twenty-two (22) indicators for Rangeland Health were evaluated for public land on Salt Creek, allotment #64021. Ten of these assessed soil site stability, 11 hydrologic function, and 13 biotic integrity. These qualitative assessments in conjunction with quantitative information gathered from previous data collected on 6 trend plot locations within this allotment were utilized to make rangeland health determinations. Quantitative evaluations are performed by the Roswell Field Office, which include some or all of the following: ground and vegetative cover, species composition, production, frequency, and ecological condition. These monitoring data collections, which were initiated in the late 1970's/early 1980's, are scheduled and conducted approximately every 5 years.

There are six study sites on this allotment. All were visited between March 23, 2007 and April 18, 2007. Two sites are Loamy SD-3; two are Shallow SD-3; and two are Limestone Hills SD-3.

The Red Tank pasture with its study site was visited on March 23, 2007. A heavy rainfall/hail event had occurred early on this morning, which resulted in a significant overland flow in parts of the Tio Gavilan and Red Tank pastures. Rains occurred in these pastures later this same day. This pasture contains approximately 3084 acres. The study site within this pasture is within the Shallow SD-3 Ecosite. Other ecosites within the pasture include Limestone Hills SD-3 and Loamy SD-3. Most of the pasture consists of gently sloping or undulating terrain. No livestock use was observed at the study site.

Soil stability at the study area was relatively high. All soil stability indicators rated either "slight to moderate" or "none to slight". High levels of surface rock help protect the soil surface. There were no rills or gullies on site. Any rill or gully formation in this pasture would likely be associated with roads or other constructed features. Some sheet erosion has occurred and is occurring as evidenced by pedestalling, particularly in flow patterns. Bare ground is much less than expected for the ecosite. The soil surface is relatively resistant to erosion in large part because of the amount of surface rock.

Hydrologic function was near what is expected for the site. Overall, herbaceous cover is about what is expected for the ecosite, however, there are patches with less cover that are contributing to slightly less infiltration and slightly greater runoff. Some litter movement was observed within water flow patterns.

Indicators assessing biotic integrity for the site all fell into "slight to moderate" or "none to slight". Late growing season precipitation was greater than normal in 2006, making the annual production relatively high compared to the production potential for the ecosite. There is a shift in the grass community. Threeawns and *Tridens* spp. are the dominant grasses. Black grama should be dominant with blue grama and sideoats grama following. There are enough of the grama grasses remaining in the composition to allow F/S groups to rate "slight to moderate".

Pronghorn are a keystone species for this area. Habitat for pronghorn is satisfactory.

Tio Gavilan pasture with its study site was visited on April 17, 2007. This pasture contains approximately 4,165 acres. The study site is within the Limestone Hills SD-3 ecosite. Other ecosites within the pasture include Shallow SD-3 and Very Shallow SD-3. Cattle were in the area. Most of the pasture consists of gently sloping or undulating terrain. Use in the vicinity of the study site was light, however, use on black grama was noticeably higher (20 -30%).

Soil stability at the study area was relatively high. All soil stability indicators rated either "slight to moderate" or "none to slight". High levels of surface rock help protect the soil surface. There were no rills or gullies on site. Any rill or gully formation in this pasture would likely be associated with roads or other constructed features. One gully was visible to the north of the study site within Red Tank pasture. Some sheet erosion has occurred and is occurring as evidenced by pedestalling, particularly in flow patterns. Bare ground is less than expected for the ecosite. The soil surface is relatively resistant to erosion in large part because of the amount of surface rock.

Hydrologic function was near what is expected for the site. All indicators rated either "slight to moderate" or "none to slight". Overall, herbaceous cover is somewhat less than expected for the ecosite. There is an apparent increase in snakeweed and catclaw mimosa. According to the data, snakeweed is the dominant cover species. It provides more ground cover than do all the grasses combined on the site. This may be slightly affecting infiltration and runoff. Some litter movement was observed within water flow patterns. Natural displacement by wind is also occurring.

Two indicators assessing biotic integrity (annual production and invasive plants) fell into "moderate". The other indicators were either "slight to moderate" or "none to slight". Annual production was estimated to be between 40% and 60% of the site potential even though late growing season precipitation in 2006 was greater than normal. Snakeweed has increased on the site substantially beyond what is expected causing F/S Groups to trend toward "moderate" and causing Invasive Plants to rate "moderate". Mesquite is also beginning to invade the site. Black grama should dominate the grass community, but only comprises a modest amount. Other, less desirable forage species such as *Tridens* spp. and Threeawns have become more abundant. Tobosa grass is common in small swale areas.

Pronghorn and mule deer are a keystone species for this area. Habitat for both is satisfactory.

Salt Creek pasture with its study site was visited on April 17, 2007. This pasture contains approximately 3,636 acres with a mixture of state, private and public land. The study site is within a Shallow SD-3 ecosite. Other ecosites within the pasture (according to GIS) include Limestone Hills SD-3 and Loamy SD-3. The pasture consists of gently sloping to undulating, rocky terrain. Grazing use was evident at the study site, but was generally light. Use was noticeably heavier on black grama.

