

Canyons of the Ancients National Monument  
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Don E

Part 1. Area of Interest Documentation:

Observer(s): W. PERLS, STONER Date: 8/8/01 Polygon # 233  
 Allotment: YELLOW TRACKET Pasture:  
 Location: GPS lat 37°23.720' long 105°58.700' Legal NES 7 T 36R 19W  
 Aerial Photo: 1-2-12 Site Photos - Roll: 20 Number: 142  
 Soil Map Unit/Component Name: U2ALGD 2WICFE - CLAY SPRINGS Number: 158  
 Range/Ecological Site Name: CLAY SALT DESERT Number: 403  
 Slope: 4% Aspect: 320° Topographic Position: Basin Elevation: 5310

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: Clay Loam Parent material: Shale

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" X

List diagnostic horizons in profile and depth:

1 Strongly effervescent fine sand 2 clay fine 5-31.0 3 medium, calc. masses 31-60.0 4 soft shale 60.0

Evaluation Area Determination:

Surface texture: Clay Loam Parent material: Shale

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" X

List diagnostic horizons in profile and depth:

1 20" calcareous shale 2 26" calc horizon 3 42" soft marrison shale 4 48" bedrock

Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet

Wildlife Use: LIGHT

Livestock Use: None

Offsite influences on area and significance e.g. roads, chainings, fire:

dr. road (2-track)

Benchmark used for comparison: Ecological Reference Area      (ERA number     ) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Int
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common, occasionally connected	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	2	2	
Comments								



INDICATOR:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biological Interest
9. Soil Surface Loss of Degradation	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil loss or degradation severe throughout site. Minimal difference in soil organic matter content and structure of surface and subsurface layers.	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Soil surface horizon intact. Soil structure and organic matter content match that expected for the site.	2	2	2
Comments								
10. Plant Community Composition and Distribution Relative to Infiltration and Runoff.	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Infiltration and runoff are equal to that expected for the site. Plant cover (distribution and amount) adequate for site protection.		2	
Comments								
11. Compaction Layer (below soil surface).	Extensive; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately widespread; moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	None to minimal; not restrictive to water movement and root penetration.	4	4	4
Comments								
12. Functional/Structural Groups	Number of F/S groups greatly reduced; and/or relative dominance of F/S groups has been dramatically altered; and/or number of species within F/S groups dramatically reduced.	Number of F/S groups reduced; and/or one dominant group and/or one or more subdominant groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups significantly reduced.	Number of F/S groups moderately reduced; and/or one or more subdominant F/S groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups moderately reduced.	Number of F/S groups slightly reduced; and/or relative dominance of F/S groups has been modified from that expected for the site; and/or number of species within F/S groups slightly reduced.	F/S groups and number of species in each group closely match that expected for the site.			2
Comments								
13. Plant mortality/Decadence	Dead and/or decadent plants are common.	Dead and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present.	Slight plant mortality and/or decadence.	Plant mortality and decadence matches that expected for the site.			3
Comments								
14. Litter Amount	Largely absent or dominant relative to site potential and weather.	Greatly reduced or increased relative to site potential and weather.	Moderately more or less relative to site potential and weather	Slightly more or less relative to site potential and weather.	Amount is what is expected for the site potential and weather.		2	2
Comments								
15. Annual Production	Less than 20% of potential production	20 to 40% of potential production	40 to 60% of potential production	60 to 80% of potential production	Exceeds 80% of potential production			2
Comments								
16. Invasive Plants	Dominates the site	Common throughout the site.	Scattered throughout the site.	Present primarily on disturbed sites.	Rarely present on the site.			1
Comments								

Annuals - poor quality litter

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interf
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			2
Comments								
18. Biological Crusis	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	2	2	2
Comments								
Indicator Summary:						Soil/Site Stability	Hydrologic Function	Biotic Interf
1. Extreme						10	12	10
2. Moderate to Extreme								
3. Moderate								
4. Slight to Moderate								
5. None to Slight								

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section





Line Intercept

Observers: HASPEL S. STONER

Date: 8/8/01

Polygon #: 233

Line Length: 30 m

Transect 1 of 1

Species Codes:

	SETR4			SAVE4			ATCO			OPPO		
	From	To	inter	From	To	inter	From	To	inter	From	To	inter
	892	919	(21)	1492	1522	30	2486	2495	9	2721	2765	44
	1122	1158	36				2502	2527	25			
	1229	1263	(34)									
	1324	1347	23									
	1485	1500	(15)									
	1502	1505	3									
	1542	1564	22									
	1610	1705	95									
	1719	1751	32									
	1830	1872	(42)									
	1895	1889	74									
	2205	2297	92									
	2542	2652	110									
	2714	2811	97									
	2898	2975	77									
Total Intercept			661			30						44
% Cover			22 %			1 %						1.5 %

Circle intercept values that are standing dead material

Estimated total cover for PJ type:

SAUT3	1	%
PIED		%



### Production Data Sheet

Observers: Stoner Haspels Date: 8.8.2001 Polygon #: 233  
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight	
Perennial Grasses	2	/	/	/	/	T	/	/	/	/	/	T	/	/	/	/	/	/	/	/	/	12	1	.90	10.8
Annual Grasses	1	/	/	/	/	2	/	/	3	2	1	2	2	3	T	1	1	T	2	T	26.5	5.5/4.5 1.22	.95	33.03	
Perennial Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				
Annual Forbs	1	/	/	/	/	1	/	/	T	T	T	T	T	T	T					T	11.5	1	.85	9.78	
Shrub	/	/	/	/	/	1	/	/	/	/	2	5	11	17	17	1					72	1	.65	46.8	

Correction factor = clip wt / test wt. Total production in lb/ac = 4.46 x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:
Perennial Grasses	48.17	Perennial Forbs:
Annual Grasses	147.31	Shrubs: <u>SETR4</u>
Perennial Forbs		
Annual Forbs	43.62	
Shrub	208.73	
Total Production	447.83	

Soil Stability Rating Form		
Range	Criteria for assignment to stability/class	
0	Soil is too unstable to sample (falls through sieve)	
1	50% of structural integrity lost within 5 seconds of insertion in water	
2	50% of structural integrity lost 5-30 seconds after insertion	
3	10% of soil remains on sieve after 5 dipping cycles	
4	10-25% of soil remains on sieve after 5 dipping cycles	
5	25-75% of soil remains on sieve after 5 dipping cycles	
6	75-100% of soil remains on sieve after 5 dipping cycles	
Location	Under canopy	Inter-space
0 meter	2	2
7.5 meter	5	3
15 meter	3	2
22.5 meter	4	2
28.5 meter	5	2

Samples should be < 1/4 " diameter and < 1/8" thick

\* estimated out of the fed



Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: HA SREIS STWIER Date: 8/8/01 Polygon number: 233 Clayey Saltdesert - 403

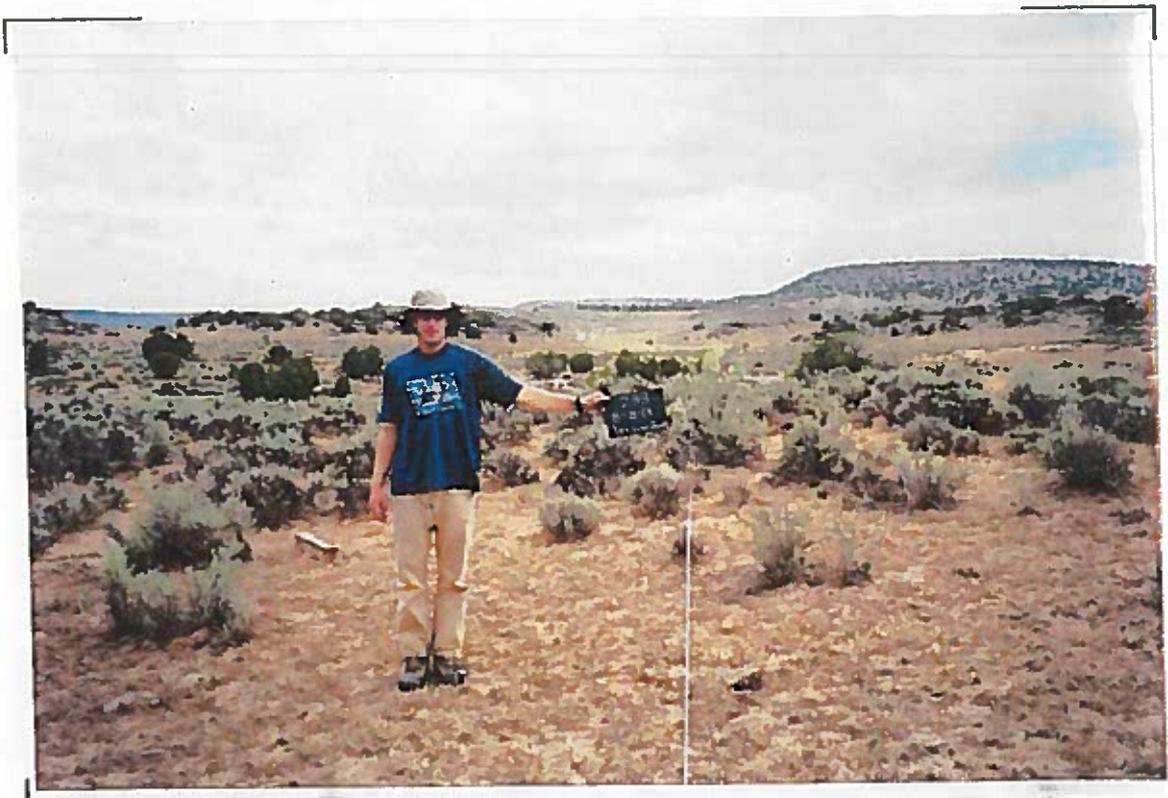
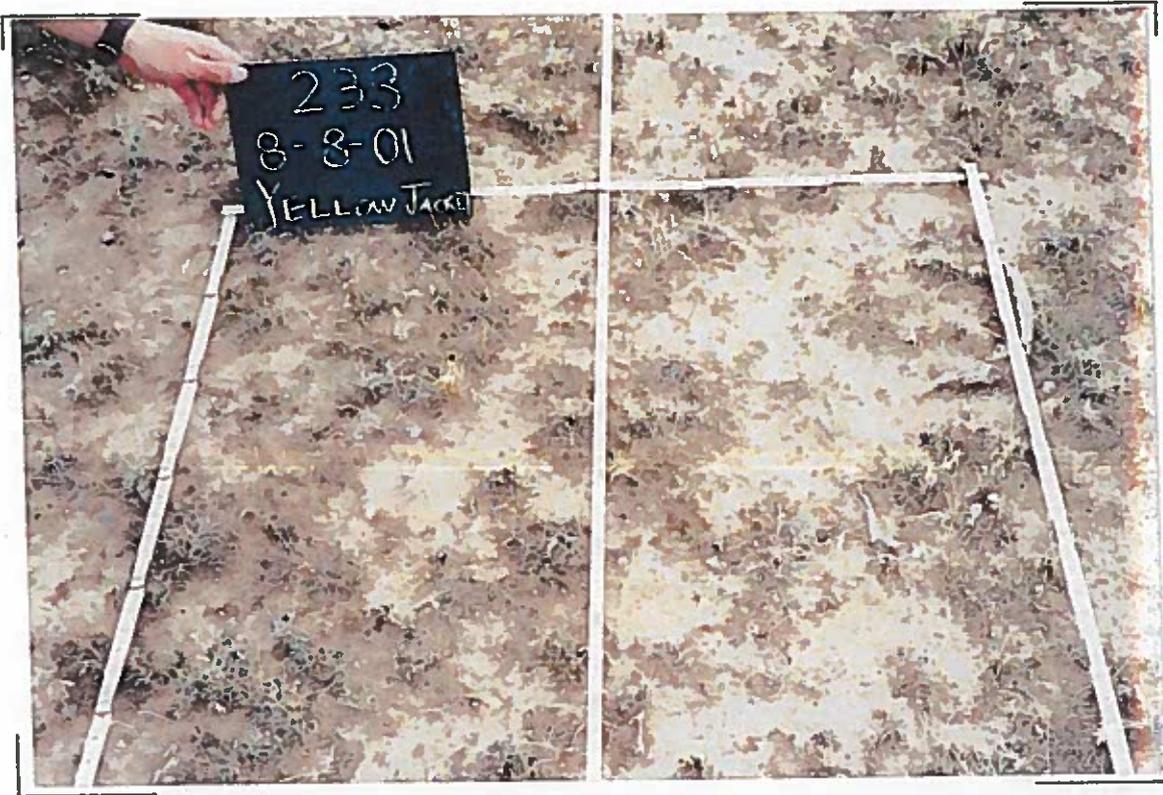
Functional/Structural Groups	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - deciduous				
Trees - evergreen	NI	T	Utah Juniper	
Shrubs - sprouting	M		Rabbitbrush	
Shrubs - non-sprouting	D		Nuttall saltbush, Mat saltbush	
Shrubs - non-sprouting	S	S	<del>Shadscale</del> Fourwing, winterfat, <del>dudsmage</del>	Big Sage, greasewood, partly gone
Shrubs - invasive	NI	T	<del>Snakeweed</del>	
Cool Season Bunchgrasses	S	T	Salina wildrye, <del>squirreltail</del>	
Cool Season Bunchgrasses	NI		Ricegrass, needle & thread, Sandburg, Threawn	
Warm Season Bunchgrasses	NI	T	Alkali sacatop	
Warm Season Rhizomatous Grasses	S	S	<del>Galletta</del>	
Cool Season Rhizomatous	S		Westernwheat	
Annual Grasses		D		Chest wood
Forbs - annual		M		Croft Purz ELLI6
Forbs - perennial	NI	T	Onion, Phlox, Primrose, Princesplume, Globemallow, <del>Sego</del> Cymopteris	
Forbs - Nitrogen fixing		T	<del>Woolly locoweed</del>	
Noxious weeds				
Biological crusts	S	T	<del>Cyanobacteria, Lichens, Moss</del>	
D - Dominant = 40 to 100% composition				
S - Subdominant = 10 to 40% composition				
M - Minor = 2 to 5% composition				
T - Trace = <2% composition				
			* Potential based on ecological/range site description or ecological reference area	
			Actual is for the area of evaluation	

Comments: Potential annual production should be 350 pounds/acre in an average year



CANM Rangeland Health Evaluation Photos

Allotment Yellow Jacket  
Polygon # 233  
Date 8/8/2001





Canyons of the Ancients National Monument  
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): Stover, Hspsels Date: 8.7.01 Polygon # 234  
 Allotment: Yellow Sacket Pasture:  
 Location: GPS lat 37°23.883' long 108°58.386' Legumes FT3WR 19w  
 Aerial Photo: 1-2-12 Site Photos - Roll: 19 Number: 23, 24  
 Soil Map Unit/Component Name: Dzard-Zwirker-Claysprings comp Number: 138  
 Range/Ecological Site Name: Chey Salt Desert Number: 403  
 Slope: 4% Aspect: 216° Topographic Position: Hill in Basin Elevation: 5420

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: Clay loam Parent material: MONTSON Shale  
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

1 Clay films 5-31" 2 Gyp sum 610s 31-60 3 Sft shale @ 60" 4

Evaluation Area Determination:

Surface texture: Clay loam Parent material: MONTSON Shale

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

1 23" Some calcic deposits 32" calcic horizon 3 bedrock @ 42" 4

Avg. annual PPT: Cortez 13". Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet

Wildlife Use: low

Livestock Use: Moderate

Offsite influences on area and significance e.g. roads, chainings, fire: None

Benchmark used for comparison: Ecological Reference Area \_\_\_\_\_ (ERA number \_\_\_\_\_) or Site/Soil Description and/or experience ✓

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	BI Int
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

Comments	2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	2	2
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Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil Site Stability	Hydrologic Function
3. Pedestals and/or Terraces	Abundant active pedestalling and numerous terraces. Many rocks and plants are pedestalled; exposed plant roots are common	Moderate active pedestalling; terraces common. Some rocks and plants are pedestalled; exposed roots	Slight active pedestalling; most pedestals are in flow paths and on exposed slopes. Occasional terraces present.	Active pedestalling or terrace formation is rare; some evidence of past pedestal formation especially in water flow patterns and on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terraces absent or uncommon.	2	2
Comments							
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.	2	2
Comments							
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.	4	4
Comments							
6. Wind-Scoured Blowouts, and/or Deposition Areas	Extensive.	Common	Occasionally present.	Infrequent and few.	Matches what is expected for the site.	2	
Comments							
7. Litter Movement	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes; in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.		2
Comments							
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.	3	3
Comments							

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bi Int
9. Soil Surface Loss of Degradation	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Severe degradation of soil organic matter structure of surface and/or layers.	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Soil surface horizon intact. Soil structure and organic matter content match that expected for the site.			
Comments								
10. Plant Community Composition and Distribution Relative to Infiltration and Runoff.	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrital plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Infiltration and runoff are equal to that expected for the site. Plant cover (distribution and amount) adequate for site protection.			
Comments								
11. Compaction Layer (below soil surface).	Extensive, severely restricts water movement and root penetration.	Wide spread, greatly restricts water movement and root penetration.	Moderately widespread: moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	None to minimal, not restrictive to water movement and root penetration.			
Comments								
12. Functional/ Structural Groups	Number of F/S groups greatly reduced; and/or relative dominance of F/S groups has been dramatically altered; and/or number of species within F/S groups dramatically reduced.	Number of F/S groups reduced; and/or one dominant group and/or one or more subdominant groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups significantly reduced.	Number of F/S groups moderately reduced; and/or one or more subdominant F/S groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups moderately reduced.	Number of F/S groups slightly reduced; and/or relative dominance of F/S groups has been modified from that expected for the site; and/or number of species within F/S groups slightly reduced.	F/S groups and number of species in each group closely match that expected for the site.			
Comments								
13. Plant mortality/Decadence	Dead and/or decadent plants are common.	Dead and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present.	Slight plant mortality and/or decadence.	Plant mortality and decadence matches that expected for the site.			
Comments								
14. Litter Amount	Largely absent or dominant relative to site potential and weather.	Greatly reduced or increased relative to site potential and weather.	Moderately more or less relative to site potential and weather.	Slightly more or less relative to site potential and weather.	Amount is what is expected for the site potential and weather.			
Comments								
15. Annual Production	Less than 20% of potential production	20 to 40% of potential production	40 to 60% of potential production	60 to 80% of potential production	Exceeds 80% of potential production			
Comments								
16. Invasive Plants	Dominate the site	Common throughout the site.	Scattered throughout the site.	Present primarily on disturbed sites.	Rarely present on the site.			
Comments								

2

4 4 4

3

3 3 3

3

3

1

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Salt/Site Stability	Hydrologic Function	10		
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.					
Comments										
18. Biological Crusts	Found only in protected areas; very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces.	Evident throughout the site but continuity is broken.	Largely intact and nearly matches site capability.	3	3	3		
Comments										
Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section						Indicator Summary:				
						1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight
							3	3	3	3
						10	12			

