Ecological site DX034A02X162
Shallow Loamy
Pinedale Plateau
(SwLy PP)

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 034A–Cool Central Desertic Basins and Plateaus

Major Land Resource Area (MLRA) 34A, Cool Central Desertic Basins and Plateaus, consists of approximately 21 million acres in Wyoming, Colorado and Utah, it consists of 10 Land Resource Units (LRU). These units are divisions of the MLRA based on geology, landscape, common soils, water resources and plant community potentials. The elevation ranges from approximately 5600 feet (1700 m) along the Green River in UT and CO to approximately 9500 feet (2900 m) near Jeffrey City, WY. Annual precipitation ranges from 7 to 16 inches (177 to 406 mm), with the driest areas in the Green River and Great Divide Basins and the wettest areas in northern Carbon County, Southeast Fremont County and Albany County. There is a seasonal weather pattern that trends west to east, with more winter precipitation in the west and more spring/summer in the east, illustrated by diminishing amounts of Big Sagebrush in the eastern part of the MLRA.

LRU notes

The Pinedale Plateau LRU is in the upper Green River Drainage from Pinedale, Wyoming at the north working southward to Farson, Wyoming and easterly to South Pass, Wyoming. It is situated between the Wyoming Range and Wind River Range largely in Sublette County with some areas in Lincoln County, northern Sweetwater County, and a small portion of Fremont County. The total area of this LRU is approximately 1,210,000 acres. It shares a boundary with MLRA 46-Northern Rocky Mountain Foothills (proposed for the foothills of western Wyoming). This LRU is dominated by the New Fork Tongue of the Wasatch formation, a large artesian aquifer that is estimated to hold large amounts of water with relatively quick recharge (Martin, 1997). It is also home to the Lance Formation, a cretaceous strata that is part of the Mesaverde Group, which holds large amounts of hydrocarbons, giving way to one of the largest on shore natural gas fields (Jonah Field) (Bowker et al 2000). The soils in the Pinedale Plateau are dominated by older Alfisols with thick argillic and calcic horizons and younger deep alluvial soils along drainage ways and in river bottoms. Salts are not a major influence in the Pinedale Plateau compared to the adjacent Green River Basin LRU but do occur, including sodium, calcium carbonate, and other soluble salts. Soils are tied closely to their parent geology but are more developed and older so typically do not have bedrock contact within six feet. This LRU has an aridic ustic soil moisture regime and frigid (bordering on cryic) soil temperature regime. The precipitation pattern is bimodal with a slight spikes in the spring and fall. Winter temperatures are cold allowing snow to accumulated and stay until spring. This lends perfectly to cool season grasses and forbs to flourish, also allowing Big Sagebrush to establish and dominate the landscape. The mean annual soil temperatures are between 36 to 40 degree Fahrenheit (2.2 to 4.4 degree Celsius) and average precipitation is between 9 and 12 inches (230-305 mm) annually. Elevations of this LRU range between 6500 and 7500 feet (1980-2280 m).

Classification relationships

Relationship to Other Established Classification Systems National Vegetation Classification System (NVC): 3 Semi-Desert 3.B.1 Cool Semi-Desert Scrub & Grassland 3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland Division M169 Great Basin & Intermountain Tall Sagebrush Shrubland & Steppe Macrogroup G303 Intermountain Dry Tall Sage Steppe and Shrubland Group A3182 Wyoming big sagebrush Mesic Steppe and Shrubland Alliance CEGL001009 Artemisia tridentata ssp. wyomingensis/Pseudoroegnaria spicata Shrubland Association Ecoregions (EPA): Level I: 10 North American Deserts Level II: 10.1 Cold Deserts Level III: 10.1.4 Wyoming Basin

Ecological site concept

• This site not does receive any additional water. • These soils: o are not saline or saline-sodic o are shallow (10-20 inches deep) o may be skeletal within 20 inches (50 cm) of the soil surface (greater than 35 percent rock fragments by volume) o are not strongly or violently effervescent in the surface mineral layer (within top 10 inches; 25 cm) o have surface textures that usually range from fine sandy loam to light clay loam in surface mineral layer (4 inches; 10 cm) • have slopes that range from 15-45 percent • clay content is not greater than 35 percent in mineral soil surface layer (6 inches; 15 cm) Climate: aridic ustic moisture regime (ustic bordering on aridic) frigid (bordering on cryic) temperature regime

Associated sites

DX034A02X122	**Loamy Pinedale Plateau (Ly PP)** Soils are moderately deep to very deep (greater than 20 inches).