Soil stability at the study area was relatively high. All soil stability indicators rated either "slight to moderate" or "none to slight". High levels of surface rock help protect the soil surface. There were no rills or gullies on site. Any rill or gully formation in this pasture would likely be associated with roads or other constructed features. Some sheet erosion has occurred and is occurring as evidenced by pedestalling, particularly in flow patterns. Bare ground is much less than expected for the ecosite. The soil surface is relatively resistant to erosion in large part because of the amount of surface rock.

Hydrologic function was near what is expected for the site. All indicators rated either "slight to moderate" or "none to slight". Herbaceous ground cover is higher than expected in the ESD and bare ground is much less than expected. Snakeweed is higher than expected, but the total shrub and half shrub community is within the expected level. According to the data, snakeweed is the dominant cover species. It provides more ground cover than do all the grasses combined on the site. Infiltration and runoff are more affected by the amount of surface rock. Litter amounts are as expected for the ecosite. There is some litter movement, both by wind and water.

Biotic integrity indicators all rate "slight to moderate" or "none to slight". Late growing season precipitation was greater than normal in 2006. Annual production was estimated to be within 60% - 80% of potential. The increase in snakeweed along with a shift in grass composition to a

largely threeawn community causes the F/S Groups to rate "slight to moderate". Invasive Plants is rated similarly due to the increase in snakeweed and the widely scattered cholla.

The site provides satisfactory habitat for mule deer. A nesting area for turkey vultures is near the study site.

Chalk Bluff pasture with its study site was visited on April 17, 2007. This pasture contains approximately 4,727 acres most of which is state land. The study site is within a Loamy SD-3 ecosite. Other ecosites within the pasture include Shallow SD-3 and Limestone Hills SD-3. Terrain ranges from nearly flat to rocky, rolling hills. Cattle were in the pasture, but there was very little use in the vicinity of the study site. Observed use was typically on black grama.

Soil stability at the study site has degraded. Most indicators fall into "slight to moderate" or "none to slight", but three fall into moderate. Soil loss is evident throughout the sight as evidenced by the amount of pedestalling. Terracettes are actively forming. This indicator is moving toward "moderate to extreme". The site is nearly flat, so rills and gullies have not formed, but sheet erosion is noticeable throughout the site.

Hydrologic function has also degraded. Four of the indicators fall into the "moderate" ranking. Flow patterns have created patchy areas with less vegetative cover. These areas mostly contain snakeweed and burrograss. These areas are contributing to reduced infiltration and increased runoff.

Two indicators assessing biotic integrity (Soil Surface Loss or Degradation and F/S Groups) fell into "moderate". Sheet erosion is very evident throughout the site. The site is transitioning to a tobosa grass / burrograss grassland. Black grama is substantially reduced from what is expected. Snakeweed and burrograss are occupying the more open areas. Reproductive capability was rated as "slight to moderate". Repeated grazing of desirable forage plants like black grama may have diminished its ability to reproduce. Late growing season precipitation was greater than normal in 2006. Annual production was estimated to be within 60% - 80% of potential.

This part of the pasture continues to provide satisfactory habitat for pronghorn.

The Poe Corn pasture with its study site was visited on April 18, 2007. This pasture contains approximately 1300 acres most of which is public land. The study site is within a Loamy SD-3 ecosite. Other ecosites within the pasture (according to GIS) include Very Shallow SD-3 and Shallow SD-3. The terrain is mostly gently sloping to nearly flat. Cattle were in the pasture at the time of the site visit. Use was slight in the vicinity of the study site. Pocket gopher activity was high around the study plot.

Most soil stability indicators rated "slight to moderate" or "none to slight". "Pedestals and/or Terracettes" rated "moderate". Terracettes were actively forming. The site is nearly flat, so rills and gullies have not formed, but sheet erosion is noticeable throughout the site. Soil loss has occurred, especially in plant interspaces. "Soil Surface Resistance to Erosion" and "Water Flow Patterns" currently rate as "slight to moderate" but are trending to "moderate".

Hydrologic function is similar to Soil Stability. Most indicators rate "slight to moderate" or "none to slight". Soil loss is evident by the formation of pedestals and terracettes, and could be related to some increase in runoff. Herbaceous ground cover is slightly higher than expected for the site and bare ground is near what is expected.

All but one of the biotic integrity indicators falls into "slight to moderate" or "none to slight". F/S Groups rates "moderate" due to a significant shift in composition among grasses. Burrograss and tobosa grass are the dominant grasses. Black grama is minimal on the site. "Invasive Plants" rates "moderate" due to an increase in snakeweed and cholla. "Reproductive Capability" was rated as "none to slight" based on current observations, but it is likely that this has been a factor in the change in grass composition resulting from repeated or continuous grazing of desirable forage plants like black grama. Late growing season precipitation was greater than normal in 2006. Annual production was estimated to be within 60% - 80% of potential.

The site provides satisfactory habitat for pronghorn, which were present in the area.

The Connell Well pasture with its study site was visited on April 18, 2007. This pasture contains approximately 4176 acres most of which is private land. The study site is on public land and is within the Limestone Hills SD-3 ecosite. Most of this pasture is within this ecosite. The terrain is mostly rough and broken and is dissected by major drainages including Arroyo del Macho and Rock House Canyon. Sheep were in this pasture and in the vicinity of the study site at the time of the visit.