### Cover Frequency Data Sheet

Observers: <u>Stoner Haspels</u>		Date: <u>8.7.01</u>																		Point #: <u>234</u>						
Transect length: <u>100'</u>		Frames per transect: <u>20 @ 20x50 cm</u>																		Transect <u>1</u> of <u>1</u>						
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI	
6	HISA		0											2	2	2	2	1	1	0	146	7.3	.6	4.4		
	ACHY							0													3	.2	.05	.1		
6a	ANTE6	2	1	3	4	2	2	3	4	3	1	3	1	3	3	2	3	4	4	2	2	520	26	1	26	
	VUOC	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	100	5	.9	4.5	
F	LEER	1	0																			13	-6	-.1	-.1	
	Calochortus sp																					5	-	-.05	-	
	SPCO																				0	3	.2	.05	-	
	CRCR3																									
Fa	GIOP	0	T	T	0	0	T	0	0						T	0	0	0	0	0	29	1.4	-.65	-.91		
	PLPA2	0	0		0	T	1	0	0	0	0		0	0	0	0	0	0	0	0	0	55.5	2.8	.85	2.1	
	TRU4	1	0		T								T	T	0	0	T	0			0	24	1.2	-.5	-.6	
	ERCIB							0	0					0							9	.4	-.15	-.1		
	DRCU										T										T	1	-	-.1	-	
	MONU												0								3	-.2	-.05	-		
	COWK2																									
	ASNU4									0	0	0									7	.4	.15	-.1		
Bare Ground % cov		9	8	-	6	4	7	6	4	7	7	1	3	5	4	7	5	3	7	4	1	980	49	.95	46.6	
Groundcover																										
Cyanbac. crust											0	0	5								3	86	4.3	.7	3.0	
Moss											T	3	0								1	2	63.5	3.2	-.15	-.8
Lichen											T	0	0								2	26.5	1.3	.2	-.26	
Litter		1	2	7	4	4	3	4	5	3	2	4	1	5	5	3	4	6	3	3	2	710	36.5	1	30.5	
Wood												1	0	0	0						2	0	52	2.6	.35	1.0
Basal Veg		0	0	3	0	1	0	0	0	0	0		T	0	1	0	1	1	0	T	T	114.5	5.7	1	5.7	
Bare Soil		9	8	-	6	4	7	6	4	7	7	1	3	5	4	7	5	3	7	4	1	980	49	.95	46.6	
Gravel <3 in.																										
Cobble 3-10 in.																										
Stone 10-24 in.																										
Boulder >24 in.																										
Bedrock																										

Groundcover = 100%

Code	Range	Mid-point	Code	Range	Mid-point
T	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
30	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
1	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
2	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
3	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
4	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
5	45.1 - 55% cover	50.0%			







### Production Data Sheet

Observers: HASPEL S. STONER Date: 8/7/01 Polygon #: 234  
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect      of 1

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weig	
Perennial Grasses	/	T	/	/	/	1	/	T	T	/	/	/	/	2	2	3	2	T	T	/	15.5	<sup>3/4</sup> .75	.90	10.5	
Annual Grasses	1	T	T	2	1	2	1	T	1	1	T	1	T	1	2	T	2	2	1	T	1	20.5	<sup>5/4.5</sup> 1.11	.95	21.6
Perennial Forbs	2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	T	/	T	/	4	1	.50	2	
Annual Forbs	1	/	T	T	T	T	T	T	T	T	T	T	T	1	T	T	1	T	T	T	11.5	1	.75	8.6	
Shrub	1	2	T	8	/	T	/	T	/	/	8	7	/	2	/	T	2	/	/	/	23	<sup>9.5/4.5</sup> 1	.65	14.95	

Correction factor = clip wt / est wt.

Total production in lb/ac = 89.2 x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																					
perennial grasses	46.83	Perennial Forbs: ASNU4, CALOCH 5																					
annual grasses	4.46	Shrubs: GLISAZ, SETRY, SAUE4																					
perennial forbs	8.92	<b>Soil Stability Rating Form</b> Criteria for assignment to stability class <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Rating</th> <th>Criteria</th> </tr> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td>10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </table>	Rating	Criteria	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles					
Rating	Criteria																						
0	Soil is too unstable to sample (falls through sieve)																						
1	50% of structural integrity lost within 5 seconds of insertion in water																						
2	50% of structural integrity lost 5-30 seconds after insertion																						
3	10% of soil remains on sieve after 5 dipping cycles																						
4	10-25% of soil remains on sieve after 5 dipping cycles																						
5	25-75% of soil remains on sieve after 5 dipping cycles																						
6	75-100% of soil remains on sieve after 5 dipping cycles																						
annual forbs	38.45																						
shrub	66.68																						
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Location</th> <th>Under canopy</th> <th>Inter-space</th> </tr> <tr> <td>1m</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> </tr> <tr> <td>6m</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> </tr> <tr> <td>11m</td> <td style="text-align: center;">3</td> <td style="text-align: center;">6</td> </tr> <tr> <td>16m</td> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> </tr> <tr> <td>20m</td> <td style="text-align: center;">6</td> <td style="text-align: center;">6</td> </tr> <tr> <td>avg</td> <td style="text-align: center;">3.6</td> <td style="text-align: center;">4</td> </tr> </table>	Location	Under canopy	Inter-space	1m	2	3	6m	3	3	11m	3	6	16m	3	2	20m	6	6	avg	3.6	4
Location	Under canopy	Inter-space																					
1m	2	3																					
6m	3	3																					
11m	3	6																					
16m	3	2																					
20m	6	6																					
avg	3.6	4																					
<b>Total Production</b>	165 34	Samples should be < 1/4 " diameter and < 1/8" thick																					





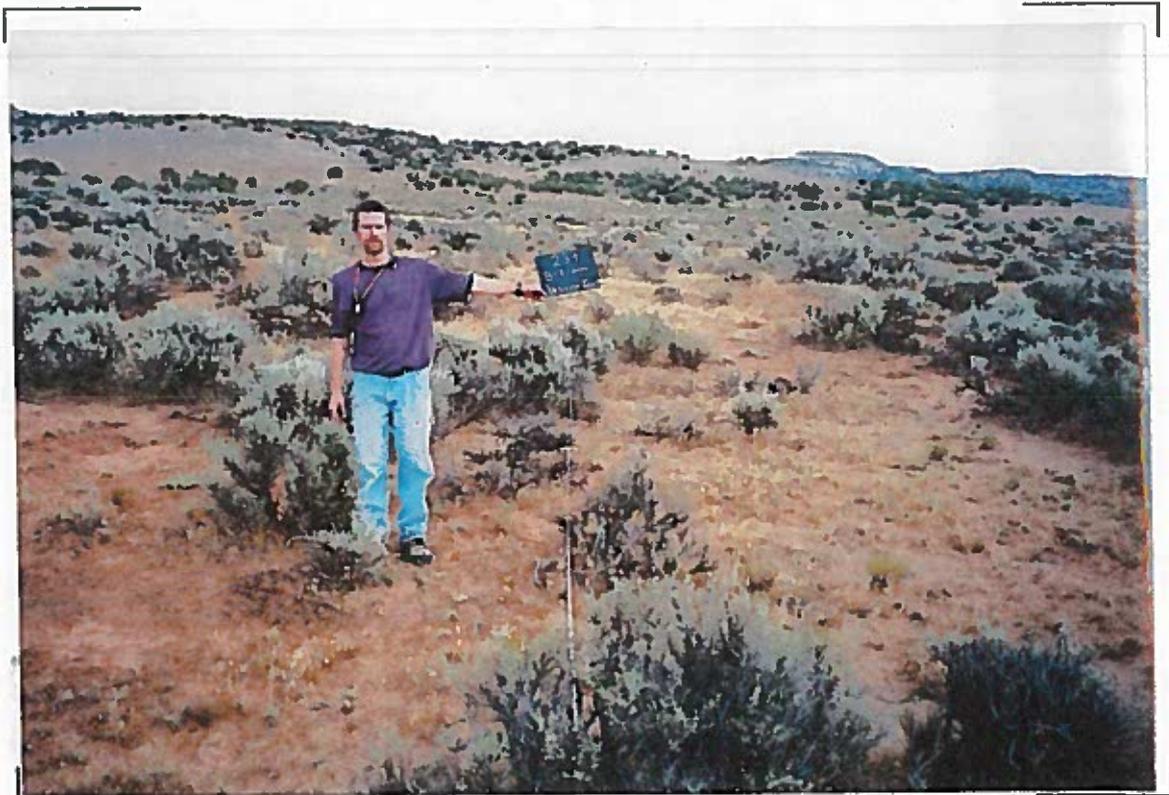
Handwritten notes at the top left corner.

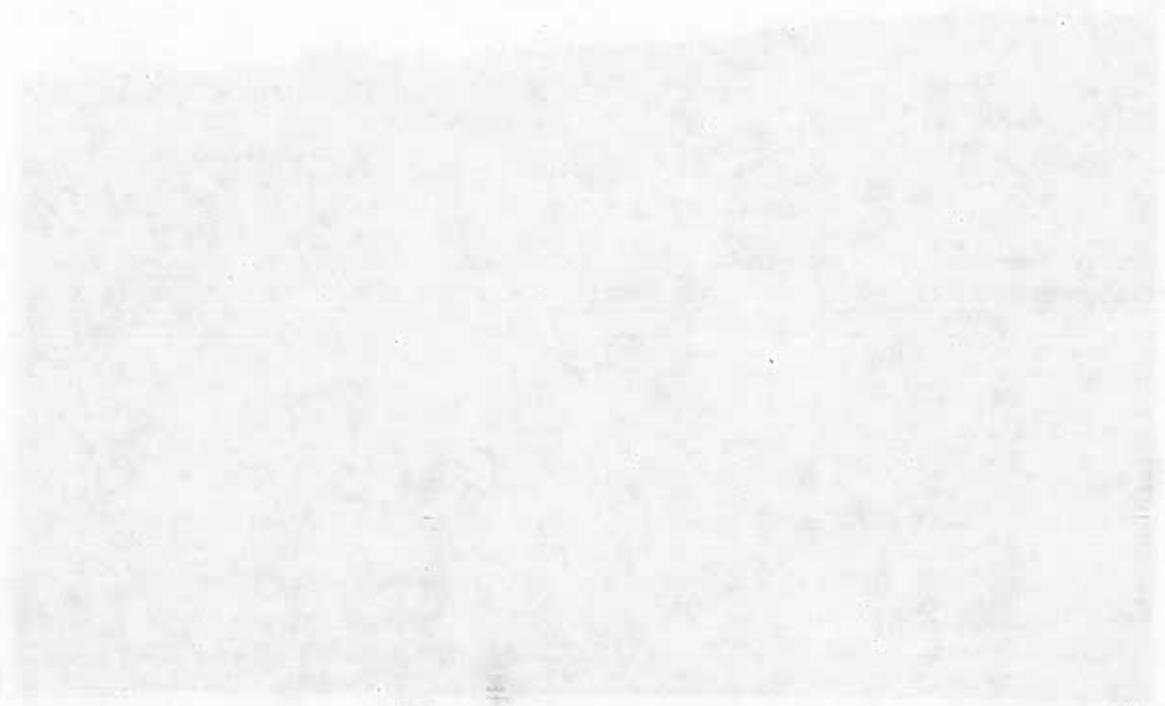
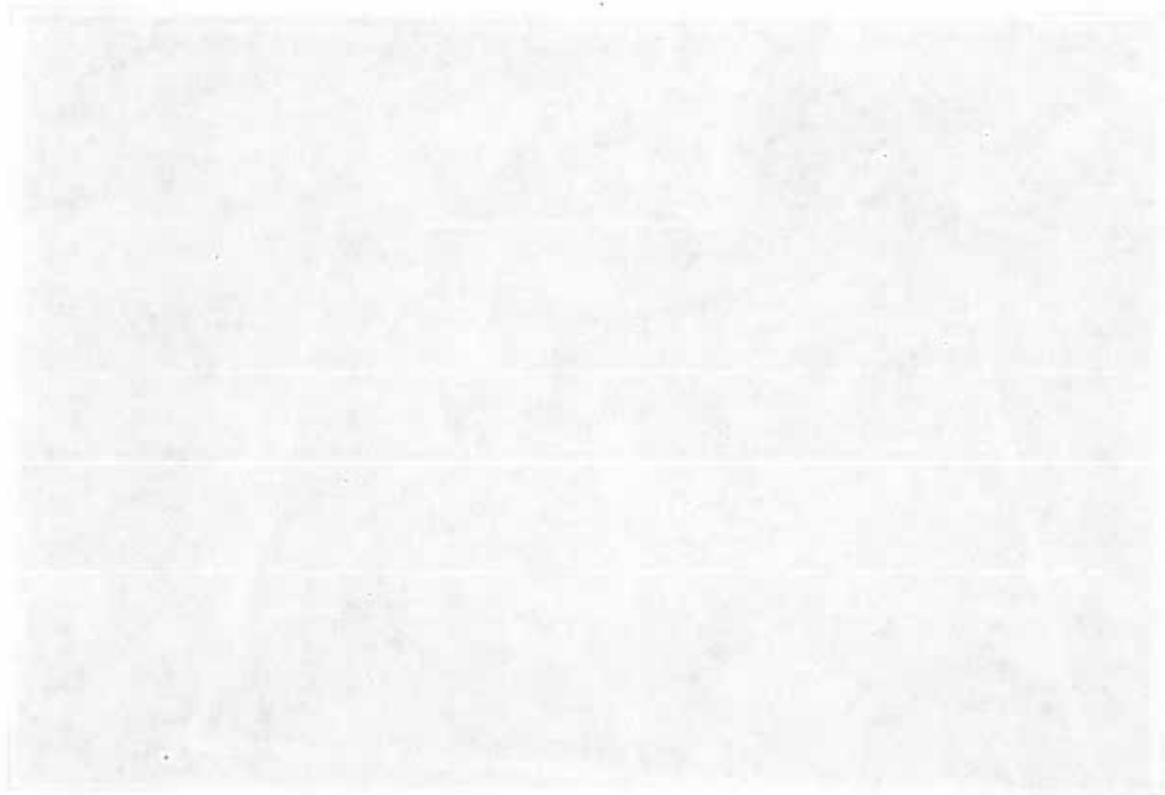
Year	Month	Day	Event	Location	Notes
1950	Jan	1	...	...	...
1950	Jan	2	...	...	...
1950	Jan	3	...	...	...
1950	Jan	4	...	...	...
1950	Jan	5	...	...	...
1950	Jan	6	...	...	...
1950	Jan	7	...	...	...
1950	Jan	8	...	...	...
1950	Jan	9	...	...	...
1950	Jan	10	...	...	...
1950	Jan	11	...	...	...
1950	Jan	12	...	...	...
1950	Jan	13	...	...	...
1950	Jan	14	...	...	...
1950	Jan	15	...	...	...
1950	Jan	16	...	...	...
1950	Jan	17	...	...	...
1950	Jan	18	...	...	...
1950	Jan	19	...	...	...
1950	Jan	20	...	...	...
1950	Jan	21	...	...	...
1950	Jan	22	...	...	...
1950	Jan	23	...	...	...
1950	Jan	24	...	...	...
1950	Jan	25	...	...	...
1950	Jan	26	...	...	...
1950	Jan	27	...	...	...
1950	Jan	28	...	...	...
1950	Jan	29	...	...	...
1950	Jan	30	...	...	...
1950	Jan	31	...	...	...

Handwritten notes at the bottom of the page, including a signature and date.

CANM Rangeland Health Evaluation Photos

Allotment Yellow Jacket  
Polygon # 234  
Date 8 / 7 / 2001





Canyons of the Ancients National Monument  
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): Spover, Haspels Date: 8-28-01 Polygon # 235  
 Allotment: Yellow Jacket Pasture:  
 Location: GPS lat 37°22.90' long 108°57.64' Legal NE S17T36R19W  
 Aerial Photo: 1-2-10 Site Photos - Roll: (20) Number: 12-13  
 Soil Map Unit/Component Name: D22ac02Zwister Number: 138  
 Range/Ecological Site Name: Clayey Salt Desert Number: 403  
 Slope: 3% Aspect: 134 Topographic Position: rolling valley bottom Elevation: 5320

Range/Ecological site description, soil survey, and/or ecological reference area:  
 Surface texture: Clay loam Parent material: Morrison shale  
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" ✓  
 List diagnostic horizons in profile and depth:  
 1 15" Gypwm CalO<sub>2</sub> M<sub>4</sub>2 brack > 60" 3 5ft Morrison shale @ 60 4  
 Evaluation Area Determination:  
 Surface texture: Clay loam Parent material: Morrison shale  
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" X  
 List diagnostic horizons in profile and depth:  
 1 15" Gypwm CalO<sub>2</sub> M<sub>4</sub>2 brack > 60" 3 5ft Morrison shale @ 60 4  
 Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet  
 Wildlife Use: Light - moderate  
 Livestock Use: Moderate  
 Offsite influences on area and significance e.g. roads, chainings, fire: none  
 Benchmark used for comparison: Ecological Reference Area (ERA number     ) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bi
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	2	2	
Comments								





Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bioh Interest
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			3
Comments	Found only in protected areas, very limited suite of functional groups.					Largest observed occurring mostly in protected areas.		
18. Biological Crusts			In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	3	3	3
Comments								
Indicator Summary:						Soil/Site Stability	Hydrologic Function	Bioh Interest
1. Extreme						3	(6)	3
2. Moderate to Extreme						(4)	4	(4)
3. Moderate						1	1	2-3
4. Slight to Moderate						1	1	
5. None to Slight						10	12	10

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

### Cover Frequency Data Sheet

Observers: Stoner, Haspels Date: 8-28-01 Polygon #: 235

Transect length: 30 m Frames per transect: 20 @ 20x50 cm Transect 1 of 1

meter for frame location 0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI	
0	HIJA	T									2	0											24	1.2	.2	.2
	SPAI				3	T									6	2							110.5	5.5	.2	1.1
	ACHY					T																	.5	-	.05	-
	ELELS																				T		.5	-	.05	-
29	ANTE6	2	1	1	0	T	2	2	1	T	1	1	2	2	1	2	0	2	2	1	2		257	12.8	1	12.8
	VUOC						0	0	0	T	0		T	0	T	T		0	T				20.5	1.0	-.55	-.55
	CHGL13																									
FA	CHEG3											T											.5	-	.05	-
FA	PLPA2																									
EN	ASNU4																									

Bare soil without canopy: 8 9 9 5 A 7 7 4 9 6 A 2 7 4 2 - 2 3 9 7 1194 59.7 .95 56.7

Groundcover: (total groundcover should equal 100%)

Cyanbac. crust		0	0																							46.5	2.3	.3	7	
Moss		T	T	2																							88	4.4	-.55	2.4
Lichen		T	T																								12	-.6	-.25	-.2
Litter		2	0	0	2	0	2	2	4	0	1	0	4	3	2	5	7	7	5	1	3		515	25.8	1	25.8				
Wood				0					2																		39	2.0	-.25	-.5
Basal Veg		0	T	T	1	T	1	0	T	2	0	T	1	0	1	1	3	0	0	T	0		107	5.4	1	5.4				
Bare Soil		8	9	9	5	A	7	7	4	9	6	A	2	7	4	2	-	2	3	9	7		1194	59.7	.95	56.7				
Gravel <3 in.		T	0	0		0	0	1		0	0	0															33	1.6	.6	1.0
Cobble 3-10 in.																														
Stone 10-24 in.																														
Boulder >24 in.																														
Bedrock																														

Code	Range	Mid-point	Code	Range	Mid-point
T	0 - 1.0% cover	0.5%	9	55.1 - 65% cover	60.0%
0	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
1	5.1 - 15% cover	10.0%	5	75.1 - 85% cover	80.0%
2	15.1 - 25% cover	20.0%	0	85.1 - 95% cover	90.0%
3	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
4	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
5	45.1 - 55% cover	50.0%			



Line Intercept

Observers: HARELS, STANER

Date: 8/28/01

Polygon #: 235

Line Length: 30 m

Transect 1 of 1

Species Codes:

	SETR4			SAVE4			GUSAZ																	
	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter			
	906	1022	116	2210	2295	85	2859	2883	24															
	1602	1808	206	2348	2410	62																		
	1969	1995	26																					
	2002	2060	58																					
	2130	2208	78																					
	2278	2301	23																					
	2411	2443	32																					
	2497	2587	88																					
	2583	2622	39																					
	2723	2743	10																					
	2823	2968	95																					
Total Intercept			706																					
% Cover			65																					
			23.5%																					
			2%																					

Circle intercept values that are standing dead material

Estimated total cover for PJ type:

SAUT3 %  
PIED %

147  
24  
1%



### Production Data Sheet

Observers: <u>HASPELS, STONER</u>	Date: <u>8/28/01</u>	Polygon #: <u>235</u>
Transect length: <u>30 meters</u>	Frames per transect: <u>20 @ 20x50 cm</u>	Transect <u>1</u> of <u>1</u>

0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight	
Perennial Grasses	T								3													3.5/7.5			
Annual Grasses	T			8	T				2	1				14	3							1.4	.65	26.39	
Perennial Forbs																									
Annual Forbs											T		T									1	—	.85	1.28
Shrub	14					5								8	T	16	15					34/28	1.2	.65	153.66
	10		1			6	3	4									12	7			5	19.7			

Correction factor = clip wt / est wt. Total production in lb/ac = ~~4.46~~ x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:
Perennial Grasses	117.70	Perennial Forbs: <del>EPTO</del> <del>GUSAZ</del>
Annual Grasses	44.51	Shrubs: EPTO, GUSAZ
Perennial Forbs		
Annual Forbs	5 71	
Shrub	685.32	
Total Production	853.24	

Soil Stability Rating Form		
Rating	Criteria for assignment to stability class	
0	Soil is too unstable to sample (falls through sieve)	
1	50% of structural integrity lost within 5 seconds of insertion in water	
2	50% of structural integrity lost 5-30 seconds after insertion	
3	10% of soil remains on sieve after 5 dipping cycles	
4	10-25% of soil remains on sieve after 5 dipping cycles	
5	25-75% of soil remains on sieve after 5 dipping cycles	
6	75-100% of soil remains on sieve after 5 dipping cycles	
Location	Under canopy	Inter-space
0 meter	2	2
7.5 meter	4	3
15 meter	4	3
22.5 meter	3	3
28.5 meter	4	3
	2.4	7.8

Samples should be < 1/4 " diameter and < 1/8" thick



Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: HARELS, STONER Date: 8/28/01

235

Clayey Saltdesert - 403

Polygon number:

Functional/Structural Group	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - deciduous	M	T	<del>Utah Juniper</del>	
Trees - evergreen	M	T	<del>Rabbitbrush</del>	
Shrubs - sprouting	M	T	<del>Natural saltbush, Mat saltbush</del>	
Shrubs - non-sprouting	D	D	<del>Shadscale, Fourwing, winterfat, budsage,</del>	SAVEY, SEREN
Shrubs - non-sprouting	S	M	<del>Snakeweed</del>	
Shrubs - invasive	M	T	<del>Salina wildrye, squirreltail</del>	
Cool Season Bunchgrasses	S	T	<del>Ricegrass, needle&amp;thread, Sandburg, Threawn</del>	
Cool Season Bunchgrasses	N1	S	<del>Alkali saccaton</del>	
Warm Season Bunchgrasses	N1	S	<del>Galleta</del>	
Warm Season Rhizomatous Grasses	S	S	<del>Westernwheat</del>	
Cool Season Rhizomatous	S	M		Chert, VUNC PLPAPZ, COWRZ
Annual Grasses		T		
Forbs - annual		T		
Forbs - perennial	N1	T	<del>Onion, Phlox, Primrose, Princesplume, Globemallow, Sego, Cymopteris</del>	CATE3 ASNU4
Forbs - Nitrogen fixing		T	<del>Woollytoco weed</del>	
Noxious weeds				
Biological crusts	S	M	<del>Cyanobacteria, Lichens, Moss</del>	
D - Dominant = 40 to 100% composition				
S - Subdominant = 10 to 40% composition				
M - Minor = 2 to 5% composition				
T - Trace = <2% composition				

\* Potential based on ecological/range site description or ecological reference area

Comments: Potential annual production should be 350 pounds/acre in an average year



## CANM Rangeland Health Evaluation Photos

Allotment Yellow Jacket  
Polygon # 235  
Date 8/28/2001

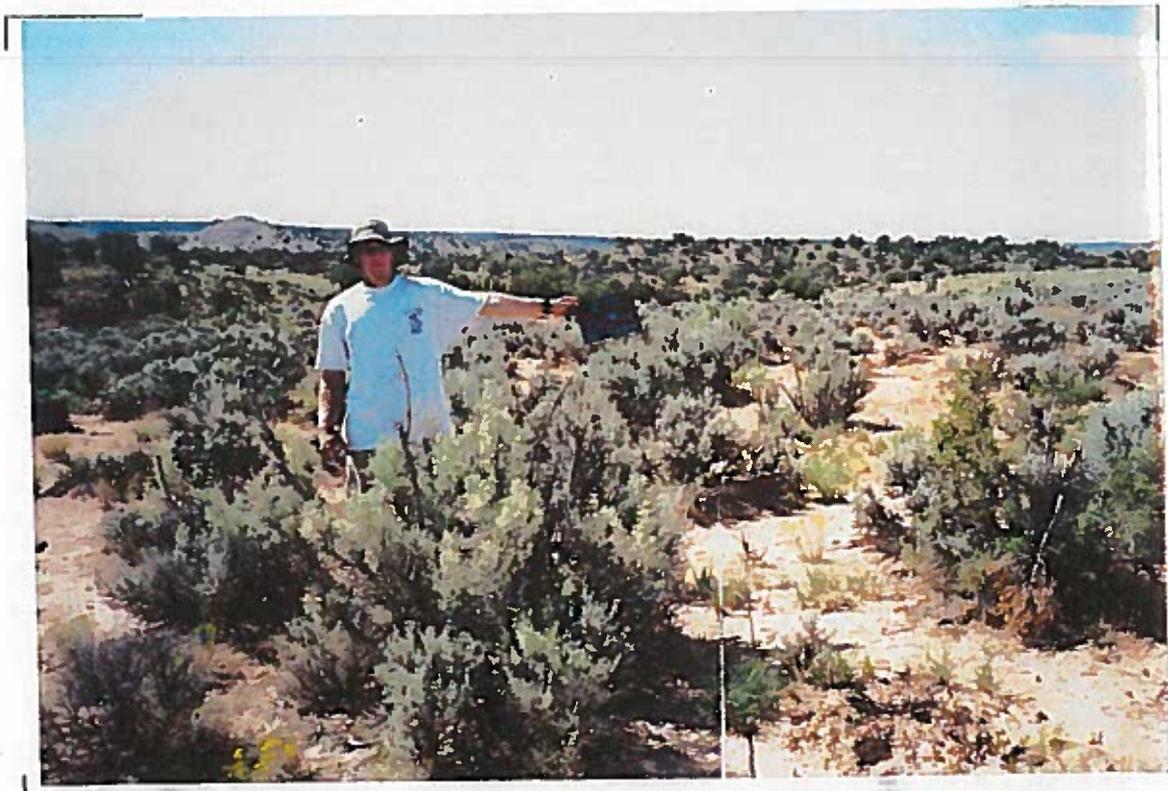


Table 1. Summary of the study design and data collection

Phase	Duration	Activities	Data Collection
Phase 1	12 weeks	Baseline assessment, intervention, and follow-up	Pre-test, Post-test, Follow-up
Phase 2	12 weeks	Baseline assessment, intervention, and follow-up	Pre-test, Post-test, Follow-up
Phase 3	12 weeks	Baseline assessment, intervention, and follow-up	Pre-test, Post-test, Follow-up

Phase	Duration	Activities	Data Collection
Phase 4	12 weeks	Baseline assessment, intervention, and follow-up	Pre-test, Post-test, Follow-up
Phase 5	12 weeks	Baseline assessment, intervention, and follow-up	Pre-test, Post-test, Follow-up
Phase 6	12 weeks	Baseline assessment, intervention, and follow-up	Pre-test, Post-test, Follow-up

Canyons of the Ancients National Monument  
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

**Part 1. Area of Interest Documentation:**

Observer(s): HASRELS, SORNER Date: 8/27/01 Polygon # 236  
 Allotment: YELLOW STACKET Pasture: \_\_\_\_\_  
 Location: GPS lat N37° 22' 42.5" long W108° 57' 7.5" Legal S1/4 T36N R19W E2  
 Aerial Photo: 1-2-10 Site Photos - Roll: \_\_\_\_\_ Number: ~~4~~ 4, 10  
 Soil Map Unit/Component Name: Clay Springs Number: 22  
 Range/Ecological Site Name: Salthorst Break Number: 406  
 Slope: 4% Aspect: 222° Topographic Position: Hill in Valley Elevation: 5250'  
 Range/Ecological site description, soil survey, and/or ecological reference area:  
 Surface texture: Very Stoney Clay loam Parent material: Rosdium Form Morrison Shale  
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" Parent material: SANDSTONE  
 List diagnostic horizons in profile and depth:  
 1 0-3" stony at contact 2 calciferous s. 60% 0-5" 3 gypsum crystals 1-18" 4 4-70" weathered  
 Evaluation Area Determination: \_\_\_\_\_  
 Surface texture: FINE SANDY LOAM Parent material: \_\_\_\_\_  
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"  
 List diagnostic horizons in profile and depth:  
 1 Calc layer 6" 2 14" bedrock 3 \_\_\_\_\_ 4 \_\_\_\_\_  
 Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet  
 Wildlife Use: light  
 Livestock Use: Moderate  
 Offsite influences on area and significance e.g. roads, channings, fire: old 2-track  
 Benchmark used for comparison: Ecological Reference Area \_\_\_\_\_ (ERA number \_\_\_\_\_) or Site/Soil Description and/or experience \_\_\_\_\_

**Part 2. Indicator Rating:**

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	BI Int.
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site			
2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.			
Comments	5 5							

Comments	3 3							
----------	-----	--	--	--	--	--	--	--





Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil Site Stability	Hydrologic Function	Biotic Interf.
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capable to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			3
Comments								
18. Biological Crusts	Found only in protected areas. very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces.	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	4	4	4
Comments								
Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section						Indicator Summary:		
						1. Extreme	Hydrologic Function	Biotic Interf.
						2. Moderate to Extreme	2	2
						3. Moderate	3	3
						4. Slight to Moderate	4	3
						5. None to Slight	1	1
						10	12	10

### Cover Frequency Data Sheet

Observers: HASPELS, STONER																	Date: 8/27/01					Polygon #: 236			
Transect length: 30 m		Frames per transect: 20 @ 20x50 cm															Transect		of						
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5				
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI
G	H1JA	0		0					T		1	1		2							1	56.5	2.8	.35	-.9
	ACHY				1					1												20	1	.1	-.1
	ELELS				0		0															6	.3	.1	-
	SPAT																4	T	2	4		10.5	-.5	.2	-.1
Gn	ANTEG	1	0	1	2	T	2	T		T	T	1	T	T	0	1	T	T	1	1	1	120	6	.95	5.7
	VUOC	1	T	T	1	T	T		T	T	T			T	T	T	T	0	T	T		30	1.5	-.85	1.3
F																									
Fa	DRCU	T																					-.5	-	-.05
	PLPA2																					T	.5	-	.05
Bare soil without canopy		T	6	3	T	8	-	A	6	6	9	6	6	6	9	8	9	3	-	5	1	1008	50.9	.7	45.4
Groundcover: (total groundcover should equal 100%)																									
Cyanbac. crust		3	2	2	1	1		T	3	3		2	2	3	1	1	1	1	1		3	300.5	15.0	-.85	12.8
Moss					0													2	3	T	0	56.5	2.8	-.25	-.7
Lichen		3	T	0					T									T	0		T	38	1.9	-.35	-.7
Litter		3	0	2	7	0	A	0	0	0	0	0	T	0	T	1	T	1	3	2	3	342.5	17.1	.1	17.1
Wood				3														T	2			50.5	2.5	.15	-.4
Basal Veg		1	T	T	1	T	T	T	T	T	0	0	T	0	T	T	T	0	0	0	0	53.5	2.7	.1	2.7
Bare Soil		0	7	3	0	8	0	A	6	6	9	6	6	6	9	8	9	5	T	7	3	1086	54.3	.1	54.3
Gravel <3 in.			0	T	T	0		T	T	T	T	0	0	T	T	T	T			T	T	18.5	-.9	-.85	-.8
Cobble 3-10 in			0						0		0		2								0	32	1.6	-.25	-.4
Stone 10-24 in.																									
Boulder >24 in.											1											10	-.5	.05	-.02
Bedrock																									

Code	Range	Mid-point	Code	Range	Mid-point
0	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
1	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
2	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
3	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
4	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
5	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
6	45.1 - 55% cover	50.0%			







### Production Data Sheet

Observers: <u>Stoner, Haspels</u>	Date: <u>8-27-01</u>	Polygon #: <u>236</u>
Transect length: 30 meters	Frames per transect: 20 @ 20x50 cm	Transect <u>1</u> of <u>1</u>

0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight	
Perennial Grasses	T								2		3							4	T	3	10	33	1	.55	18.15
Annual Grasses	2								T		2					T						25.5	.83	.95	20.11
Perennial Forbs																									
Annual Forbs	T																					1		.85	.85
Shrub	23															T			9			59.5	1.15	.65	44.48

Correction factor = clip wt / est wt. Total production in lb/ac = 4.46 x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:
Perennial Grasses	80.95	Perennial Forbs:
Annual Grasses	89.69	Shrubs: <u>ATLO, SETR4</u>

Growth form	Pounds per acre dry weight	Soil Stability Rating Form																			
Perennial Forbs		<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Rating</th> <th>Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr><td>0</td><td>Soil is too unstable to sample (falls through sieve)</td></tr> <tr><td>1</td><td>50% of structural integrity lost within 9 seconds of insertion in water</td></tr> <tr><td>2</td><td>50% of structural integrity lost 5-30 seconds after insertion</td></tr> <tr><td>3</td><td>10% of soil remains on sieve after 5 dipping cycles</td></tr> <tr><td>4</td><td>10-25% of soil remains on sieve after 5 dipping cycles</td></tr> <tr><td>5</td><td>25-75% of soil remains on sieve after 5 dipping cycles</td></tr> <tr><td>6</td><td>75-100% of soil remains on sieve after 5 dipping cycles</td></tr> </tbody> </table>	Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 9 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles			
Rating	Criteria for assignment to stability class																				
0	Soil is too unstable to sample (falls through sieve)																				
1	50% of structural integrity lost within 9 seconds of insertion in water																				
2	50% of structural integrity lost 5-30 seconds after insertion																				
3	10% of soil remains on sieve after 5 dipping cycles																				
4	10-25% of soil remains on sieve after 5 dipping cycles																				
5	25-75% of soil remains on sieve after 5 dipping cycles																				
6	75-100% of soil remains on sieve after 5 dipping cycles																				
Annual Forbs	3.79																				
Shrub	198.38																				
Total Production	372.81	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Location</th> <th>Under canopy</th> <th>Inter-space</th> <th rowspan="6">Samples should be &lt; 1/4 " diameter and &lt; 1/8" thick</th> </tr> </thead> <tbody> <tr><td>0 meter</td><td>6</td><td>2</td></tr> <tr><td>7.5 meter</td><td>6</td><td>3</td></tr> <tr><td>15 meter</td><td>6</td><td>2</td></tr> <tr><td>22.5 meter</td><td>6</td><td>2</td></tr> <tr><td>28.5 meter</td><td>6</td><td>3</td></tr> </tbody> </table>	Location	Under canopy	Inter-space	Samples should be < 1/4 " diameter and < 1/8" thick	0 meter	6	2	7.5 meter	6	3	15 meter	6	2	22.5 meter	6	2	28.5 meter	6	3
Location	Under canopy	Inter-space	Samples should be < 1/4 " diameter and < 1/8" thick																		
0 meter	6	2																			
7.5 meter	6	3																			
15 meter	6	2																			
22.5 meter	6	2																			
28.5 meter	6	3																			



**Rangeland Health Assessment - Canyons of the Ancients National Monument**

**Functional/Structural Group Worksheet**

Observers: Wesley Stover Date: 8/27/01

Polygon number: 236

**Salt Desert Breaks - 406**

Functional/Structural Group Name	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - deciduous				
Trees - evergreen	M	M	Utah Juniper	
Shrubs - sprouting	M	T	Rabbitbrush	
Shrubs - non-sprouting	D	M	Sagebrush	SEVER
Shrubs - non-sprouting	M	D	Fourwing, Winterfat, Sage	
Shrubs - invasive		M		CRUSA 2
Cool Season Bunchgrasses	M-S	T	Saltina wildrye, Ricegrass, Squirreltail	
Warm Season Bunchgrasses	S	S	Needle&thread, Sandburg, Threeawn	
Warm Season Rhizomatous Grasses	D	S	Alkali sacaton	
Cool Season Rhizomatous	M	T	Galletta	
Annual Grasses		S	Westernwheat	CHEAT WOOD
Forbs - annual		T		DRCU, PLPAZ, SIANZ
Forbs - perennial	M	T	Onion, Phlox, Primrose, Princesplume, Globemallow, Sego, Cymopteris, Larkspur	LEER
Forbs - Nitrogen fixing			Locoweed	
Noxious weeds				
Biological crusts	S	S	Cyanobacteria, Lichens, Moss	
D - Dominant = 40 to 100% composition				
S - Subdominant = 10 to 40% composition				
M - Minor = 2 to 5% composition				
T - Trace = <2% composition				
* Potential based on ecological/range site description or ecological reference area				
Actual is for the area of evaluation				

Comments: Potential annual production should be 200 pounds/acre in an average year

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025																																																																																																																																							
Population	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430	435	440	445	450	455	460	465	470	475	480	485	490	495	500	505	510	515	520	525	530	535	540	545	550	555	560	565	570	575	580	585	590	595	600	605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	680	685	690	695	700	705	710	715	720	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795	800	805	810	815	820	825	830	835	840	845	850	855	860	865	870	875	880	885	890	895	900	905	910	915	920	925	930	935	940	945	950	955	960	965	970	975	980	985	990	995	1000

Handwritten notes and a signature at the bottom of the page.