Five of the Soil Stability indicators rate "moderate" and five rate "slight to moderate" or "none to slight". Active rills and gullies are forming throughout the area. This is less so in the immediate vicinity of the study plot but very noticeable in the general area. Arroyo del Macho and Rock House Canyon are close to the study site and have active cutting occurring along the drainages as well as in side canyons to the main drainages. At the study site, the area is relatively flat and shows less evidence of active erosion. Even so, pedestalling is common and flow patterns are evident. The study site area is heavily armored with surface rock, which is undoubtedly slowing the rate of soil loss. Sheep trailing is evident throughout the area. Classic terracettes have formed on many of the hillsides adjacent to Arroyo del Macho. The road leading to the study site is badly eroded.

Hydrologic function is similar to Soil Stability. Five indicators rate "moderate". In addition to the discussion above, the plant community has shifted both in shrub cover and in the composition of herbaceous species. Creosote bush and whitethorn acacia are common shrubs in the upland areas. Herbaceous ground cover is less than expected for the ecosite. This shift in plant composition and distribution is negatively affecting infiltration.

Two of the biotic integrity indicators rate "moderate to extreme". They are F/S Groups and Invasive Plants. Shrubs, particularly creosote bush and whitethorn acacia, are becoming more dominant on the site. Threeawns and Tridens spp. are the dominant grasses. Burrograss is common in disturbed areas. Black grama should be the dominant grass and is minimal in the composition. No sideoats grama was observed. The indicator "Invasive Plants" is rated "moderate to extreme" due to the abundance of creosote bush, whitethorn acacia and snakeweed.

"Physical / Chemical / Biological Crusts" was rated "moderate". Biological crusts were mostly confined to protected areas. Other biotic integrity indicators rated "slight to moderate" or "none to slight". "Reproductive Capability" was rated "none to slight" based on current observations. However, it is likely that the reduced occurrence of desirable forage plants is directly related to the timing, duration, and intensity of grazing.

The area provides satisfactory habitat for mule deer, but it would not be regarded higher than satisfactory.

It is the professional opinion of the Assessment Team, public land within allotment #64021, Salt Creek meets Upland and Biotic Standards. There are no Riparian issues present therefore this standard was not addressed. See site notes, comments and recommendations for further information regarding this assessment.

The (\*) indicates that the assessment had one or more indicator(s) rated moderate/extreme or extreme. These indicators are:

- Functional/Structural Groups
- Invasive Plants

These indicators by themselves are not enough to rate the site as not meeting a standard but may warrant future monitoring.

**Recommendations:** All study sites show a shift in composition within the grass community. Loamy areas within the allotment are dominated by Tobosa grass with a noticeable reduction in other more desirable grasses. Prescribed burning or other disturbance (i.e. herd effect) followed by appropriate rest may help improve vegetative diversity. For all sites, consider changing the timing and duration of grazing to allow desirable forage plants to thrive and reproduce.

<b>RFOs Upland and Biotic Standard Assessment Summary Worksheet</b>			
<b>SITE 64021-#1-F276</b>			
Legal Land Desc	NENE 14 0080S 0230E Meridian 23	Acreage	1280
Ecosite	042CY007NM LOAMY SD-3	Photo Taken	Y
Watershed	13060005080 MACHO		
Observers	JACKSON; DILLEY	Observation Date	04/18/2007
County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	HMA	Soil Taxon Name	HOLLOMEX
Texture Class	NM644 L	Soil Phase	HOLLOMEX- REEVES-MILNER

Texture Modifier	NM644 LOAM,DRY		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	10.55	NOAA Growing Season Precipitation	8.18
NOAA Avg Annual Precipitation	9.73	NOAA Avg Growing Season Precipitation	8.01
Disturbances and Animal Use:	<p>Cattle are just to the north of the plot. No or slight use around the plot. Trailing is evident. Pocket gopher activity is high.</p> <p>A two track road passes through the site. A fence (boundary between state and BLM land) borders the site.</p>		

## Part 2. Attributes and Indicators

		Departure from Ecological Site Description/Ecological Reference Areas				
Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:	Level site. Rill formation may be starting on gyp inclusions.					
S H	Water Flow Patterns				X	
Comments:	Trending to moderate. Flow patterns are generally short, stable. There is some soil deposition below some of the terracettes. Active pedestalling is evident throughout.					
S H	Pedestals and/or Terracettes			X		
Comments:	Active pedestalls are present, especially in burrograss areas. Terracettes are present. Trending toward moderate to extreme.					
S H	Bare Ground				X	
Comments:	Falls within expected for the site.					
S H	Gullies					X
Comments:	None on site.					
S	Wind-scoured, Blowouts, and/or Deposition Areas					X
Comments:						
H	Litter Movement				X	
Comments:	Some displacement (more in burrograss stands) but no large accumulations.					
S H B	Soil Surface Resistance to Erosion				X	
Comments:	Moderate aggregate stability.					

S H B	Soil Surface Loss or Degradation				X	
Comments:	Active pedestals and presence of terracettes indicates some soil loss. Trending toward moderate.					
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff					X
Comments:	Plant cover (grasses and forbs) is greater than expected for the site and bare ground is near what is expected. Bare areas are small.					
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups			X		
Comments:	There is a slight increase in the shrub component over what is expected for the site. There is a shift in composition in the grasses. Burrograss and Tobosa grass dominate the site. Black grama is rare on the site.					
B	Plant Mortality/Decadence					X
Comments:						
H B	Litter Amount				X	
Comments:	Falls within expected range.					
B	Annual Production				X	
Comments:	Approaches 80% of potential.					
B	Invasive Plants				X	
Comments:	Cholla are widely scattered on the site.					
B	Reproductive Capability of Perennial Plants					X
Comments:						
S	Physical/Chemical/Biological Crusts				X	
Comments:	Evident throughout the site, but continuity is broken.					
B	Wildlife Habitat					X
Comments:	Good forb crop this spring.					
B	Wildlife Populations				X	
Comments:						
B	Special Status Species Habitat					X
Comments:						
B	Special Status Species Populations					
Comments:						

### Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	1	5	4
H	Hydrologic	0	0	1	6	4
B	Biotic	0	0	1	6	5

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil	Most indicators fall into the slight to moderate category; one is moderate. Overall, the site meets the standards, but the site is not as stable as it should be. The amount of bare ground is near what is expected for the site. There are no rills or gullies present on site, but sheet erosion is evident by the amount of pedestalling present. Soil resistance to erosion has been reduced; soil loss is evident by the amount of pedestalling.	0	1	9
Hydrologic		0	1	10
Biotic	Most indicators fall within "slight to moderate" or "none to slight". F/S groups rates moderate because the plant community has shifted to a burrograss-grassland state. Black grama is rare on the site.	0	1	11

Site Notes: Site has moved to a Burrograss-Grassland state. There has been some recolonization of soil deposition areas resulting from terracettes with snake weed and burrograss. There is active pedestalling occurring and some terracette fronts are actively eroding resulting in some exposed roots and subsequent plant mortality. Blue and black grama were not observed on the site. There may be more departure from the ESD than indicated by the individual rankings.

Plants species encountered: GUSA , PLMU, SCBR, Lesquerella spp., Verbena, pencil cholla, Opuntia macrocentra, Erodium spp., Euphorbia spp., Grayia spinosa, Lithosperma spp., SPCR, Circium spp., Ephedra spp., Cryptantha spp., ARIST, Dyssochia spp..

**RFOs Upland and Biotic Standard Assessment Summary Worksheet**

**SITE 64021-CHALK BLUFF-F272**

Legal Land Desc	SWSW 22 0070S 0230E Meridian 23	Acreage	2515
Ecosite	042CY007NM LOAMY SD-3	Photo Taken	Y
Watershed	13060005080 MACHO		
Observers	JACKSON, BRITTON, REBITZKI, DILLEY	Observation Date	04/17/2007
County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	HMA	Soil Taxon Name	HOLLOMEX
Texture Class	NM644 L	Soil Phase	HOLLOMEX- REEVES-MILNER
Texture Modifier	NM644 LOAM,DRY		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	10.55	NOAA Growing Season Precipitation	8.18
NOAA Avg Annual Precipitation	9.73	NOAA Avg Growing Season Precipitation	8.01
Disturbances and Animal Use:	No recent grazing use observed, but cattle are in the area. A two track road passes through the site. Area shows signs of heavy livestock use in the past.		

**Part 2. Attributes and Indicators**

Attribute	Indicators	Departure from Ecological Site Description/Ecological Reference Areas				
		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:	Site is nearly flat.					
S H	Water Flow Patterns			X		

Comments:	Sheet erosion is apparent. Pedestals and small terracettes are common throughout the site. Flow patterns are not entirely stable.					
S H	Pedestals and/or Terracettes			X		
Comments:	There are active pedestals. Small terracettes are evident throughout. This indicator is trending toward Moderate to Extreme based on the amount pedestalling observed.					
S H	Bare Ground				X	
Comments:	About what is expected for the site.					
S H	Gullies					X
Comments:	None observed.					
S	Wind-scoured, Blowouts, and/or Deposition Areas					X
Comments:						
H	Litter Movement				X	
Comments:	Trending toward moderate. Most noticeable in water flow patterns.					
S H B	Soil Surface Resistance to Erosion				X	
Comments:	Trending toward moderate. Moderate soil aggregate stability.					
S H B	Soil Surface Loss or Degradation			X		
Comments:	Low end of moderate. Soil loss is occurring.					
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff			X		
Comments:	Grass cover has been reduced in patches, resulting in reduced soil protection, decreased infiltration and increased runoff.					
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups			X		
Comments:	There is a slight increase in the shrub component. This is particularly evident in relatively open patches which have a higher snake weed component than expected for the site. Tobosa grass dominates the site. Black grama is minimal on the site. This site is transitioning to a tobosa grass - burrograss grassland.					
B	Plant Mortality/Decadence					X
Comments:	There is some decadence in tobosa grass and burrograss.					
H B	Litter Amount				X	
Comments:	Within expected range for the site.					
B	Annual Production				X	
Comments:	Approaches 80% of potential.					