# CANM Rangeland Health Evaluation Photos

Allotment Yellow Jacket  
Polygon # 236  
Date 8/27/2001





Canyons of the Ancients National Monument  
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): Stover, Haspels Date: 8-30-01 Polygon # 237  
 Allotment: Yellow Jacket Pasture:  
 Location: GPS lat 37°22.087' long 108°57.844' LegalNES 20T36NR 19w  
 Aerial Photo: 1-2-10 Site Photos - Roll: 20 Number: 16, 17  
 Soil Map Unit/Component Name: Typc Torrier vents - mod outcrop c Number: 133  
 Range/Ecological Site Name: Salt desert Bents Number: 406  
 Slope: 24% Aspect: 262° Topographic Position: Mesa slope Elevation: 5230

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: Stony sandy loam Parent material: Mixed sources  
 Depth: Very shallow <10" X Shallow 10-20" X Moderate 20-40" X Deep >40" X  
 List diagnostic horizons in profile and depth:  
 1 0-3" 5% cobbles, 30% s tone 2 3-7" 30% gravel, 5% cobbles, 20% stone - c 3 7-16 stony silty clay loam 0-6% rock 4  
 Evaluation Area Determination:

Surface texture: Gravel stony sandy loam Parent material: Mixed sources  
 Depth: Very shallow <10" X Shallow 10-20" X Moderate 20-40" X Deep >40" X  
 List diagnostic horizons in profile and depth:  
 1 Bedrock @ 7" 2 3 4

AVG. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet  
 Wildlife Use: light

Livestock Use: light  
 Offsite influences on area and significance e.g. roads, chainings, fire: none  
 Benchmark used for comparison: Ecological Reference Area (ERA number     ) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Int.
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion	3	3	
Comments								



Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil Site Stability	Hydrologic Function	Bi Int
9. Soil Surface Loss of Degradation	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil surface degradation severe throughout site. Minimal differences in soil organic matter content and structure of surface and subsurface layers.	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Soil surface horizon intact. Soil structure and organic matter content match that expected for the site.	4	4	4
10. Plant Community Composition and Distribution Relative to Infiltration and Runoff.	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Derivational plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Infiltration and runoff are equal to that expected for the site. Plant cover (distribution and amount) adequate for site protection.		3	
11. Compaction Layer (below soil surface).	Extensive; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately widespread; moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	None to minimal; not restrictive to water movement and root penetration.	4	4	4
12. Functional/Structural Groups	Number of F/S groups greatly reduced; and/or relative dominance of F/S groups has been dramatically altered; and/or number of species within F/S groups dramatically reduced.	Number of F/S groups reduced; and/or one dominant group and/or one or more subdominant groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups significantly reduced.	Number of F/S groups moderately reduced; and/or one or more subdominant F/S groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups moderately reduced.	Number of F/S groups slightly reduced; and/or relative dominance of F/S groups has been modified from that expected for the site; and/or number of species within F/S groups slightly reduced.	F/S groups and number of species in each group closely match that expected for the site.			3
13. Plant mortality/Decadence	Dead and/or decadent plants are common.	Dead and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present.	Slight plant mortality and/or decadence.	Plant mortality and decadence matches that expected for the site.			4
14. Litter Amount	Largely absent or dominant relative to site potential and weather.	Greatly reduced or increased relative to site potential and weather.	Moderately more or less relative to site potential and weather	Slightly more or less relative to site potential and weather.	Amount is what is expected for the site potential and weather.		3	3
15. Annual Production	Less than 20% of potential production	20 to 40% of potential production	40 to 60% of potential production	60 to 80% of potential production	Exceeds 80% of potential production			3
16. Invasive Plants	Dominate the site	Common throughout the site.	Scattered throughout the site.	Present primarily on disturbed sites.	Rarely present on the site.			4

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interest																												
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			3																												
Comments																																				
18. Biological Crusts	Found only in protected areas; very limited suite of functional groups.	Large, absent occurring mostly in protected areas.	In protected areas and with a minor component in interspaces.	Evident throughout the site but continuity is broken.	Largely intact and nearly matches site capability.	3	3	3																												
Comments																																				
Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section						<table border="1"> <thead> <tr> <th>Indicator Summary:</th> <th>Soil/Site Stability</th> <th>Hydrologic Function</th> <th>Biotic Interest</th> </tr> </thead> <tbody> <tr> <td>1. Extreme</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. Moderate to Extreme</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. Moderate</td> <td>3</td> <td>6</td> <td>5</td> </tr> <tr> <td>4. Slight to Moderate</td> <td>6</td> <td>5</td> <td>3</td> </tr> <tr> <td>5. None to Slight</td> <td>1</td> <td>1</td> <td></td> </tr> <tr> <td></td> <td>10</td> <td>12</td> <td>10</td> </tr> </tbody> </table>			Indicator Summary:	Soil/Site Stability	Hydrologic Function	Biotic Interest	1. Extreme				2. Moderate to Extreme				3. Moderate	3	6	5	4. Slight to Moderate	6	5	3	5. None to Slight	1	1			10	12	10
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### Cover Frequency Data Sheet

Observers: <u>HASPELS, STONER</u>															Date: <u>8/30/77</u>					Polygon #: <u>237</u>						
Transect length: 30 m					Frames per transect: 20 @ 20x50 cm															Transect <u>1</u> of <u>    </u>						
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5					
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI	
1	HJJA LESAY	0	0	T	0	1	2	0					2	0	0					2	1	T	99	5.0	.65	2.9
																									.05	-
2	ANTEL VUOC								T														.5	-	.05	-
																							10	.5	.05	-
3	PIP12 PHACH				0								1								T		13.5	-7	.15	-.1
															0								3	-.2	.05	-.1
4	LACA PLPAB AAFF DRCU		T																				.5	-	.05	-
			T																				1	-	.1	-
			T	T			T																1.5	-.1	.15	-
								T													T		1	-	.1	-
5	Funct Botrydium																									
				</																						







### Production Data Sheet

Observers: HASPELS & JONER Date: 8/29/01 Polygon #: 237  
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of     

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Tot dry weig
Perennial Grasses	/	/	T	/	T	3	T	/	/	/	/	3	T	1/4	/	T	/	3	2	T	15	1	.55	8.2
Annual Grasses	/	/	/	/	/	/	/	T	/	/	/	/	/	/	/	T	/	/	/	/	1	-	.95	.95
Perennial Forbs	/	/	/	T	/	/	/	/	/	/	/	T	/	1	/	/	/	T	/	T	3	1	.85	2.5
Annual Forbs	/	T	T	/	/	T	T	T	/	/	/	/	/	/	/	/	/	/	T	T	3	1	.85	2.55
Shrub	/	/	T	/	/	/	/	/	/	/	/	/	1	T	/	/	/	/	/	T	4	11.5 2	.50	4

Correction factor = clip wt / est wt. Total production in lb/ac = 89.2 x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																			
GP	36.80	Perennial Forbs: PHAC4 Actr ga 5																			
GA	4.24	Shrubs: G CSAZ																			
FP	11.37	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Soil Stability Rating Form</th> </tr> <tr> <th style="width: 10%;">Rating</th> <th style="width: 90%;">Criteria for assessment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td>10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-50% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Soil Stability Rating Form		Rating	Criteria for assessment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-50% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles	
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FA	11.37																				
S	17.84																				
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Location</th> <th>Under canopy</th> <th>Inter-space</th> <th rowspan="6" style="font-size: small;">Samples should be &lt; 1/4" diameter and &lt; 1/8" thick</th> </tr> </thead> <tbody> <tr> <td>1m</td> <td>6</td> <td>5</td> </tr> <tr> <td>6m</td> <td>5</td> <td>3</td> </tr> <tr> <td>11m</td> <td>5</td> <td>5</td> </tr> <tr> <td>16m</td> <td>3</td> <td>3</td> </tr> <tr> <td>20m</td> <td>5</td> <td>5</td> </tr> </tbody> </table>	Location	Under canopy	Inter-space	Samples should be < 1/4" diameter and < 1/8" thick	1m	6	5	6m	5	3	11m	5	5	16m	3	3	20m	5	5
Location	Under canopy	Inter-space	Samples should be < 1/4" diameter and < 1/8" thick																		
1m	6	5																			
6m	5	3																			
11m	5	5																			
16m	3	3																			
20m	5	5																			
<b>Total Production</b>	<b>81.62</b>	4.8      4.2																			



Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: HASPERSSMAN Date: 8/30/01

Polygon number: 237

Salt Desert Breaks - 406

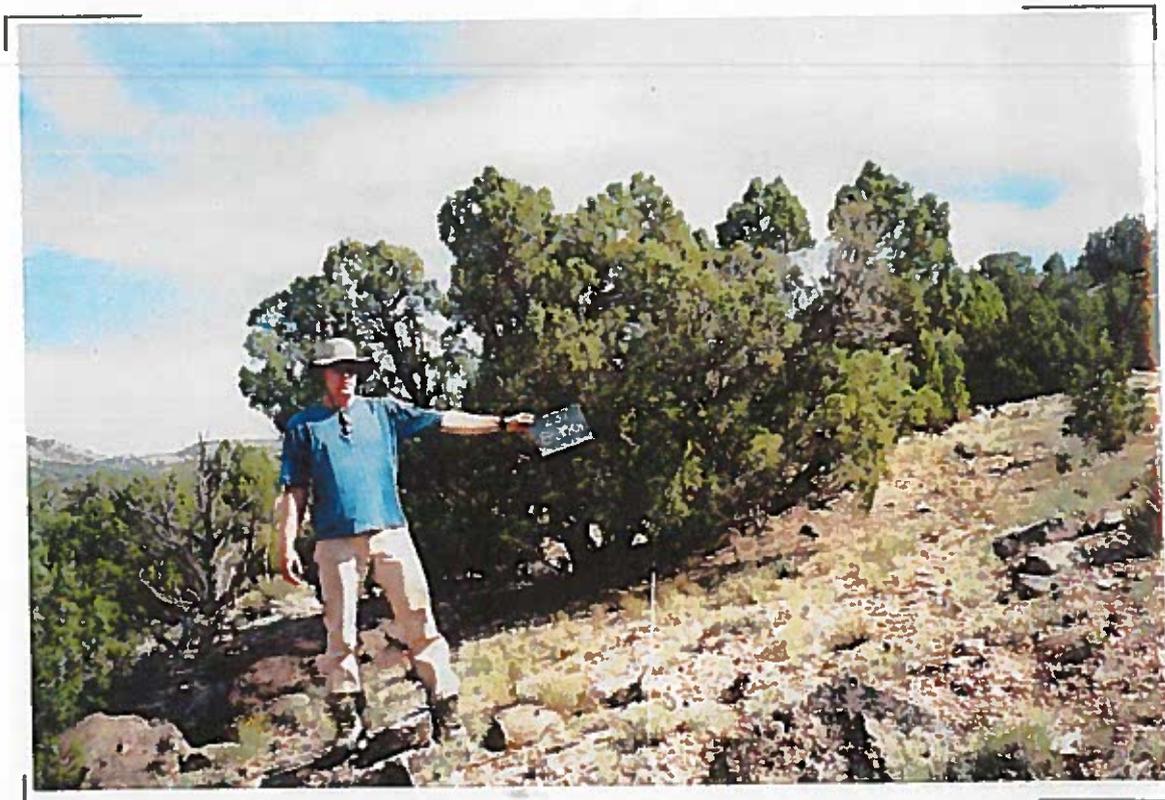
Functional/Structural Group Name	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - deciduous	M	S	(Utah Juniper)	
Trees - evergreen	M	T	(Rabbitbrush)	
Shrubs - sprouting	D	M	(Shadscale)	
Shrubs - non-sprouting	M	M	Fourwing, Winterfat, Sage	Cliffrose, Skunkbush Yucca, LEPU, Bri...
Shrubs - invasive		M		ERMY
Cool Season Bunchgrasses	M-S	T	Sathna wildrye, Ricegrass, Squirreltail, Needle&thread, Sandburg, Threawn	
Warm Season Bunchgrasses	S	M	Alkali-sarcodon	
Warm Season Rhizomatous Grasses	D	D	(Galleta)	
Cool Season Rhizomatous	M		Westernwheat	
Annual Grasses		T		Chert, VIAC
Forbs - annual		T		OREL, PLAZ
Forbs - perennial	M	T	Onion, Phlox, Primrose, Princessplume, Globemallow, Sege, Cymopters, Larkspur	PHAC4, CLIF2, PEO5, oreary
Forbs - Nitrogen fixing		T	Locoweeds	
Noxious weeds				
Biological crusts	S	S	Cyanobacteria, Lichens, Moss	
D - Dominant = 40 to 100% composition				
S - Subdominant = 10 to 40% composition				
M - Minor = 2 to 5% composition				
T - Trace = <2% composition				
* Potential based on ecological/range site description or ecological reference area				
Actual is for the area of evaluation				

Comments: Potential annual production should be 200 pounds/acre in an average year



CANM Rangeland Health Evaluation Photos

Allotment Yellow Jacket  
Polygon # 237  
Date 8/30/2001

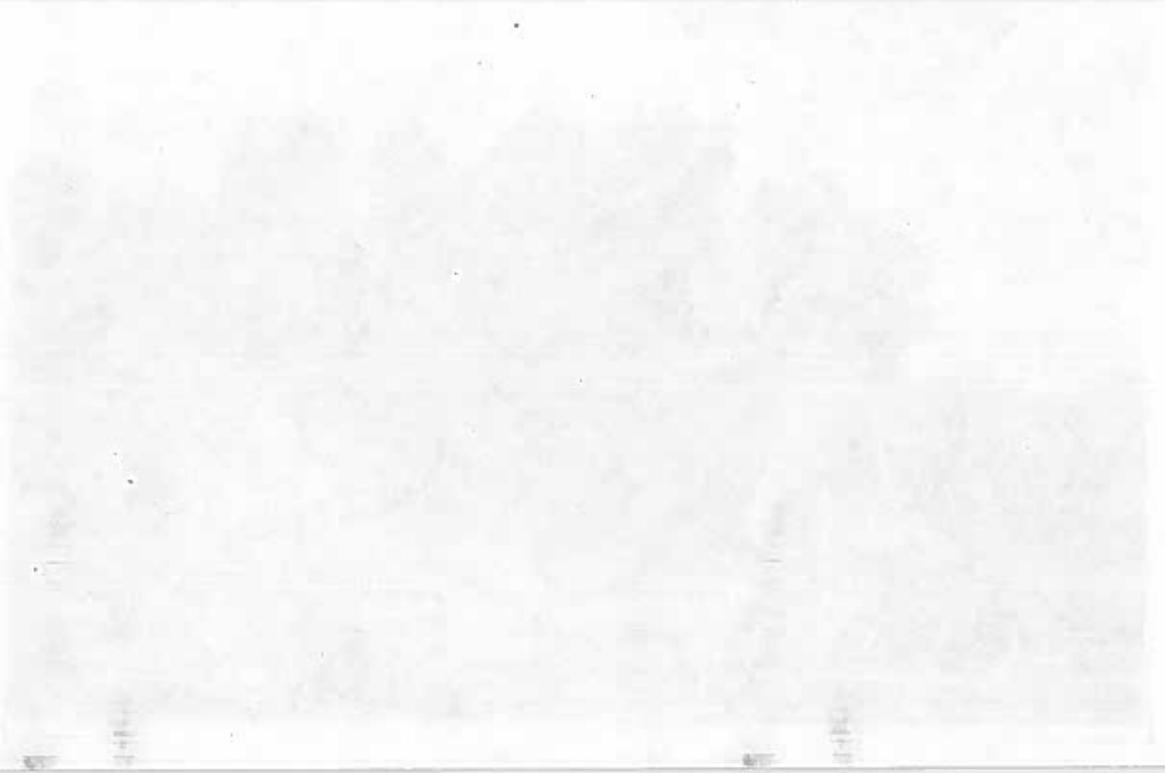
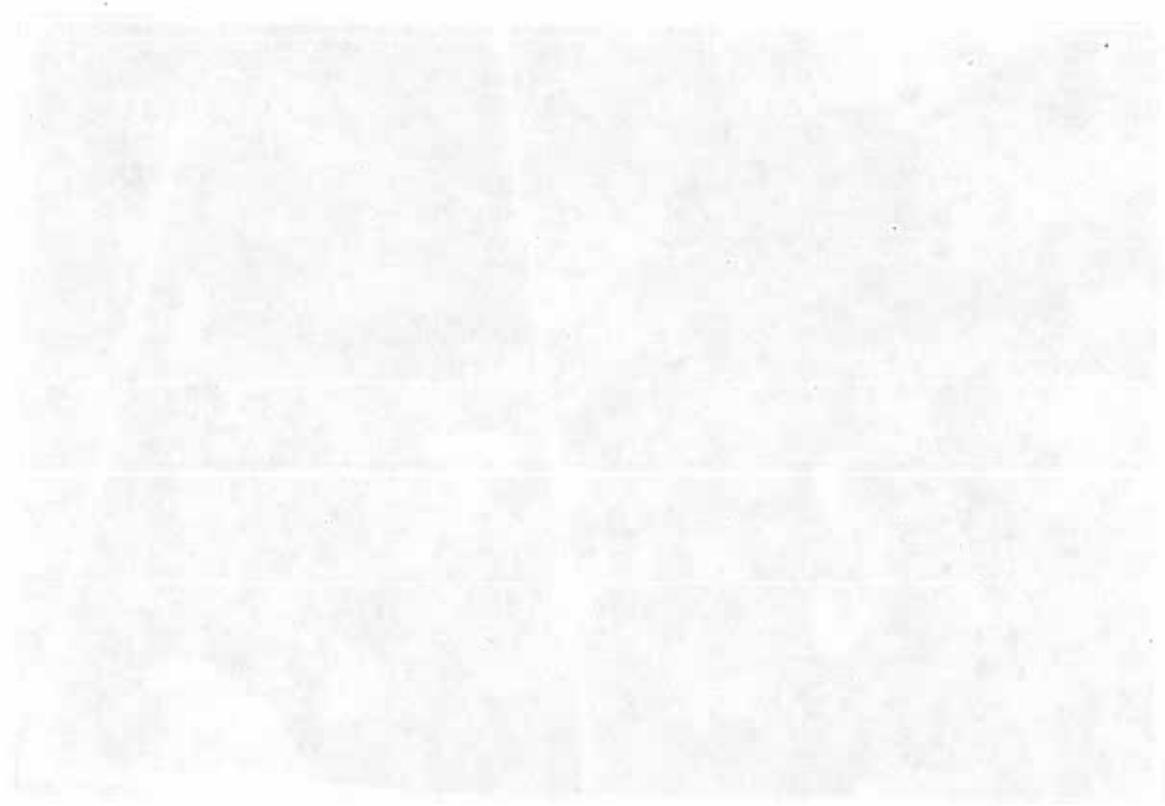


1000

STATE OF NEW YORK

IN SENATE  
January 12, 1910

REPORT  
OF THE  
COMMISSIONERS OF THE  
LAND OFFICE





Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bio Inter
3. Pedestals and/or Terraces	Abundant active pedestalling and numerous terraces. Many rocks and plants are pedestalled; exposed plant roots are common	Moderate active pedestalling; terraces common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terraces present.	Active pedestalling or terracing formation is rare; some evidence of past pedestal formation especially in water flow patterns and/or on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terraces absent or uncommon.	3	3	3
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.	3	3	3
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.	4	4	4
6. Wind-Scoured Blowouts, and/or Deposition Areas	Extensive.	Common	Occasionally present	Infrequent and few.	Matches what is expected for the site.	4	4	4
7. Litter Movement	Extreme: concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.	3	3	3
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site.	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.	3	3	3
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bi
9. Soil Surface Loss/Soil Degradation	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	degradation severe. Minimal organic matter in soil structure of surface and subsurface layers.	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Soil surface horizon intact. Soil structure and organic matter content match that expected for the site.			
10. Plant Community Composition and Distribution Relative to Infiltration and Runoff.	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Infiltration and runoff are equal to that expected for the site. Plant cover (distribution and amount) adequate for site protection.		3	
11. Compaction Layer (below soil surface).	Extensive; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately widespread; moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	None to minimal; not restrictive to water movement and root penetration.		4	4
12. Functional/Structural Groups	Number of F/S groups greatly reduced; and/or relative dominance of F/S groups has been dramatically altered; and/or number of species within F/S groups dramatically reduced.	Number of F/S groups reduced; and/or one dominant group and/or one or more subdominant groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups significantly reduced.	Number of F/S groups moderately reduced; and/or one or more subdominant F/S groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups moderately reduced.	Number of F/S groups slightly reduced; and/or relative dominance of F/S groups has been modified from that expected for the site; and/or number of species within F/S groups slightly reduced.	F/S groups and number of species in each group closely match that expected for the site.			2
13. Plant mortality/Decadence	Dead and/or decadent plants are common.	Dead and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present.	Slight plant mortality and/or decadence.	Plant mortality and decadence matches that expected for the site.			3
14. Litter Amount	Largely absent or dominant relative to site potential and weather.	Greatly reduced or increased relative to site potential and weather.	Moderately more or less relative to site potential and weather.	Slightly more or less relative to site potential and weather.	Amount is what is expected for the site potential and weather.			3
15. Annual Production	Less than 20% of potential production	20 to 40% of potential production	40 to 60% of potential production	60 to 80% of potential production	Exceeds 80% of potential production			2
16. Invasive Plants	Dominate the site	Common throughout the site.	Scattered throughout the site.	Present primarily on disturbed sites.	Rarely present on the site.			1

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bioh. Intert.
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			2
Comments								
18. Biological Crusts	Found only in protected areas. Very limited suite of functional groups.	Largely absent occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	1	1	1
Comments								
Indicator Summary:						Soil/Site Stability	Hydrologic Function	Bioh. Intert.
1. Extreme						1	1	2
2. Moderate to Extreme						5	5	3
3. Moderate						3	3	4
4. Slight to Moderate						1	1	1
5. None to Slight						10	12	10

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section









**Production Data Sheet**

Observers: Stoner, Haspels Date: 8-29-01 Polygon #: 238  
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight
Perennial Grasses	/	1	6	2	1	1	1	/	2	2	3	3	2	2	2	1	/	/	T	/	29.5	<sup>3/4</sup> -75	-55	12.17
Annual Grasses	2	2	1	2	2	2	3	3	3	2	3	3	2	2	1	1	1	2	2	2	41	1	.95	38.95
Perennial Forbs	1	/	/	T	1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	2.5	1	.55	1.38
Annual Forbs	T	T	T	/	T	T	*	1	T	T	1	1	T	T	2	1	1	1	1	T	14.5	1	.85	12.32
Shrub	/	/	10	1	/	26	14	18	/	/	/	/	/	/	/	6	9	10	/	/	62	<sup>3/23</sup> 1.39	-50	43.09

Correction factor = clip wt / est wt.

Total production in lb/ac = 4.46 x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																											
Perennial Grasses	54.28	Perennial Forbs: <u>LEER, SPLO</u>																											
Annual Grasses	173.72	Shrubs: <u>ATCO, GXA2</u>																											
Perennial Forbs	6.15	<table border="1"> <thead> <tr> <th colspan="3">Soil Stability Rating Form</th> </tr> <tr> <th>Rating</th> <th colspan="2">Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td colspan="2">Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td colspan="2">50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td colspan="2">50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td colspan="2">40% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td colspan="2">10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td colspan="2">25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td colspan="2">75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Soil Stability Rating Form			Rating	Criteria for assignment to stability class		0	Soil is too unstable to sample (falls through sieve)		1	50% of structural integrity lost within 5 seconds of insertion in water		2	50% of structural integrity lost 5-30 seconds after insertion		3	40% of soil remains on sieve after 5 dipping cycles		4	10-25% of soil remains on sieve after 5 dipping cycles		5	25-75% of soil remains on sieve after 5 dipping cycles		6	75-100% of soil remains on sieve after 5 dipping cycles	
Soil Stability Rating Form																													
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6	75-100% of soil remains on sieve after 5 dipping cycles																												
Annual Forbs	54.95																												
Shrub	192.18																												
Total Production	481.28	<table border="1"> <thead> <tr> <th>Location</th> <th>Under canopy</th> <th>Inter-space</th> <th rowspan="6">Samples should be &lt; 1/4 " diameter and &lt; 1/8 " thick</th> </tr> </thead> <tbody> <tr> <td>0 meter</td> <td>3</td> <td>3</td> </tr> <tr> <td>7.5 meter</td> <td>6</td> <td>3</td> </tr> <tr> <td>15 meter</td> <td>5</td> <td>3</td> </tr> <tr> <td>22.5 meter</td> <td>3</td> <td>3</td> </tr> <tr> <td>28.5 meter</td> <td>5</td> <td>3</td> </tr> </tbody> </table>	Location	Under canopy	Inter-space	Samples should be < 1/4 " diameter and < 1/8 " thick	0 meter	3	3	7.5 meter	6	3	15 meter	5	3	22.5 meter	3	3	28.5 meter	5	3								
Location	Under canopy	Inter-space	Samples should be < 1/4 " diameter and < 1/8 " thick																										
0 meter	3	3																											
7.5 meter	6	3																											
15 meter	5	3																											
22.5 meter	3	3																											
28.5 meter	5	3																											

\* estimated out of the field

503.4

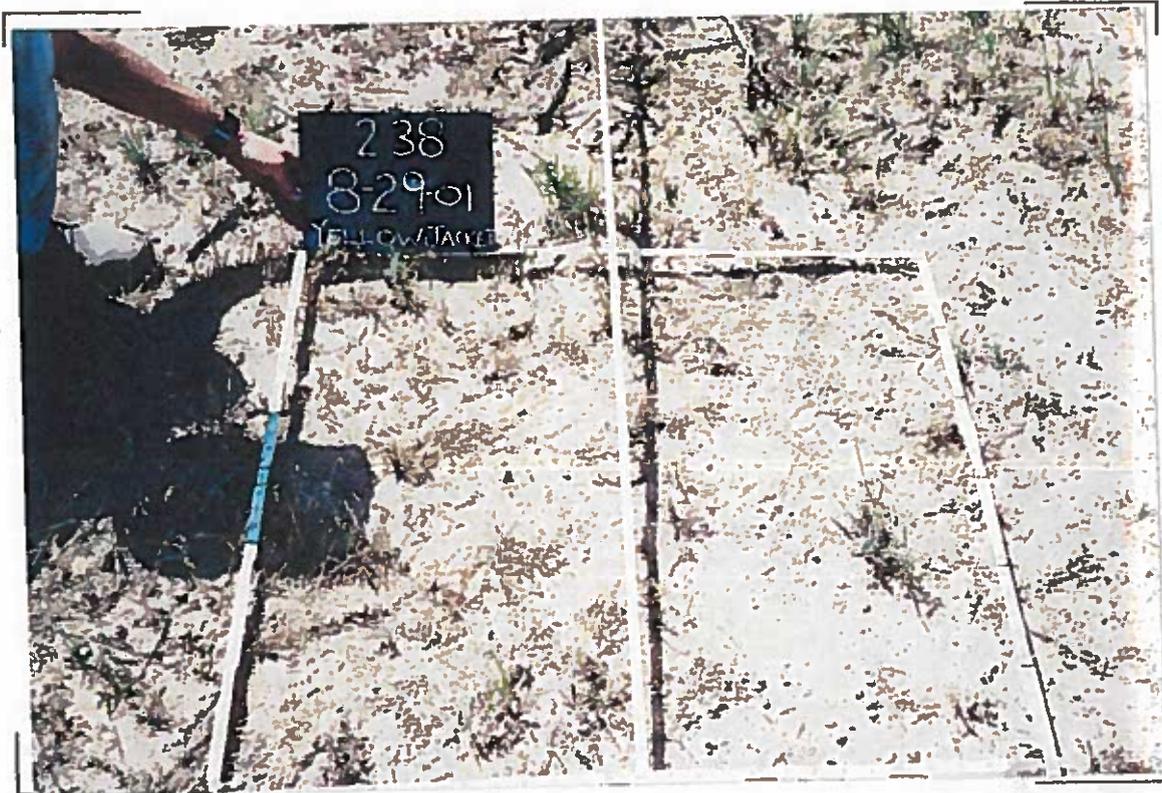






# CANM Rangeland Health Evaluation Photos

Allotment \_\_\_\_\_  
Polygon # \_\_\_\_\_  
Date / / 2001



THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO  
DEPARTMENT OF CHEMISTRY  
5408 SOUTH DIVISION STREET  
CHICAGO, ILLINOIS 60637  
TEL: (773) 835-3100  
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Canyons of the Ancients National Monument  
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): Stover Hasbels Date: 8-10-01 Polygon # 239  
 Allotment: Yellow Jacket Pasture:  
 Location: GPS lat 37°23.301' long 108°57.171' Legal(s) S 9 T36NR 19W  
 Aerial Photo: 1-3-10 Site Photos - Roll: 20 Number: 5,6  
 Soil Map Unit/Component Name: Clay Springs Number: 22  
 Range/Ecological Site Name: Salt Desert Shrub Number: 406  
 Slope: 87° Aspect: 182° Topographic Position: Foot Hills below Mesa Elevation: 5480

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: Very stony clay loam Parent material: Residium - Morrison Shale  
 Depth: Very shallow <10" Shallow 10-20" X Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

1 Stowell effervescent of? Red frag. 5-60% 0-3" 3 Gypsum crystals 9-18" 4 bedrock  
 Evaluation Area Determination:

Surface texture: Very stony clay loam Parent material: Residium - Morrison Shale  
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

1 17" Calc horizon ? (Gravel) through-out 321" Gypsum crystals 1427" bedrock  
 Avg. annual PPT: Cortez 13". Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet

Wildlife Use: light

Livestock Use: light

Offsite influences on area and significance e.g. roads, chainings, fire: none

Benchmark used for comparison: Ecological Reference Area (ERA number     ) or Site/Soil Description and/or experience     

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	B
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	
2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	3	3	
Comments								



Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil Site Stability	Hydrologic Function	Disturbance
9. Soil Surface Loss of Degradation	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil surface horizon degraded severe throughout the site. Minimal differences in soil organic matter content and structure of surface and subsurface layers.	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Soil surface horizon intact. Soil structure and organic matter content match that expected for the site.	2	2	2
10. Plant Community Composition and Distribution Relative to Infiltration and Runoff.	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Infiltration and runoff are equal to that expected for the site. Plant cover (distribution and amount) adequate for site protection.	3	3	3
11. Compaction Layer (below soil surface).	Extensive; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately widespread; moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	None to minimal; not restrictive to water movement and root penetration.	5	5	5
12. Functional/Structural Groups	Number of F/S groups greatly reduced; and/or relative dominance of F/S groups has been dramatically altered; and/or number of species within F/S groups dramatically reduced.	Number of F/S groups reduced; and/or one dominant group and/or one or more subdominant groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups significantly reduced.	Number of F/S groups moderately reduced; and/or one or more subdominant F/S groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups moderately reduced.	Number of F/S groups slightly reduced; and/or relative dominance of F/S groups has been modified from that expected for the site; and/or number of species within F/S groups slightly reduced.	F/S groups and number of species in each group closely match that expected for the site.	3	3	3
13. Plant mortality/Decadence	Dead and/or decadent plants are common.	Dead and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present.	Slight plant mortality and/or decadence.	Plant mortality and decadence matches that expected for the site.	3	3	3
14. Litter Amount	Largely absent or dominant relative to site potential and weather.	Greatly reduced or increased relative to site potential and weather.	Moderately more or less relative to site potential and weather.	Slightly more or less relative to site potential and weather.	Amount is what is expected for the site potential and weather.	2	2	2
15. Annual Production	Less than 20% of potential production	20 to 40% of potential production	40 to 60% of potential production	60 to 80% of potential production	Exceeds 80% of potential production	2	2	2
16. Invasive Plants	Dominate the site	Common throughout the site.	Scattered throughout the site.	Present primarily on disturbed sites.	Rarely present on the site.	2	2	2

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bioh. Integri
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capable to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			2
Comments								
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	2	2	2
Comments								
Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section						Indicator Summary:		
						1. Extreme	2	2
						2. Moderate to Extreme	3	4
						3. Moderate	4	3
						4. Slight to Moderate	2	2
						5. None to Slight	10	10

### Cover Frequency Data Sheet

Observers: <u>HATSPELS STONER</u>																	Date: <u>8/10/01</u>				Polygon #: <u>239</u>				
Transect length: <u>30 m</u>				Frames per transect: <u>20 @ 20x50 cm</u>													Transect <u>1</u> of <u>1</u>								
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5				
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI
G	HIJA			0		1	1	0			2	1	2	3	1	2	0	3	2	1	2	219	11.0	0.75	8.2
G	ANTEG VUOC			0	1	1	0	1	0	1	0	1	0	1	2	0	1	1			1	86	4.3	0.7	2.0
							T	T	T	T	0	0	T	T	T	0	T	0	T	T	0	20	1	0.75	0.8
F	PHLOZ	T																				.5	-	.05	-
	SRO		1																			10	.5	.05	0.0
	unk Calochortus			0								0	0				T				T	10	.5	0.25	0.1
	DESC			0																		3	-2	0.05	0.0
E	IANA9	T		0		T													T			4.5	.2	0.2	0.0
	ERIC6	T					0									0	T	T	0	T		11	.6	0.35	0.2
	SANZ				0	T						T		T							T	5.5	-3	0.3	0.1
	GIOP			0				0	T		T	T	T	T							T	9.5	.5	0.45	0.2
	PLPAZ					0	0	0	T	T	T	T	T	0	0	T	0	0	T	0	0	21.5	1.4	0.75	1.0
FA	KA+r		1																			10	.5	0.05	0.0
	ASNH4					0		0	0						0		T	0		0	0	18.5	.9	0.35	0.3
FA	unknown		*T																			.5	-	.05	0.0
Bare soil without canopy		6	4	5	4	3	3	3	4	2	2	2	2	2	2	1	0	0	0	1	2	469	23.4	1.1	23.4
Groundcover: (total groundcover should equal 100%)																									
Cyanbac. crust		T	1	1	-2	2	0	1	4	2	T	1	0	T	0	T	0	T	0	T	0	150	7.5	0.95	7.1
Moss						0			0					T								6.5	.3	0.15	0.0
Lichen		T	0	0	T	1	0	T	1	0	T	T			T	+	0	T	T	-	T	40	2	0.85	1.7
Litter		1	T	0	-1	1	0	T	1	1	1	1	2	1	0	0	0	1	1	0	0	118.5	5.8	0.75	5.5
Wood									0			0										6	.3	0.1	0.0
Basal Veg		T	0	T	T	0	D	T	0	0	0	0	0	0	T	0	2	0	0	0	T	59.5	3	1.0	3.0
Bare Soil		7	4	5	4	3	3	3	4	2	2	2	2	3	2	1	0	0	1	1	2	516	25.8	1.0	25.8
Gravel <3 in.		3	5	3	5	4	2	5	4		3	6	5	4	7	7	7	7	6	6	6	960	48	1.0	47.6
Cobble 3-10 in				1	1		0	1			1	0					1	2	2	1	0	109	5.45	0.55	3.0
Stone 10-24 in.																									
Boulder >24 in.																					1	10	.5	.05	0.0
Bedrock																									

\* estimated out of the f.o.

Code	Range	Mid-point	Code	Range	Mid-point
1	0 - 1.0% cover	0.5%	11	55.1 - 65% cover	60.0%
0	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
1	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
2	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
3	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
4	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
5	45.1 - 55% cover	50.0%			



Line Intercept

Observers: HARENS, STONER

Date: 9/10/01

Polygon #: 239

Line Length: 30 m

Transect 1 of 1

Species Codes:

	ATCO			PIDEY			GUSAZ															
	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter	
	61	69	8.0	52	101	49	198	201	3.0													
	113	131	18.0	220	223	3.0	407	420	13.0													
	224	242	18.0	1679	1675	1.0	574	582	8.0													
	510	526	16.0				2020	2022	2.0													
	1678	1682	4.0				2639	2655	16.0													
	2715	2739	24.0				2705	2726	21													
Total Intercept			88.0			53.0		26.0	37.0													
% Cover			2.9%			1.7%		1.7%	1.5%													

Circle intercept values that are standing dead material

Estimated total cover for PJ type:

SAUT3 1 %  
PIED 1 %



### Production Data Sheet

Observers: Stoner, Haspels Date: 8-10-01 Polygon #: 239  
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight	
Perennial Grasses	/	/	T	/	/	/	/	/	/	2	T	/	/	/	2	T	2	/	/	T	/	15.5	1	.65	10.08
Annual Grasses	/	/	/	T	/	T	T	/	T	/	/	T	/	T	T	T	T	T	T	T	/	11.5	.83	.95	9.07
Perennial Forbs	T	/	T	T	/	/	/	/	T	/	/	/	/	/	/	/	/	/	/	/	T	3.5	1	.85	2.9
Annual Forbs	T	T	/	T	T	T	/	/	T	T	T	T	/	/	/	T	/	/	T	T	/	13	1	.85	11.05
Shrub	2 3	/	/	/	/	/	/	/	/	2	/	/	/	/	/	/	/	/	2	6	T	13.5	.71	.50	4.79

Correction factor = clip wt / test wt. Total production in lb/ac = 4.46 x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																		
Perennial Grasses	44.96	Perennial Forbs: <u>PHLO2, SPLO</u>																		
Annual Grasses	40.45	Shrubs: <u>GUSA2</u>																		
Perennial Forbs	12.93	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Soil Stability Rating Form</th> </tr> <tr> <th style="width: 10%;">Range</th> <th>Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td>10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Soil Stability Rating Form		Range	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles
Soil Stability Rating Form																				
Range	Criteria for assignment to stability class																			
0	Soil is too unstable to sample (falls through sieve)																			
1	50% of structural integrity lost within 5 seconds of insertion in water																			
2	50% of structural integrity lost 5-30 seconds after insertion																			
3	10% of soil remains on sieve after 5 dipping cycles																			
4	10-25% of soil remains on sieve after 5 dipping cycles																			
5	25-75% of soil remains on sieve after 5 dipping cycles																			
6	75-100% of soil remains on sieve after 5 dipping cycles																			
Annual Forbs	8.40																			
Shrub	21.36																			
Total Production	128.10																			

Location	Under canopy	Inter-space
0 meter	3	2
7.5 meter	3	2
15 meter	3	2
22.5 meter	6	2
28.5 meter	3	2

(3.1) (2.1)