B	Invasive Plants					X
Comments:	Snake weed is increasing on disturbed patches.					
B	Reproductive Capability of Perennial Plants				X	
Comments:	The lack of black grama could be a function of selective grazing limiting its ability to produce seed.					
S	Physical/Chemical/Biological Crusts				X	
Comments:	Evident throughout the site but continuity is broken.					
B	Wildlife Habitat					X
Comments:						
B	Wildlife Populations				X	
Comments:						
B	Special Status Species Habitat					X
Comments:						
B	Special Status Species Populations					X
Comments:						

**Part 3. Summary**

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	3	3	4
H	Hydrologic	0	0	4	4	3
B	Biotic	0	0	2	5	6

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets

Soil	Most indicators fall into "slight to moderate" or "none to slight", but 3 fall into moderate. Soil loss is evident throughout the sight as evidenced by the amount of pedestalling. Terracettes are forming. The site is nearly flat, so rills and gullies have not formed, but sheet erosion is noticeable throughout the site.	0	3	7
Hydrologic		0	4	7
Biotic	Most indicators rank "slight to moderate" or "none to slight". Soil surface loss and F/S groups are "moderate". The site is currently meeting standards, but appears to be on a downward trend.	0	2	11

Site Notes: Soil stability and hydrologic function on this site have declined. The area has a significant amount of pedestalling particularly in flow patterns but also evident under the grass canopy. Heavy flow pattern areas are patchy. These patches have poor cover with an increase in snake weed. Broad terracettes are forming as a result of the pedestalling. Tobosa grass dominates the site. Burro grass is second. Vegetative ground cover, litter cover, and bare ground all rate acceptably, but clearly, the site is eroding.

Plant species encountered include: GUSA2, pencil cholla, Lesquerella spp., PLMU3. MUSQ, Verbena spp., Yucca spp., Solanum spp., Cryptantha spp., SCBR, ERODI (filaree), OPUNT (cholla), BOER4.

### RFOs Upland and Biotic Standard Assessment Summary Worksheet

#### SITE 64021-CONNELL WELL-F275

Legal Land Desc	NESW 20 0070S 0230E Meridian 23	Acreage	2371
Ecosite	042CY020NM LIMESTONE HILLS SD	Photo Taken	Y
Watershed	13060005080 MACHO		
Observers	BRITTON; REBITZKI	Observation Date	04/18/2007
County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	ESD	Soil Taxon Name	ECTOR
Texture Class	NM644 CBX-L	Soil Phase	ECTOR-ROC
Texture Modifier	NM644 EXTREMELY COBBLY L		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	10.55	NOAA Growing Season Precipitation	8.18
NOAA Avg Annual	9.73	NOAA Avg Growing Season	8.01

Precipitation		Precipitation	
Disturbances and Animal Use:	Sheep are in the area. The site and surrounding area is being grazed. The area shows signs of past heavy grazing. The road to the site is rough and eroded.		

**Part 2. Attributes and Indicators**

		Departure from Ecological Site Description/Ecological Reference Areas				
Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills			X		
Comments:	Borderline with slight to moderate. Rills mostly starting on top edge of slope break. Lower canyon area has more substantial rill formation.					
S H	Water Flow Patterns			X		
Comments:	Flow patterns are evident with soil movement. Near the drainage bottom, this would rank as moderate to extreme.					
S H	Pedestals and/or Terracettes			X		
Comments:	Both occur and are relatively common. Terracettes are highly visible on adjacent steeper slopes in and around study area.					
S H	Bare Ground					X
Comments:	There is a lot of surface rock. Bareground is less than expected for the site.					
S H	Gullies			X		
Comments:	There are no gullies in the immediate area of the study plot, however, the two track road leading to the site and following Arroyo del Macho and Rock House Canyon is severely eroded. Active cutting is occurring in both drainages. Most side drainages are showing active erosion and gully formation. Trending toward moderate to extreme.					
S	Wind-scoured, Blowouts, and/or Deposition Areas					X
Comments:						
H	Litter Movement				X	
Comments:	In the immediate vicinity of the study plot, litter is being displaced and is not uniformly distributed. Litter movement is much more obvious near the drainage bottoms.					
S H B	Soil Surface Resistance to Erosion				X	
Comments:	Trending to moderate. There is a reduction of stabilizing agents particularly in the plant interspaces.					
S H B	Soil Surface Loss or Degradation				X	

Comments:	Trending toward moderate.					
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff			X		
Comments:	Increase in shrub cover is negatively affecting infiltration and is increasing runoff.					
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups		X			
Comments:	Shrubs are becoming more abundant. There has been a substantial shift in grass composition from what is expected for the site. Burro grass is a major component. Black grama is greatly reduced from expected. No sideoats grama was observed on site. Based on other Limestone Hills sites, this appears to be significant departure.					
B	Plant Mortality/Decadence					X
Comments:						
H B	Litter Amount				X	
Comments:	Appears to be within expected range for the site. The average is slightly higher than the expected range.					
B	Annual Production			X		
Comments:	The average herbaceous production is approx. 260 lbs/ac. This is about 29% of the potential production, which would put this into the "moderate to extreme" category. Average shrub production is less than expected for the site even though there appears to be an increase in shrubs. Accounting for the good production year in 2006, it is possible this site is at 40% of potential, which generously places this indicator in "moderate".					
B	Invasive Plants		X			
Comments:	Creosote bush, whitethorn acacia, and snake weed are common throughout the site. Each appear to be increasing on the site. According to the ESD, "Creosotebush is usually confined to the lower footslopes of hills." As shown in the photos, it is common throughout the upland areas.					
B	Reproductive Capability of Perennial Plants					X
Comments:	No apparent restrictions at the time of this visit. The change in plant composition suggests that this has been a problem in the past.					
S	Physical/Chemical/Biological Crusts			X		
Comments:	Biotic crusts are a minor component in plant interspaces.					
B	Wildlife Habitat				X	
Comments:	Deer habitat. Trending toward moderate due to the apparent increase in creosote bush and reduced productivity.					