36  
518  
12  
30



**Rangeland Health Assessment - Canyons of the Ancients National Monument**

**Functional/Structural Group Worksheet**

Observers: MARLENE STRANER

Date: 8/10/05

Polygon number: 239

**Salt Desert Breaks - 406**

Functional/Structural Groups	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - deciduous				
Trees - evergreen	M	T	Utah Juniper	
Shrubs - sprouting	M		Rabbitbrush	
Shrubs - non-sprouting	D	S	Shadscale	Pickelbar, Gearhart, bintango
Shrubs - non-sprouting	M		Fourwing, Winterfat, Sage	
Shrubs - invasive		S		Snakeweed
Cool Season Bunchgrasses	M-S	T	Salina wildrye, Ricegrass, Squirreltail, Needle&thread, Sandburg, Threavms	
Warm Season Bunchgrasses	S		Alkali sacaton	
Warm Season Rhizomatous Grasses	D	D	Galleta	
Cool Season Rhizomatous	M		Westernwheat	
Annual Grasses		S		CHINA WOOD, JAPANESE BROOM
Forbs - annual		M		GRASS SPANZ, PLANT
Forbs - perennial	M	T	Onion, Phlox, Primrose, Princesplume, Globemallow, Seg, Cymopteris, Larkspur	
Forbs - Nitrogen fixing		T	Secoweed	
Noxious weeds				
Biological crusts	S	T	Cyanobacteria, Lichens, Moss	
D - Dominant = 40 to 100% composition				
S - Subdominant = 10 to 40% composition				
M - Minor = 2 to 5% composition				
T - Trace = <2% composition				
			* Potential based on ecological/range site description or ecological reference area	
			Actual is for the area of evaluation	

Comments: Potential annual production should be 200 pounds/acre in an average year

Quantum Mechanics

Chapter 1: Introduction to Quantum Mechanics

1.1 The Wave-Particle Duality

1.1.1 The Photoelectric Effect

1.1.2 Matter Waves

1.1.3 The Double-Slit Experiment

1.1.4 The Uncertainty Principle

1.2 The Schrodinger Equation

1.2.1 The Time-Dependent Schrodinger Equation

1.2.2 The Time-Independent Schrodinger Equation

1.2.3 Separation of Variables

1.2.4 The Particle in a Box

1.2.5 The Harmonic Oscillator

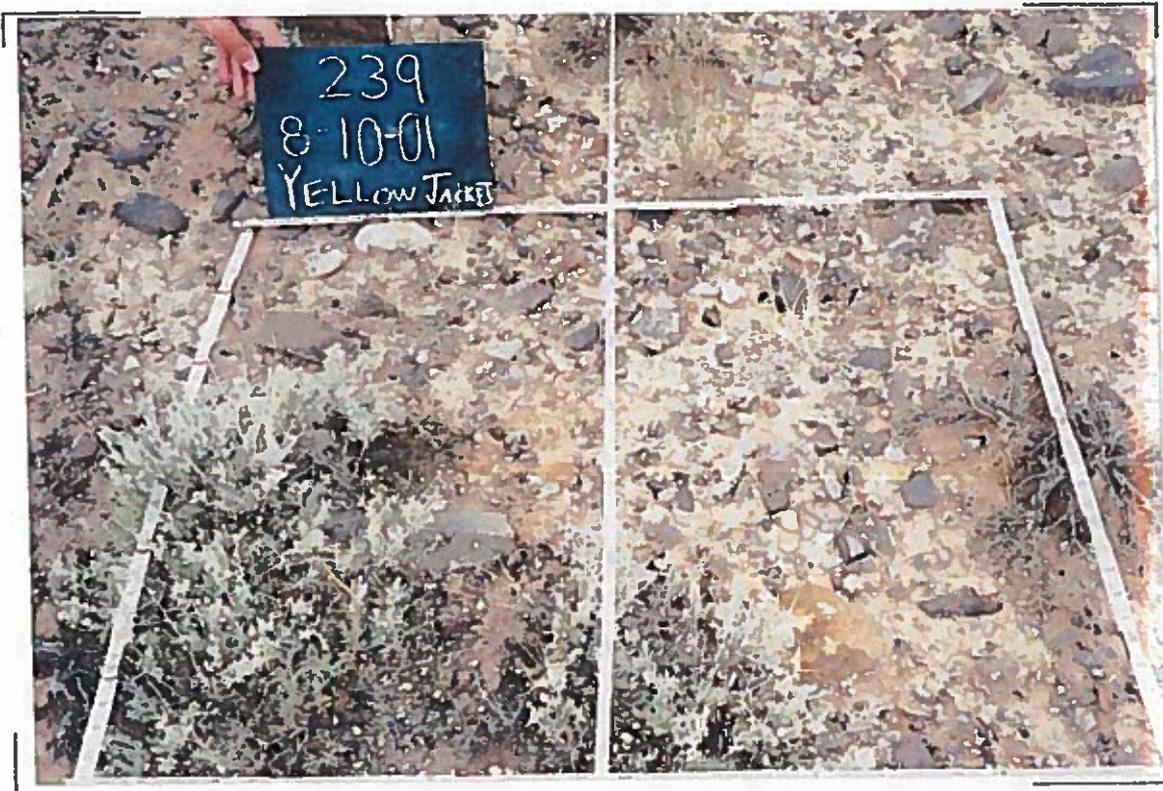
1.2.6 The Hydrogen Atom

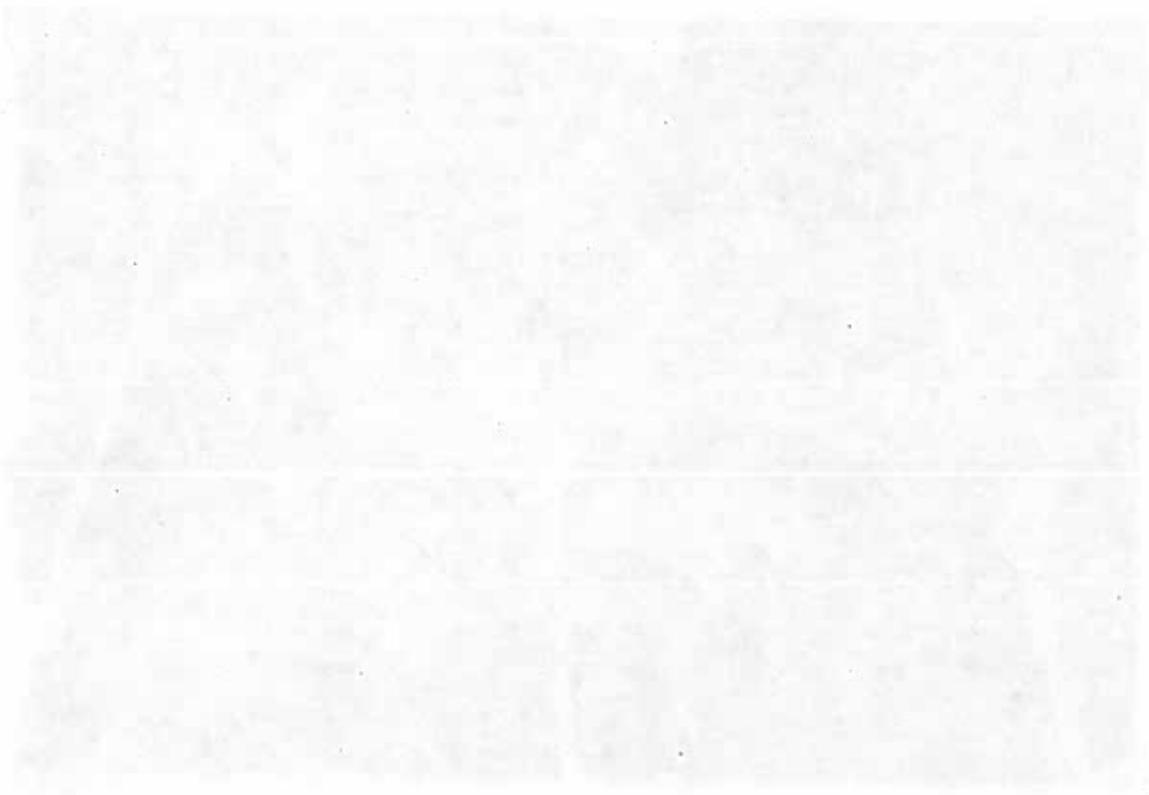
1.2.7 The Tunneling Effect

1.2.8 The Scattering Problem

CANM Rangeland Health Evaluation Photos

Allotment Yellow Jacket  
Polygon # 239  
Date 8/10/2001





Canyons of the Ancients National Monument  
 Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): HAZEL SUNKER Date: 8/17/01 Polycon # 240  
 Allotment: YELLOW TAILET Pasture:  
 Location: GPS lat/lon No batteries long LegalE S 9 T 36R 9W  
 Aerial Photo: 1-3-10 Site Photos - Roll: 32 Number: 2324  
 Soil Map Unit/Component Name: Farb Number: 31  
 Range/Ecological Site Name: Shallow Desert Number: 409  
 Slope: 4% Aspect: 212° Topographic Position: MESA TOP EDGE Elevation: 5780  
 Range/Ecological site description, soil survey, and/or ecological reference area:  
 Surface texture: SANDY LOAM Parent material: SANDSTONE  
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"  
 List diagnostic horizons in profile and depth:  
 1 0-3" calcic 2 3-13" C1 calcic horizon 3  
 Evaluation Area Determination: 2 3-13" C1 calcic horizon 3  
 Surface texture: SANDY SANDY LOAM Parent material: SANDSTONE  
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"  
 List diagnostic horizons in profile and depth:  
 1 35% gravel 2 bedrock 5" 3  
 Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet  
 Wildlife Use: light  
 Livestock Use: light-moderate  
 Offsite influences on area and significance e.g. roads, channings, fire: None  
 Benchmark used for comparison: Ecological Reference Area (ERA number     ) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Int
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	
2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	2	2	
Comments								



Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	In
9. Soil Surface Loss of Degradation	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil loss or degradation severe throughout site. Minimal differences in soil organic matter content and structure of surface and subsurface layers.	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Soil surface horizon intact. Soil structure and organic matter content match that expected for the site.	3	3	3
10. Plant Community Composition and Distribution Relative to Infiltration and Runoff.	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Infiltration and runoff are equal to that expected for the site. Plant cover (distribution and amount) adequate for site protection.		3	
11. Compaction Layer (Below soil surface).	Extensive; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately widespread; moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	None to minimal; not restrictive to water movement and root penetration.	5	5	5
12. Functional/Structural Groups	Number of F/S groups greatly reduced; and/or relative dominance of F/S groups has been dramatically altered; and/or number of species within F/S groups dramatically reduced.	Number of F/S groups reduced; and/or one dominant group and/or one or more subdominant groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups significantly reduced.	Number of F/S groups moderately reduced; and/or one or more subdominant F/S groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups moderately reduced.	Number of F/S groups slightly reduced; and/or relative dominance of F/S groups has been modified from that expected for the site; and/or number of species within F/S groups slightly reduced.	F/S groups and number of species in each group closely match that expected for the site.			3
13. Plant mortality/Decadence	Dead and/or decadent plants are common.	Dead and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present.	Slight plant mortality and/or decadence.	Plant mortality and decadence matches that expected for the site.			4
14. Litter Amount	Largely absent or diminished relative to site potential and weather.	Greatly reduced or increased relative to site potential and weather.	Moderately more or less relative to site potential and weather	Slightly more or less relative to site potential and weather.	Amount is what is expected for the site potential and weather.		2	2
15. Annual Production	Less than 20% of potential production.	20 to 40% of potential production	40 to 60% of potential production	60 to 80% of potential production	Exceeds 80% of potential production			3
16. Invasive Plants	Dominate the site.	Common throughout the site.	Scattered throughout the site.	Present primarily on disturbed sites.	Rarely present on the site.			3

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bl. Int.
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			3
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	2	2	2
<b>Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section</b>						<b>Indicator Summary:</b>		
						1. Extreme	(5)	3
						2. Moderate to Extreme	(3)	4
						3. Moderate	1	(5)
						4. Slight to Moderate	2	3
						5. None to Slight	10	1

### Cover Frequency Data Sheet

Observers: <u>HASPEL S STONER</u>															Date: <u>8/17/01</u>					Polygon #: <u>241</u>					
Transect length: <u>30 m</u>					Frames per transect: <u>20 @ 20x50 cm</u>															Transect _____		of _____			
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5				
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI
G	Henes	1	0	1	0		T	1	T	T	7	1	4		0		2	5	3	8	4	380.5	19.0	.35	16
G	ANTEL VUOC	0		T			0	0			T					0	T	0				16.5	.8	4	.3
											0											3	.7	.05	-
F	SCL					0									0							6	.3	.1	-
Fr	GIOP														T					T		1	-	.1	-
FN	ASNU4																			T		.5	-	.05	-
Bare soil without canopy		6	5	4	2	-	-	3	4	4	3	2	3	8	-	3	5	5	5	2	2	660	33	.85	25
Groundcover: (total groundcover should equal 100%)																									
Cyanbac. crust					0			0	1		1		1	T	0		T		T	1		50.5	2.5	.5	1.2
Moss																									
Lichen		0	0	0	T			0	0	1	T	T	T		T	T		T	0		T	32	1.6	.75	1.2
Litter		0	1	1	6	A	X	2	T	T	1	T	0	0	5		0	1	1	4	2	447	22.4	.95	21
Wood								0		0					3					T		36.5	1.8	.2	.36
Basal Veg		T	T	T	1	T	T	T	T	T	1	T	0	T			T	T	0	1	0	45.5	2.3	.95	2.2
Bare Soil		6	5	4	2	T		3	4	4	4	3	3	8	1	3	7	7	6	3	2	750.5	37.5	.95	36
Gravel <3 in.		3	4	5	1	T		4	3	4	3	6	5	2	0	7	3	2	2	1	6	613.5	30.7	.95	29
Cobble 3-10 in.									1	1	1											30	1.5	.15	.22
Stone 10-24 in.																									
Boulder >24 in.																									
Bedrock																									

Code	Range	Mid-point	Code	Range	Mid-point
0	0 - 1.0% cover	0.5%	11	55.1 - 65% cover	60.0%
1	1.1 - 5.0% cover	3.0%	12	65.1 - 75% cover	70.0%
2	5.1 - 15% cover	10.0%	13	75.1 - 85% cover	80.0%
3	15.1 - 25% cover	20.0%	14	85.1 - 95% cover	90.0%
4	25.1 - 35% cover	30.0%	15	95.1 - 99% cover	97.0%
5	35.1 - 45% cover	40.0%	16	99.1 - 100% cover	99.5%
6	45.1 - 55% cover	50.0%			







**Production Data Sheet**

Observers: Stoner, Haspels Date: 9-17-01 Polygon #: 240  
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight	
Perennial Grasses	T	T	T	T	T	T	T	T	T	T	2	2	4	T	T	3	2	4	5	12	9	55.5	.93	.85	43.87
Annual Grasses	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	4	1	.95	3.8
Perennial Forbs						T							T									1	-	.85	.85
Annual Forbs													T		T						T	1	-	.85	.85
Shrub				10			8									4						34	.86	.50	14.62

Correction factor = clip wt / est wt.

Total production in lb/ac = ~~300~~ x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:
Perennial Grasses	195.66	Perennial Forbs:
Annual Grasses	16.95	Shrubs: rabbit, Guse 2

Growth form	Pounds per acre dry weight	Soil Stability Rating Form	
		Rating	Criteria for assignment to stability class
Perennial Forbs	3.79	0	Soil is too unstable to sample (falls through sieve)
Annual Forbs	3.79	1	50% of structural integrity lost within 5 seconds of insertion in water
		2	50% of structural integrity lost 5-30 seconds after insertion
Shrub	65.21	3	<10% of soil remains on sieve after 5 dipping cycles
		4	10-25% of soil remains on sieve after 5 dipping cycles
		5	25-75% of soil remains on sieve after 5 dipping cycles
		6	75-100% of soil remains on sieve after 5 dipping cycles

Total Production	285.40	Location	Under canopy	Inter-space	Samples should be < 1/4" diameter and < 1/8" thick
		0 meter	4	2	
		7.5 meter	5	3	
		15 meter	6	2	
		22.5 meter	5	1	
		28.5 meter	4	2	

57.8  
2.10

(4.8) (2)

### Production Data Sheet

Observers:	Date:	Polygon #:
Transect length: 30 meters	Frames per transect: 20 @ 20x50 cm	Transect ____ of ____

0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight	
Perennial Grasses	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
Annual Grasses	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
Perennial Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
Annual Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
Shrub	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			

Correction factor = clip wt / est wt.

Total production in lb/ac = ~~890~~ x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:
Perennial Grasses		Perennial Forbs:
Annual Grasses		Shrubs:

Soil Stability Rating Form			
Rating	Criteria for assignment to stability class		
0	Soil is too unstable to sample (falls through sieve)		
1	50% of structural integrity lost within 5 seconds of insertion in water		
2	50% of structural integrity lost 5-30 seconds after insertion		
3	<10% of soil remains on sieve after 5 dipping cycles		
4	10-25% of soil remains on sieve after 5 dipping cycles		
5	25-75% of soil remains on sieve after 5 dipping cycles		
6	75-100% of soil remains on sieve after 5 dipping cycles		
Total Production	Location	Under canopy	Inter-space
	0 meter		
	7.5 meter		
	15 meter		
	22.5 meter		
	28.5 meter		

Samples should be < 1/4 " diameter and < 1/8" thick

Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: AKS, KLS, ST, JRC Date: 9/17/01

Polygon number: 240

Shallow Desert - 409

Functional/Structural Group Name	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - evergreen	T	S	<u>Utah Juniper</u>	
Trees - evergreen		S		CHGR6
Shrubs - sprouting		S		
Shrubs - non-sprouting	S	M	<u>Ephedra</u> , <u>Big Sage</u> , <u>Shadscale</u>	
Shrubs - non-sprouting	M	T	<u>Yucca</u> , <u>Cliffrose</u> , <u>RICKIV</u> pear, <u>Skunkbush</u>	
Shrubs - invasive	T		<u>Snakeweed</u>	
Cool Season Bunchgrasses	D	D	<u>New Mex. Feathergrass</u> , <u>Ricegrass</u> , <u>Salina wildrye</u>	
Cool Season Bunchgrasses	S		<u>Squirreltail</u> , <u>threawn</u>	
Warm Season Bunchgrasses				
Warm Season Rhizomatous Grasses	S	T	<u>Galletta</u>	
Cool Season Rhizomatous Annual Grasses				
Forbs - annual				
Forbs - perennial	M	T	<u>Phlox</u> , <u>Princesplume</u> , <u>Globeamallow</u> , <u>Cymopteris</u>	
Forbs - Nitrogen fixing	T	T	<u>Locoweed</u>	
Noxious weeds				
Biological crusts	S	T	<u>Cyanobacteria</u> , <u>Lichens</u> , <u>Moss</u>	
D - Dominant = 40 to 100% composition				
S - Subdominant = 10 to 40% composition				
M - Minor = 2 to 5% composition				
T - Trace = <2% composition				
* Potential based on ecological/range site description or ecological reference area				
Actual is for the area of evaluation				

Comments: Potential annual production should be 400 pounds/acre in an average year

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

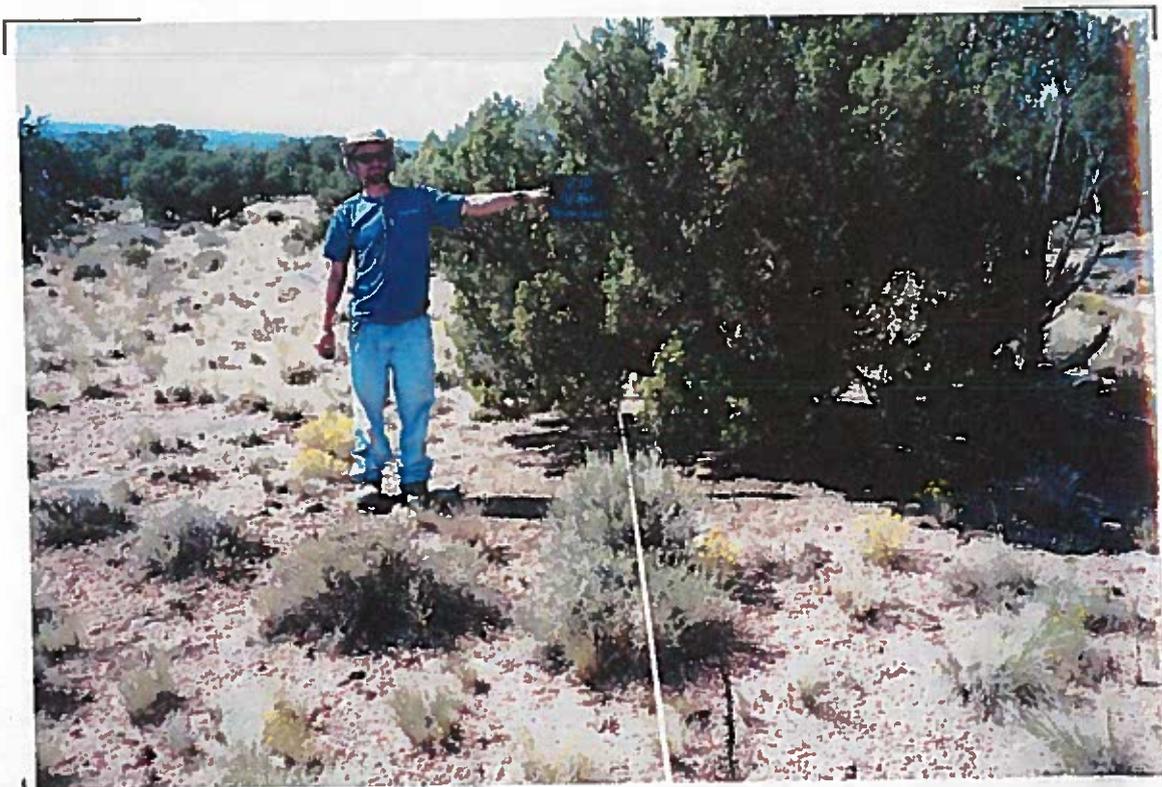
In the second section, the author details the process of reconciling the accounts. This involves comparing the internal records with the bank statements to identify any discrepancies. If a difference is found, it is crucial to investigate the cause immediately, as it could indicate a clerical error or a potential fraud.