B	Wildlife Populations				X	
Comments:						
B	Special Status Species Habitat					X
Comments:						
B	Special Status Species Populations					X
Comments:						

### Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	5	2	3
H	Hydrologic	0	0	5	4	2
B	Biotic	0	2	1	5	5

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil	More information is needed for five of the indicators. Some are trending to "moderate to extreme". Soil Surface Resistance to Erosion and Soil Surface Loss are trending to "moderate". Soil loss is evident throughout the site.	0	5	5
Hydrologic		0	5	6
Biotic	There is a substantial shift in plant composition from what is expected in the ESD. There is an apparent increase in shrubs such as creosote bush, whitethorn acacia and snake weed. They are common throughout the site.	2	1	10

Site Notes: This site has lots of evidence of past heavy use or continuous use. There is a significant departure from the expected plant community for this site. Black grama and sideoats

grama should be dominant grasses for this site. Black grama is minimally represented and sideoats grama was not observed. According to the data, threeawns dominate the site, but burro grass appears to be increasing in patches particularly on flatter areas. Creosote bush is common throughout the site. Snakeweed and whitethorn acacia appear to be increasing.

Soil loss is evident throughout the site, but less so around the study plot area. Arroyo del Macho and Rock House Canyon show significant instability. Active erosion is very evident. Side drainages into these major drainages are also actively eroding. Sheep trailing is evident throughout the site. The classic terracettes associated with steep slope grazing are evident on many of the steeper slopes near the site. Sheep were observed grazing these steeper slopes at the time of the site visit.

Plants species observed included: LATR, GUSA2, ACCO2, RHMI, OPUNT(prickly pear), DAFO, OPUNT (cholla), pencil cholla, Verbena spp., PLPA (wooly plantain), ERODI (filaree), ARIST, TRMU, BOER, SCBR, BOGR2, MUAR,

**RFOs Upland and Biotic Standard Assessment Summary Worksheet**

**SITE 64021-RED TANK-F274**

Legal Land Desc	SWNW 5 0080S 0230E Meridian 23	Acreage	1589
Ecosite	042CY025NM SHALLOW SD-3	Photo Taken	Y
Watershed	13060005080 MACHO		
Observers	JACKSON; BRITTON	Observation Date	03/23/2007
County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	EbC	Soil Taxon Name	ECTOR
Texture Class	NM644 CBV-L	Soil Phase	ECTOR
Texture Modifier	NM644 VERY COBBLY LOAM,D		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	10.55	NOAA Growing Season Precipitation	8.18
NOAA Avg Annual Precipitation	9.73	NOAA Avg Growing Season Precipitation	8.01
Disturbances and Animal Use:	No current livestock use on the site. A road passes through the site.		

**Part 2. Attributes and Indicators**

	Departure from Ecological Site Description/Ecological Reference Areas
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Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:						
S H	Water Flow Patterns				X	
Comments:						
S H	Pedestals and/or Terracettes				X	
Comments:	There is active pedestalling especially in flow patterns. No terracettes.					
S H	Bare Ground					X
Comments:	Much less than expected for the site. The site is very rocky, much rockier than expected in the ESD.					
S H	Gullies					X
Comments:	None observed.					
S	Wind-scoured, Blowouts, and/or Deposition Areas					X
Comments:						
H	Litter Movement				X	
Comments:	Some litter is being displaced.					
S H B	Soil Surface Resistance to Erosion				X	
Comments:	There is moderate aggregate stability.					
S H B	Soil Surface Loss or Degradation				X	
Comments:	Trending toward moderate.					
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff				X	
Comments:	Herbaceous cover has been about what is expected for this site, however, plant interspaces may be enlarging.					
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups				X	
Comments:	Shrubs are about what is expected for the site. There is a shift in the grass community. Three awns and Tridens spp. are the dominant grasses. Black grama should be dominant with blue grama and sideoats grama following.					
B	Plant Mortality/Decadence					X
Comments:	There is some mortality in GUSA2.					

H B	Litter Amount				X	
Comments:	About as expected for the site.					
B	Annual Production					X
Comments:	Within 80% of potential.					
B	Invasive Plants					X
Comments:						
B	Reproductive Capability of Perennial Plants					X
Comments:						
S	Physical/Chemical/Biological Crusts				X	
Comments:	Crusts are discontinuous.					
B	Wildlife Habitat					X
Comments:						
B	Wildlife Populations				X	
Comments:						
B	Special Status Species Habitat					X
Comments:						
B	Special Status Species Populations					X
Comments:						

### Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	0	5	5
H	Hydrologic	0	0	0	7	4
B	Biotic	0	0	0	5	8

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate

box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil	Soils are relatively stable and are heavily armored with rock. There is some soil loss, but still within acceptable limits.	0	0	10
Hydrologic		0	0	11
Biotic	The grass community has changed in composition, but is still functioning acceptably.	0	0	13

Site Notes: Site is fairly stable. The large amount of surface rock contributes to the site's stability. There has been a shift in plant composition. The site has transitioned from a black grama / sideoats grama site to a threeawn / Tridens site. Forbs were noticeably lacking.

Plants species encountered: Shrubs: MIAC, GUSA2, OPUNT (cholla), NOLIN, PRGL, LATR, assorted cacti, Forbs: PLPA Grasses: BOGR2, BOER, ARIST, SCBR, SPCR, ERPU8

### RFOs Upland and Biotic Standard Assessment Summary Worksheet

#### SITE 64021-SALT CREEK-F273

Legal Land Desc	SENW 22 0080S 0230E Meridian 23	Acreage	1754
Ecosite	042CY025NM SHALLOW SD-3	Photo Taken	Y
Watershed	13060005070 SALT		
Observers	JACKSON; BRITTON; REBITZKI; DILLEY	Observation Date	04/17/2007
County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	EbC	Soil Taxon Name	ECTOR
Texture Class	NM644 CBV-L	Soil Phase	ECTOR
Texture Modifier	NM644 VERY COBBLY LOAM,D		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	10.55	NOAA Growing Season Precipitation	8.18
NOAA Avg Annual Precipitation	9.73	NOAA Avg Growing Season Precipitation	8.01
Disturbances and	Grazing use was evident throughout the site. Most use was on black grama		

Animal Use:	(30 -40%), otherwise, light use overall. A two track road passes through the site.
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<b>Part 2. Attributes and Indicators</b>						
Attribute	Indicators	Departure from Ecological Site Description/Ecological Reference Areas				
		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:	No rills observed.					
S H	Water Flow Patterns				X	
Comments:	There is some evidence of minor erosion, but flow patterns are short and stable.					
S H	Pedestals and/or Terracettes				X	
Comments:	Active pedestalling is minimal and occurs within flow patterns.					
S H	Bare Ground					X
Comments:	Bare ground is much less than expected for the ecosite. There is a lot of surface rock.					
S H	Gullies					X
Comments:	No gullies observed in or around site.					
S	Wind-scoured, Blowouts, and/or Deposition Areas					X
Comments:						
H	Litter Movement				X	
Comments:	Some displacement is occurring, mostly by wind.					
S H B	Soil Surface Resistance to Erosion				X	
Comments:	Moderate soil aggregate stability in interspaces.					
S H B	Soil Surface Loss or Degradation				X	
Comments:	There is some evidence of soil loss. The site is heavily armored with rock and appears to have stabilized.					
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff					X
Comments:	There is a change in the composition of the grass community, but this is not affecting runoff or infiltration.					
S H B	Compaction Layer					X
Comments:						

B	Functional/Structural Groups				X	
Comments:	The grass community has shifted from a grama grass dominated community to a threeawn dominated community. Shrubs (ie snakeweed) are higher than expected.					
B	Plant Mortality/Decadence					X
Comments:						
H B	Litter Amount					X
Comments:	Slightly higher than expected in the ESD. Has been averaging near 9%. Current estimate is near 10%.					
B	Annual Production				X	
Comments:	Currently estimated to be within 60-80% of potential. The average is substantially less than the average expected for the ecosite.					
B	Invasive Plants				X	
Comments:	GUSA2 is significantly higher than expected for the ecosite. Cholla is widely scattered throughout the site.					
B	Reproductive Capability of Perennial Plants					X
Comments:						
S	Physical/Chemical/Biological Crusts				X	
Comments:	Evident throughout the site, but not continuous.					
B	Wildlife Habitat					X
Comments:						
B	Wildlife Populations				X	
Comments:						
B	Special Status Species Habitat					X
Comments:						
B	Special Status Species Populations					X
Comments:						

### Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	0	5	5

H	Hydrologic	0	0	0	5	6
B	Biotic	0	0	0	6	7

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil	Soils are relatively stable. The high amount of surface rock lends stability to the site.	0	0	10
Hydrologic		0	0	11
Biotic	The grass community has shifted to a threeawn dominated community, but Grama grasses remain in the composition. The site may be trending to a shrub / threeawn transition community.	0	0	13

Site Notes: The amount of surface rock greatly contributes to the stability of the site. Grasses and forbs still provide the bulk of the ground cover, but snakeweed accounts for nearly as much cover. The grass community has shifted from a grama grass community to a threeawn dominated community and may be headed to a shrub / threeawn community.