The third part of the document focuses on the periodic review of the financial statements. It suggests that these reviews should be conducted at regular intervals, such as monthly or quarterly. This helps in identifying trends, assessing the company's financial health, and making informed decisions about future operations.

Finally, the document concludes by highlighting the role of technology in modern accounting. The use of accounting software can significantly reduce the risk of human error and streamline the entire process, from data entry to report generation. However, it also stresses the importance of proper training and security measures to protect the sensitive financial information.

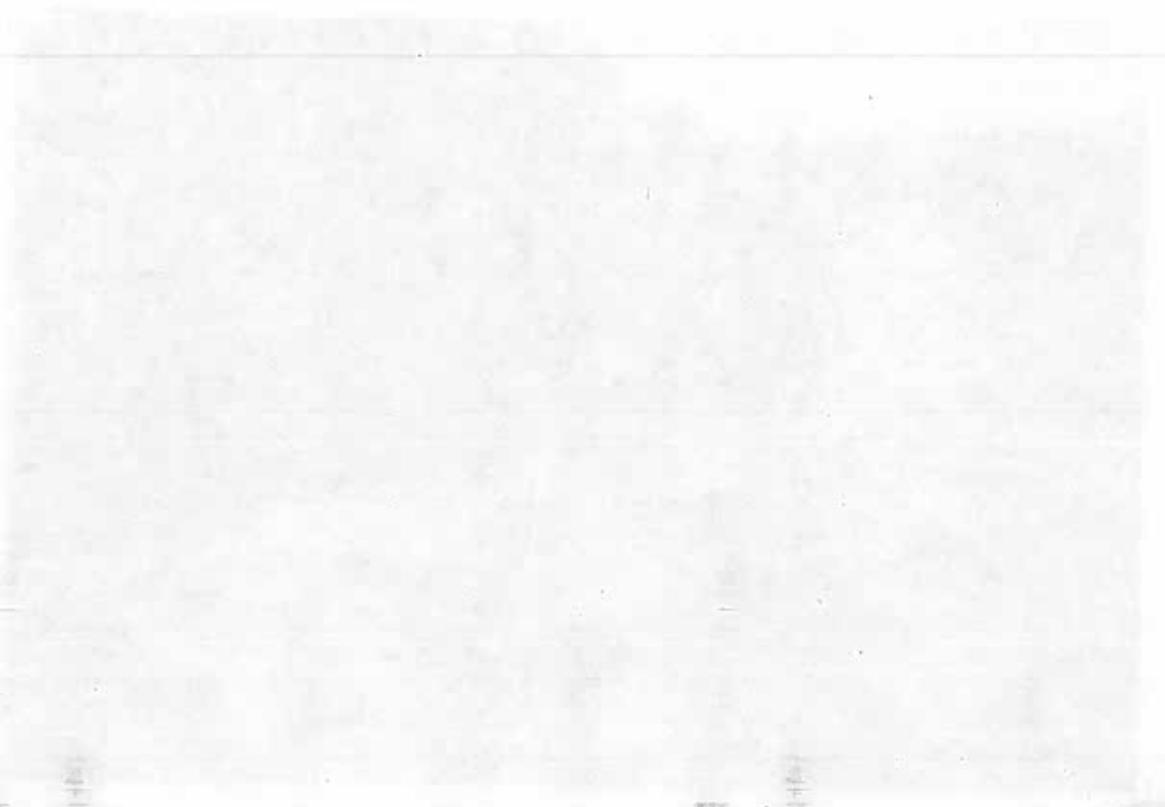
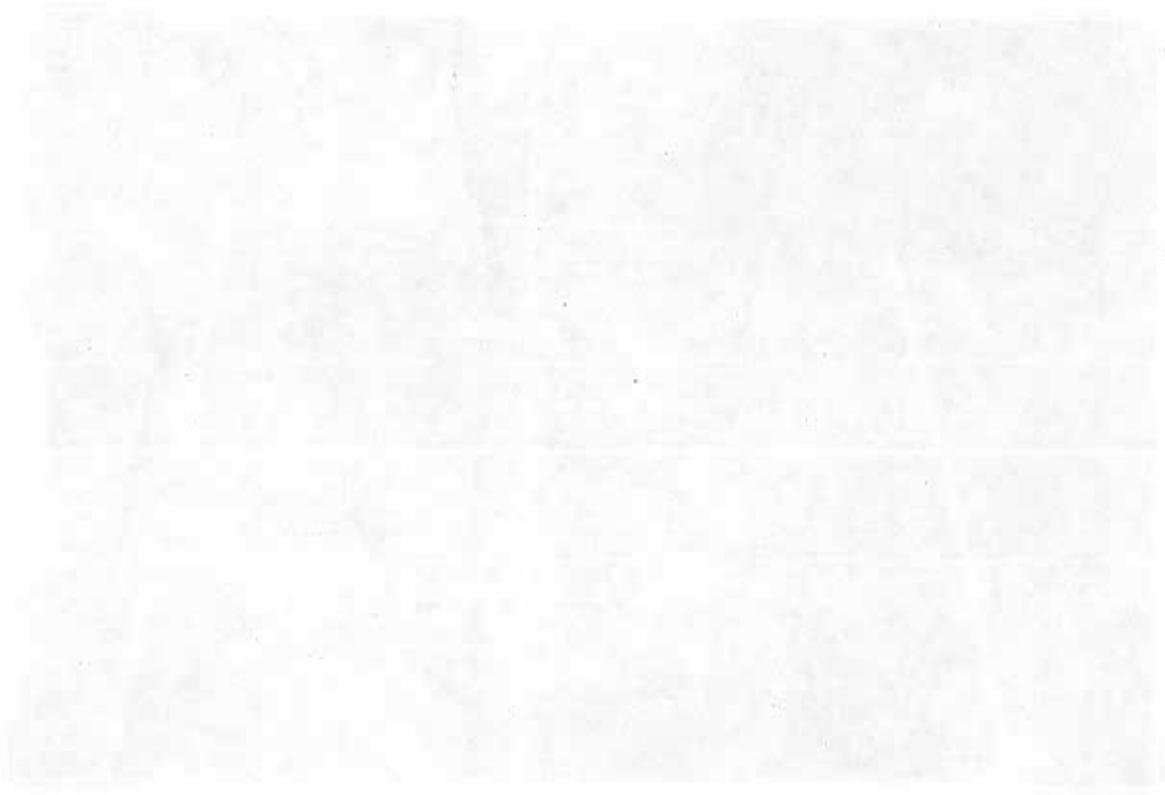
CANM Rangeland Health Evaluation Photos

Allotment Yellow Jacket  
Polygon # 240  
Date 9/17/2001



GRAND HOTEL - 1100 14TH ST. N.W.

1100 14TH ST. N.W.  
WASHINGTON, D.C.



Canyons of the Ancients National Monument  
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

DONE ✓

Part 1. Area of Interest Documentation:

Observer(s): SPRINGER HASPELS Date: 9-17- Polygon # 241  
 Allotment: Yellow Jacket Pasture:  
 Location: GPS lat long \_\_\_\_\_ Legal Sec 9 T 36 R 19 W  
 Aerial Photo: 1-3-10 Site Photos - Roll: 32 Number: 21, 22  
 Soil Map Unit/Component Name: F97B Number: 31  
 Range/Ecological Site Name: Shallow desert Number: 409  
 Slope: 5% Aspect: 271° Topographic Position: Mesa Top Elevation: 5830

Range/Ecological site description, soil survey, and/or ecological reference area:  
 Surface texture: Sandy loam Parent material: Sandstone  
 Depth: Very shallow <10"  Shallow 10-20"  Moderate 20-40"  Deep >40" Parent material: Sandstone

List diagnostic horizons in profile and depth:  
 1 0-3" calic 2 C1 @ 3-13" 3 \_\_\_\_\_ 4 \_\_\_\_\_  
 Evaluation Area Determination:  
 Surface texture: Sandy loam Parent material: Sandstone  
 Depth: Very shallow <10"  Shallow 10-20"  Moderate 20-40"  Deep >40" Parent material: Sandstone

List diagnostic horizons in profile and depth:  
 1 calic @ 3" 2 calic horizon @ 9" 3 18" bedrock 4 \_\_\_\_\_  
 Avg. annual PPT: Cortez 13". Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet  
 Wildlife Use: light  
 Livestock Use: light to moderate  
 Offsite influences on area and significance e.g. roads, chalmings, fire: none  
 Benchmark used for comparison: Ecological Reference Area \_\_\_\_\_ (ERA number \_\_\_\_\_) or Site/Soil Description and/or experience

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	In
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	5

2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	3	3
Comments							



Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function
9. Soil Surface Loss or Degradation	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil loss or degradation severe throughout site. Minimal differences in soil organic matter content and structure of surface and subsurface layers.	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Soil surface horizon intact. Soil structure and organic matter content match that expected for the site.	3	3
Comments							
10. Plant Community Composition and Distribution Relative to Infiltration and Runoff.	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Infiltration and runoff are equal to that expected for the site. Plant cover (distribution and amount) adequate for site protection.		4
Comments							
11. Compaction Layer (below soil surface).	Extensive; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately widespread; moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	None to minimal; not restrictive to water movement and root penetration.	4	4
Comments							
12. Functional/Structural Groups	Number of F/S groups greatly reduced; and/or relative dominance of F/S groups has been dramatically altered; and/or number of species within F/S groups dramatically reduced.	Number of F/S groups reduced; and/or one dominant group and/or one or more subdominant groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups significantly reduced.	Number of F/S groups moderately reduced; and/or one or more subdominant F/S groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups moderately reduced.	Number of F/S groups slightly reduced; and/or relative dominance of F/S groups has been modified from that expected for the site; and/or number of species within F/S groups slightly reduced.	F/S groups and number of species in each group closely match that expected for the site.		4
Comments							
13. Plant mortality/Decadence	Dead and/or decadent plants are common.	Dead and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present.	Slight plant mortality and/or decadence.	Plant mortality and decadence matches that expected for the site.		4
Comments							
14. Filter Amount	Largely absent or dominant relative to site potential and weather.	Greatly reduced or increased relative to site potential and weather.	Moderately more or less relative to site potential and weather	Slightly more or less relative to site potential and weather.	Amount is what is expected for the site potential and weather.		3
Comments							
15. Annual Production	Less than 20% of potential production.	20 to +0% of potential production	40 to 60% of potential production	60 to 80% of potential production	Exceeds 80% of potential production		4
Comments							
16. Invasive Plants	Dominant the site.	Common throughout the site.	Scattered throughout the site.	Present primarily on disturbed sites.	Rarely present on the site.		2
Comments							



### Cover Frequency Data Sheet

Observers: <u>Stoner Haspels</u>		Date: <u>9-17-01</u>																		Polygon #: <u>241</u>					
Transect length: <u>30 m</u>		Frames per transect: <u>20 @ 20x50 cm</u>																		Transect <u>1</u> of <u>1</u>					
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5				
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI
6	HELO26	0	0								1											6	.3	.15	-
	HIJA	0		2	2	4	T					2	0	0			T	6	3	1		210	10.5	-.6	6.3
	HENES			T	T		3	2	5	4		T	3	6	1	4	T			1	1	321	16.0	-.7	11.2
25	ANTE6	1	1	2	2	2	0	2	3	2	5	2	0	0	1	0	2	1	2	1	0	322	16.1	1	16.1
	VUOC	T	T	T			0	T	T	T	T	1	0	0	T	0	0	1			1	585	2.9	.8	2.32
F	LEM02														1							10	.5	.05	-.2
	LEER														0	0						6	.3	.1	-
	DESC																		0			3	.7	-.05	-
	Dendthera											0										3	.2	-.05	-
F	GIOP	0			T																	3.5	.2	1	-
	DEPI	T																				.5	-	.5	-
	LAMA9											0										3	.2	.05	-
F	ASND4	T	T								T											T 2	.1	.2	-
Bare soil without canopy		7	7	7	5	6	4	4	3	4	4	5	5	5	6	6	4	2	5	6	3	980	49	1	49
Groundcover: (total groundcover should equal 100%)																									
Cyanbac. crust				0	0		1	1	1	1	0			1	0					T	0	65.5	3.3	-.55	1.8
Moss					T		1	1	2			T								T	0	41.5	2.1	.3	-.6
Lichen																									
Litter		2	2	2	3	2	3	3	3	2	4	4	3	2	2	2	4	7	2	1	3	560	29	1	28
Wood											0	0				1				1	0	29	1.4	.25	-.4
Basal Veg		0	T	0	0	1	1	0	1	1	0	0	0	1	0	0	0	1	0	T	0	97	4.8	1	4.8
Bare Soil		7	7	7	5	6	4	4	3	4	4	5	5	5	6	6	4	2	5	6	3	980	49	1	49
Gravel <3 in.		1	1	1	2	1	0	1	0	2	1	0	2	1	2	2	1	0	3	2	3	272	13.6	1	13.6
Cobble 3-10 in.																									
Stone 10-24 in.																									
Boulder >24 in.																									
Bedrock																									

Code	Range	Mid-point	Code	Range	Mid-point
	0 - 1.0% cover	0.5%		55.1 - 65% cover	60.0%
	1.1 - 5.0% cover	3.0%		65.1 - 75% cover	70.0%
	5.1 - 15% cover	10.0%		75.1 - 85% cover	80.0%
	15.1 - 25% cover	20.0%		85.1 - 95% cover	90.0%
	25.1 - 35% cover	30.0%		95.1 - 99% cover	97.0%
	35.1 - 45% cover	40.0%		99.1 - 100% cover	99.5%
	45.1 - 55% cover	50.0%			



Line Intercept

Observers: HA SHEL'S STONER

Date: 9/17/01

Polygon #: 241

Line Length: 30 m

Transect 1 of

Species Codes:

	GRVZ			CHVZ <sup>g</sup>			SETR4			ATRO		
	From	To	inter	From	To	inter	From	To	inter	From	To	inter
	20	24	4	234	258	24	375	431	56	479	536	57
	189	203	14	429	448	19	1759	1803	44			
	629	639	10	812	848	36						
	889	893	4	1114	1117	3						
	1016	1030	14	1573	1652	79						
	1101	1104	2									
	1281	1291	2									
	2057	2081	24									
	2109	2125	17									
	2202	2221	19									
	2299	2319	20									
Total Intercept			110			161			100			57
% Cover			3.6%			5.3%			3.3%			1.9%

Circle intercept values that are standing dead material

Estimated total cover for PJ type:

SAUT3	5	%
PIED		%



**Production Data Sheet**

Observers: \_\_\_\_\_ Date: \_\_\_\_\_ Polygon #: \_\_\_\_\_  
 Frames per transect: 20 @ 20x50 cm  
 Transect length: 30 meters  
 of \_\_\_\_\_ Transect \_\_\_\_\_

00 15 30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 255 270 285

Growth form	Correction factor = clip wt / est wt.										Total production in lb/ac = <del>893</del> x total dry wt.													
	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight
Perennial Grasses	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				
Annual Grasses	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				
Perennial Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				
Annual Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				
Shrub	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				

Growth form Pounds per acre dry weight

Perennial Forbs: \_\_\_\_\_

Shrubs: \_\_\_\_\_

Annual Grasses	
Perennial Grasses	
Annual Forbs	
Perennial Forbs	
Shrub	
Total Production	

Soil Stability Rating Form	
Rating	Criteria for assignment to stability class
0	Soil is too unstable to sample (falls through sieve)
1	50% of structural integrity lost within 5 seconds of insertion in water
2	50% of structural integrity lost 5-30 seconds after insertion
3	<10% of soil remains on sieve after 5 dipping cycles
4	10-25% of soil remains on sieve after 5 dipping cycles
5	25-75% of soil remains on sieve after 5 dipping cycles
6	75-100% of soil remains on sieve after 5 dipping cycles
Location	Under canopy
	Inter-space
	Samples should be < 1/4" diameter and > 1/8" thick
	0 meter
	7.5 meter
	15 meter
	22.5 meter
	28.5 meter



### Production Data Sheet

Observers: HASPELS STONER Date: 7/17/01 Polygon #: 241  
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight
Perennial Grasses	1	1	2	2	4	6	2	5	4	T	1	6	5	T	4	T	7	5	2	1	59.5	<sup>918</sup> 1.12	.85	56.64
Annual Grasses	T	T	T	T	T	T	T	1	T	2	1	T	T	T	T	T	T	1	T	T	13	1	.95	12.35
Perennial Forbs											T		1	1	T		T				3.5	—	.70	2.45
Annual Forbs	T	T		T						T	T									T	3	1	.85	2.55
Shrub	4	3	1			4	2	1		2	T	T	2	1	3	T	3				23	<sup>917</sup> 1.14	.50	13.11

Correction factor = clip wt / est wt.