Plant species encountered included: shrubs: GUSA2, GUMI, MIAC, OPUNT (cholla), OPUNT (prickly pear), LADI, RHMI, NOLIN, pencil cholla, DAFO, unk cacti.

forbs: PLPA, ALLIUM, ERIOG, ERBO, CASTALEA, VERBENA, bladderpod, SPHAE

grasses: ARIST, ARPU, BOGR2, BOER, TRPI, TRMU, PAHA, SCBR, ERPU8, PLMU, PLJA, SPCR, BOCU

### RFOs Upland and Biotic Standard Assessment Summary Worksheet

#### SITE 64021-TIO GAVILAN #1-F277

Legal Land Desc	NWNW 9 0080S 0230E Meridian 23	Acreage	3150
Ecosite	042CY020NM LIMESTONE HILLS SD	Photo Taken	N
Watershed	13060005080 MACHO		
Observers	JACKSON; BRITTON; DILLEY; REBITZKI	Observation Date	04/17/2007

County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	ESD	Soil Taxon Name	ECTOR
Texture Class	NM644 CBX-L	Soil Phase	ECTOR-ROC
Texture Modifier	NM644 EXTREMELY COBBLY L		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	10.55	NOAA Growing Season Precipitation	8.18
NOAA Avg Annual Precipitation	9.73	NOAA Avg Growing Season Precipitation	8.01
Disturbances and Animal Use:	Cattle are in the area. Slight use overall; 20 - 30% use on black grama. Very little use on other species. A road passes through the site.		

## Part 2. Attributes and Indicators

		Departure from Ecological Site Description/Ecological Reference Areas				
Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:	Lots of surface rock on a relatively flat site.					
S H	Water Flow Patterns				X	
Comments:	Few obvious flow patterns that are stable and short. This is borderline with none to slight.					
S H	Pedestals and/or Terracettes				X	
Comments:	No terracettes. Pedestalling is minimal in flow patterns.					
S H	Bare Ground					X
Comments:	Less than expected for the ecosite.					
S H	Gullies					X
Comments:	None present on site, however, one is visible to the north that is associated with a road.					
S	Wind-scoured, Blowouts, and/or Deposition Areas					X
Comments:						
H	Litter Movement				X	

Comments:	Some displacement....mostly by wind.					
S H B	Soil Surface Resistance to Erosion					X
Comments:	Good soil aggregate stability. Borders with slight to moderate.					
S H B	Soil Surface Loss or Degradation				X	
Comments:	Very slight.					
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff					X
Comments:	Trending toward slight to moderate. There is an increase in shrubs and half shrubs over what is expected for the site in terms of ground cover. The current average is about 19% compared to a 10% expected. This increase in shrubs and half shrubs is probably not yet affecting infiltration and runoff. The amount of surface rock certainly does affect those processes.					
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups				X	
Comments:	There is an increase in the shrub component. Snakeweed cover averages more than grass cover. Plus, there is a shift in the grass component. Black grama should be dominant. Tridens spp. and threeawns are high in the composition.					
B	Plant Mortality/Decadence					X
Comments:						
H B	Litter Amount				X	
Comments:	Within expected range for the ecosite, however, the data indicates that the average is less than the expected range.					
B	Annual Production			X		
Comments:	Total average production for the site is about 50% of the average expected production shown in the ESD. Current production is estimated to be between 40% and 60% of potential.					
B	Invasive Plants			X		
Comments:	This is based on an increase in "increasers" not "invaders". Snakeweed has a greater ground cover average than do grasses. Catclaw may also be on the increase and some mesquite is coming in on the site.					
B	Reproductive Capability of Perennial Plants					X
Comments:						
S	Physical/Chemical/Biological Crusts				X	
Comments:	Evident throughout the site but discontinuous.					

B	Wildlife Habitat					X
Comments:						
B	Wildlife Populations				X	
Comments:						
B	Special Status Species Habitat					X
Comments:						
B	Special Status Species Populations					X
Comments:						

### Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	0	4	6
H	Hydrologic	0	0	0	5	6
B	Biotic	0	0	2	4	7

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil	Soils are relatively stable. This site is heavily armored with surface rock.	0	0	10
Hydrologic		0	0	11
Biotic	The site meets most of the biotic integrity standards, but is falling short of the standards in production and invasive plants (or increasers).	0	2	11

Site Notes: There is a large sink hole on the site.

Soils are stable on the site, which is largely due to the amount of surface rock. There appears to be a shift in plant composition over what is expected for this ecosite. According to the data,

snakeweed is the dominant cover species. It provides more ground cover than do all the grasses combined on the site. Production appears to have been down (based on the averages) compared to what is expected for the ecosite.

## **Determination of Public Land (Rangeland) Health for 64021 SALT CREEK**

The Record of Decision (ROD) for the New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management (dated January 2001) adopted three Standards for Public Land Health. These are (1) Upland Sites Standard, (2) Biotic Communities, Including Native, Threatened, Endangered, and Special Status Species Standard and (3) Riparian Sites Standard.

The ROD also established a process for the BLM Field Offices for implementation. Through a public participation process, the Roswell Field Office developed and adopted indicators to use in conjunction with existing monitoring data to assess these standards.

Field assessment worksheets and other available data that evaluate the local indicators were completed for this allotment. Based on these assessments, it is my determination that public land within Salt Creek, allotment #64021, meets the (1) Upland Sites standard and (2) Biotic Communities, including Native, Threatened, Endangered, and Special Status Species standard. There are no public land Riparian areas on this allotment, therefore this standard was not addressed.

/s/ EDDIE BATESON  
Assistant Field Manager

08/24/2007  
Date