Total production in lb/ac = ~~999~~ x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:
Perennial Grasses	252.61	Perennial Forbs:
Annual Grasses	55.08	Shrubs: <i>GRISAZ, SETRY</i>

Growth form	Pounds per acre dry weight	Soil Stability Rating Form																
Perennial Forbs	10.93	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Rating</th> <th>Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr><td>0</td><td>Soil is too unstable to sample (falls through sieve)</td></tr> <tr><td>1</td><td>50% of structural integrity lost within 5 seconds of insertion in water</td></tr> <tr><td>2</td><td>50% of structural integrity lost 5-30 seconds after insertion</td></tr> <tr><td>3</td><td>&lt;10% of soil remains on sieve after 5 dipping cycles</td></tr> <tr><td>4</td><td>10-25% of soil remains on sieve after 5 dipping cycles</td></tr> <tr><td>5</td><td>25-75% of soil remains on sieve after 5 dipping cycles</td></tr> <tr><td>6</td><td>75-100% of soil remains on sieve after 5 dipping cycles</td></tr> </tbody> </table>	Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	<10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles
Rating	Criteria for assignment to stability class																	
0	Soil is too unstable to sample (falls through sieve)																	
1	50% of structural integrity lost within 5 seconds of insertion in water																	
2	50% of structural integrity lost 5-30 seconds after insertion																	
3	<10% of soil remains on sieve after 5 dipping cycles																	
4	10-25% of soil remains on sieve after 5 dipping cycles																	
5	25-75% of soil remains on sieve after 5 dipping cycles																	
6	75-100% of soil remains on sieve after 5 dipping cycles																	
Annual Forbs	11.37																	
Shrub	58.47																	
Total Production	388.76																	

Location	Under canopy	Inter-space	Samples should be < 1/4" diameter and < 1/8" thick
0 meter	6	2	
7.5 meter	4	3	
15 meter	5	2	
22.5 meter	6	3	
28.5 meter	5	3	
avg.	5.2	2.6	

### Production Data Sheet

Observers:	Date:	Polygon #:
Transect length: 30 meters	Frames per transect: 20 @ 20x50 cm	Transect _____ of _____

0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight	
Perennial Grasses	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Annual Grasses	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Perennial Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Annual Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Shrub	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Correction factor = clip wt / est wt.

Total production in lb/ac = ~~89.5~~ x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:
Perennial Grasses		Perennial Forbs:
Annual Grasses		Shrubs:

Soil Stability Rating Form			
Rating	Criteria for assignment to stability class		
0	Soil is too unstable to sample (falls through sieve)		
1	50% of structural integrity lost within 5 seconds of insertion in water		
2	50% of structural integrity lost 5-30 seconds after insertion		
3	≥10% of soil remains on sieve after 5 dipping cycles		
4	10-25% of soil remains on sieve after 5 dipping cycles		
5	25-75% of soil remains on sieve after 5 dipping cycles		
6	75-100% of soil remains on sieve after 5 dipping cycles		
Total Production	Location	Under canopy	Inter-space
	0 meter		
	7.5 meter		
	15 meter		
	22.5 meter		
28.5 meter			

Samples should be < 1/4 " diameter and < 1/8" thick

Rungland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: HASRES/SIDNER Date: 9/17/01 Polygon number: 241

Shallow Desert - 409

Functional/Structural Groups	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - evergreen	T		Uiah Juniper	
Trees - evergreen		N		CHURB 626
Shrubs - sprouting		S	<del>Yucca, Cliffrose, RICKY Pear, Skunkbush</del>	Spin/Passage, winterfat, EKON
Shrubs - non-sprouting	S	T	Yucca, Cliffrose, RICKY Pear, Skunkbush	
Shrubs - non-sprouting	M			
Shrubs - invasive	T	S	<del>Snakeweed</del> New Mex. Feathergrass, Ricegrass, Salina wildye	
Cool Season Bunchgrasses	D	D		HECO26 1
Cool Season Bunchgrasses	S	T	Squirreltail, threeawn	
Warm Season Bunchgrasses				SPATE
Warm Season Rhizomatous Grasses	S	S	Gallata	
Cool Season Rhizomatous				
Annual Grasses		S		CHAD UNOC
Forbs - annual		T		GARD, DEP, AMAN
Forbs - perennial	NI	T	Phlox, Princesplume, Globemallow, Cymopters,	DELONITUM, SEMOZ, LEFK, SALT
Forbs - Nitrogen fixing	T	T	(Lacoweed)	
Noxious weeds				
Biological crusts	S	T	Cyanobacteria, Lichens, Moss	

\* Potential based on ecological/fringe site description or ecological reference area

D - Dominant = 40 to 100% composition

S - Subdominant = 10 to 40% composition

M - Minor = 2 to 5% composition

T - Trace = <2% composition

Actual is for the area of evaluation

Comments: Potential annual production should be 400 pounds/acre in an average year



The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every sale, purchase, and payment must be properly documented to ensure the integrity of the financial statements. This includes recording the date, amount, and nature of each transaction.

In addition, the document highlights the need for regular reconciliation of bank accounts and credit cards. This process helps to identify any discrepancies between the company's records and the actual bank statements, allowing for timely corrections and preventing potential errors from accumulating.

Furthermore, the document stresses the importance of separating personal and business finances. This involves using a dedicated business bank account and credit card to ensure that all business-related transactions are clearly identifiable and easy to track.

Finally, the document advises on the proper handling of receipts and invoices. These documents serve as crucial evidence for all financial transactions and should be kept in a secure and organized manner for future reference and audit purposes.

The second part of the document provides a detailed overview of the company's financial performance over the past year. It begins with a summary of the total revenue generated, followed by a breakdown of the various product lines and services that contributed to this growth.

The document then presents a comprehensive analysis of the company's expenses, including a detailed list of all operating costs and a comparison of these costs against the budget. This analysis identifies areas where the company has successfully reduced expenses and areas where further cost-cutting measures may be necessary.

Additionally, the document includes a section on the company's profit margins, showing how the combination of revenue and expense management has resulted in a strong overall profit. It also discusses the company's financial position at the end of the year, including its cash reserves and debt levels.

Finally, the document concludes with a series of recommendations for the upcoming year, based on the insights gained from the current financial review. These recommendations focus on maintaining the current level of operational efficiency while exploring new opportunities for revenue growth and cost reduction.



CANM Rangeland Health Evaluation Photos

Allotment Yellow Jacket  
Polygon # 241  
Date 9/17/2001

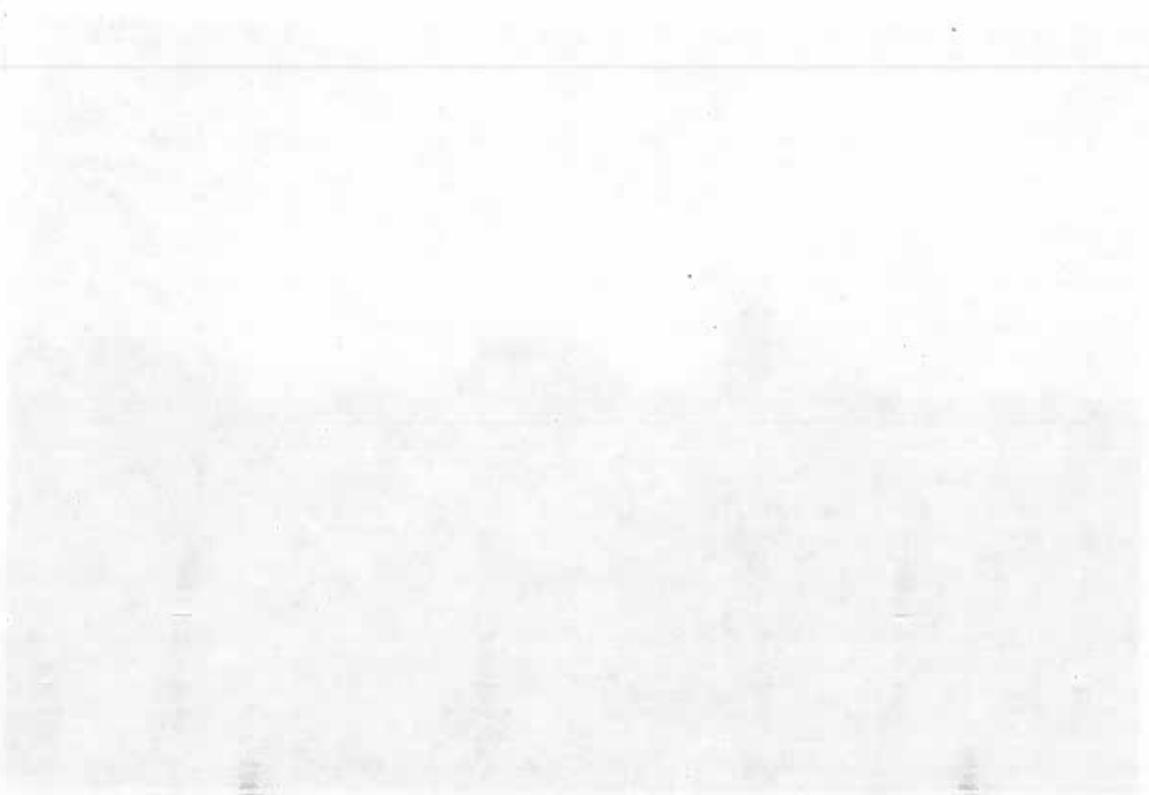
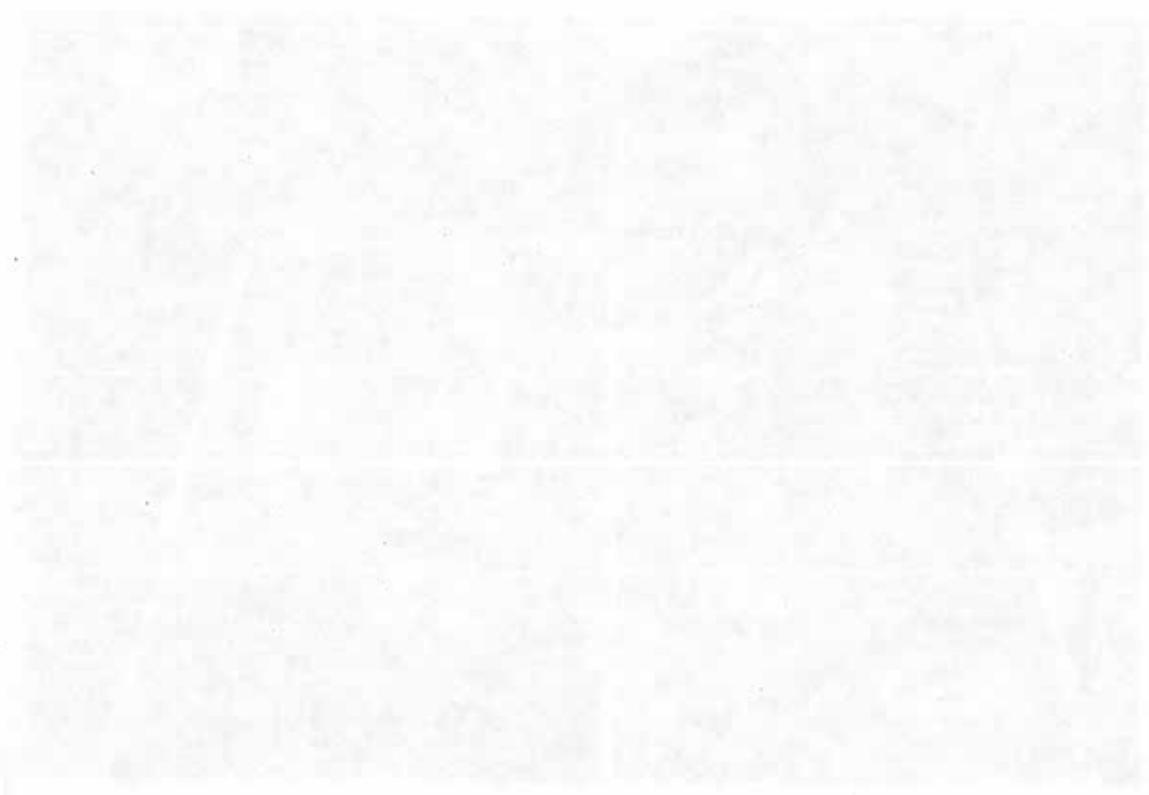




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THE UNIVERSITY OF CHICAGO

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Canyons of the Ancients National Monument  
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): HARRIS, STONER Date: 3/9/01 Polygon # 242  
 Allotment: YELLOW STACKET Pasture:  
 Location: GPS lat 37° 22' 62" N long 108° 56' 71" W Legal SE 1/4 T36N R19W  
 Aerial Photo: 1-3-10 Site Photos - Roll: 20 Number: 3,4  
 Soil Map Unit/Component Name: FARB Number: 31  
 Range/Ecological Site Name: SHALLOW DESERT Number: 409  
 Slope: 70% Aspect: 293° Topographic Position: RIDGE Elevation: 5300

Range/Ecological site description, soil survey, and/or ecological reference area:  
 Surface texture: SANDY LOAM Parent material: SANDSTONE  
 Depth: Very shallow <10"  Shallow 10-20"  Moderate 20-40"  Deep >40"  
 List diagnostic horizons in profile and depth:  
1 O-3" calcic 2 C1 horizon starting @ 3-13" 3 4  
 Evaluation Area Determination:  
 Surface texture: SANDY LOAM Parent material: SANDSTONE  
 Depth: Very shallow <10"  Shallow 10-20"  Moderate 20-40"  Deep >40"  
 List diagnostic horizons in profile and depth:  
1 Bedrock 4" 2 3 4  
 AVE. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet  
 Wildlife Use: LIGHT  
 Livestock Use: LIGHT-MODERATE  
 Offsite influences on area and significance e.g. roads, chainings, fire: \_\_\_\_\_  
 Benchmark used for comparison: Ecological Reference Area \_\_\_\_\_ (ERA number \_\_\_\_\_) or Site/Soil Description and/or experience

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Int
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blanded or mired features.	Current or past formation of rills as expected for the site	5	5	

2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	2	2	
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bio Inter
3. Pedestals and/or Terraces	Abundant active pedestalling and numerous terraces. Many rocks and plants are pedestalled; exposed plant roots are common.	Moderate to active pedestalling; terraces common. Some rocks and plants are pedestalled with exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terraces present.	Active pedestalling or terracete formation is rare; some evidence of past pedestal formation especially in water flow patterns and/or on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terraces absent or uncommon.	3	3	3
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.	3	3	3
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.	4	4	4
6. Wind-Scoured Blowouts, and/or Deposition Areas	Extensive.	Common	Occasionally present.	Infrequent and few.	Matches what is expected for the site.	3	3	3
7. Litter Movement	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.	3	3	3
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site.	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.	3	3	3
Comments								

1  
2  
3  
4  
5  
6  
7  
8



Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interest
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			3
Comments								
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	4	4	4
Comments								
Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section						Indicator Summary:		
						1. Extreme	Hydrologic Function	Biotic Interest
						2. Moderate to Extreme	4	1
						3. Moderate	4	3
						4. Slight to Moderate	4	3
						5. None to Slight	1	10
						10	12	10









Rangeland Health Assessment - Canyons of the Ancients National Monument  
Functional/Structural Group Worksheet

Observers: Stacy Hagers Date: 8/7/01

Polygon number: 292

Shallow Desert - 409

Functional/Structural Groups	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - evergreen	T	D	Ural Juniper	
Trees - evergreen				Rabbit Bush
Shrubs - sprouting		M		EROV, ERMI 4
Shrubs - non-sprouting	S	T	Yucca, Cliffrose, Big Sage, Shadscale, Prickly pear, Skunkbush	
Shrubs - non-sprouting	MI	S	Yucca, Cliffrose, Prickly pear, Skunkbush	
Shrubs - invasive	T	M	Snakeweed	
Cool Season Bunchgrasses			New Mex. Feathergrass, Ricegrass, Sahna	
Cool Season Bunchgrasses	D	T	wildye	
Cool Season Bunchgrasses	S	T	Squirreltail, Shreavin	
Warm Season Rhizomatous Grasses			Gallia	
Warm Season Rhizomatous Grasses	S	T		
Cool Season Rhizomatous				
Annual Grasses		S		
Forbs - annual		T		
Forbs - perennial	MI	T	Piltox, Princesplume, Globemallow, Gymopteris,	CHEAT, VUD, GIOP, DEPI, DRCD, ORCARYA, BUCKWHEAT
Forbs - Nitrogen fixing	T		Locoweed	
Noxious weeds				
Biological crusts	S	S	Cyanobacteria, Lichens, Moss	
D - Dominant = 40 to 100% composition				
S - Subdominant = 10 to 40% composition				
M - Minor = 2 to 5% composition				
T - Trace = <2% composition				
			* Potential based on ecological/range site description or ecological reference area	
			Actual is for the area of evaluation	

Comments: Potential annual production should be 400 pounds/acre in an average year



### Production Data Sheet

Observers: HARLES STONER

Date: 8/8/01

Polygon #: 272

Transect length: 30 meters

Frames per transect: 20 @ 20x50 cm

Transect 1 of 1

0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight	
Perennial Grasses	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				
Annual Grasses	T	T		T	T	T	T				T	1	T	T	T	T	T			2	T	11	1	.95	10.95
Perennial Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				
Annual Forbs	T			T	T	T	T					T					T	T			T	5	1	.85	4.25
Shrub	/	/	/	/	/	2	/	/	/	/	6	4	2	/	/	/	/	/	/	11	/	19	1.5	.50	14.25

Correction factor = clip wt / est wt.

Total production in lb/ac = 4.46 x total dry wt.

\* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:
Perennial Grasses		Perennial Forbs: <del>RA</del>
Annual Grasses	46.61	Shrubs: RABBIT BRUSH

Growth form	Pounds per acre dry weight	Soil Stability Rating Form																			
Perennial Forbs		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Rating</th> <th>Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td>40% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	40% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles			
Rating	Criteria for assignment to stability class																				
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Annual Forbs	18.96	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Location</th> <th>Under canopy</th> <th>Inter-space</th> <th rowspan="6" style="font-size: small;">Samples should be &lt; 1/4 " diameter and &lt; 1/8" thick</th> </tr> </thead> <tbody> <tr> <td>0 meter</td> <td style="text-align: center;">6</td> <td style="text-align: center;">6</td> </tr> <tr> <td>7.5 meter</td> <td style="text-align: center;">6</td> <td style="text-align: center;">6</td> </tr> <tr> <td>15 meter</td> <td style="text-align: center;">5</td> <td style="text-align: center;">4</td> </tr> <tr> <td>22.5 meter</td> <td style="text-align: center;">3</td> <td style="text-align: center;">6</td> </tr> <tr> <td>28.5 meter</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> </tr> </tbody> </table>	Location	Under canopy	Inter-space	Samples should be < 1/4 " diameter and < 1/8" thick	0 meter	6	6	7.5 meter	6	6	15 meter	5	4	22.5 meter	3	6	28.5 meter	5	6
Location	Under canopy		Inter-space	Samples should be < 1/4 " diameter and < 1/8" thick																	
0 meter	6	6																			
7.5 meter	6	6																			
15 meter	5	4																			
22.5 meter	3	6																			
28.5 meter	5	6																			
Shrub	63.56																				
Total Production	129.13																				



# CANM Rangeland Health Evaluation Photos

Allotment Yellow Jacket  
Polygon # 242  
Date 8/9/2001



1997-1998  
Annual Report

1997-1998  
Annual Report