Similar sites

R034AY262WY	**Shallow Loamy Foothills and Basins West (SwLy)** Previous version of this site, but applied to a larger geographic area.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia tridentata ssp. wyomingensis*
Herbaceous	(1) *Pseudoroegneria spicata*

Legacy ID

R034AC162WY

Physiographic features

The Shallow Loamy Pinedale Plateau (SwLy-PP) ecological site occurs in intermontane basin landscapes on hill and hillslope landforms (see following definitions). The slopes typically range from 15 to 45 percent, but can occur from 0 to greater than 50 percent. This site occurs on all aspects.

Landscape Definitions:
intermontane basin–-A generic term for wide structural depressions between mountain ranges that are partly filled with alluvium and called "valleys" in the vernacular.

Landform Definitions:
hills–-A landscape dominated by hills and associated valleys. The landform term is singular (hill).
hillslope -- A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of the hill.

Table 2. Representative physiographic features

Landforms	(1) Intermontane basin > Hill (2) Hillslope
Runoff class	Negligible to very high

Flooding frequency	None
Ponding frequency	None
Elevation	1,980 – 2,290 m
Slope	20 – 50 %
Aspect	Aspect is not a significant factor

Climatic features

Annual precipitation ranges from 9 to 12 inches per year. Wide fluctuations may occur in yearly precipitation and result in more below average years than those with above average precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Much of the precipitation accumulation (45 percent) comes in the winter in the form of snow (October to April). The wettest month is May (1.69 inches). The dominant plants (sagebrush and cool season grasses) are well adapted to these conditions. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 miles per hour. The growing season is short (less than 60 day) and cool (critical growth period): primary growth typically occurs between May and June. Growth of native cool-season plants begins about mid-April and continues to approximately early July. Some green-up of cool-season plants usually occurs in September with adequate fall moisture.

All data is based on the 30-year average from 1981-2010.

Table 3 Representative climatic features

Frost-free period (characteristic range)	30-70 days
Freeze-free period (characteristic range)	50-80 days
Precipitation total (characteristic range)	230-310 mm
Frost-free period (actual range)	20-70 days
Freeze-free period (actual range)	50-90 days
Precipitation total (actual range)	230-330 mm
Frost-free period (average)	40 days
Freeze-free period (average)	60 days
Precipitation total (average)	280 mm

- (1) PINEDALE [USC00487260], Pinedale, WY
- (2) BOULDER REARING STN [USC00480951], Boulder, WY
- (3) CORA [USC00482054], Cora, WY

Influencing water features

There are no influencing water features in the Shallow Loamy Pinedale Plateau ecological site.

Wetland description

N/A

Soil features

The soils of this site are shallow and formed in slope alluvium and colluvium derived from interbedded sedimentary rock and conglomerate. Surface and subsurface textures are fine sandy loam to light clay loam. Rock fragments are typically channery or flaggy (angular) and may be present at the surface with outcropping bedrock, increasing in volume with depth to lithic or paralithic contact. These soils are well-drained and have moderate to moderately rapid permeability. The soil moisture regime is ardic ustic and the soil temperature regime is frigid.

Major Soil Series correlated to this site include: Broback, Craighigh, and Hoofer
Representative soil taxonomy:
Loamy-skeletal, mixed, superactive, calcareous, frigid, shallow Aridic Ustorthents
Loamy-skeletal, mixed, superactive, frigid Aridic Haplustalfs
Loamy, mixed, superactive, frigid, shallow Aridic Haplustalfs

Table 4. Representative soil features

Parent material	(1) Slope alluvium – sandstone and shale (2) Residuum – sandstone and shale
Surface texture	(1) Very parachannery loam (2) Sandy clay loam (3) Very gravelly sandy loam
Family particle size	(1) Loamy-skeletal
Drainage class	Well drained
Permeability class	Moderately slow to moderate
Depth to restrictive layer	30 – 50 cm
Soil depth	30 – 50 cm
Surface fragment cover <=3"	10 – 20 %

Surface fragment cover >3"	10 – 20 %
Available water capacity (0-50.8cm)	4.83 – 9.91 cm
Calcium carbonate equivalent (0-50.8cm)	0 – 20 %
Electrical conductivity (0-25.4cm)	Not specified
Sodium adsorption ratio (0-25.4cm)	0 – 10
Soil reaction (1:1 water) (0-25.4cm)	7.6 – 8.4
Subsurface fragment volume <=3" (38.1-101.6cm)	0 – 50 %
Subsurface fragment volume >3" (38.1-76.2cm)	0 – 40 %

Ecological dynamics

A State-and-Transition Model (STM)diagram is depicted below. Thorough descriptions of each state, transition, plant community phase, and pathway are found after the model in this document. This diagram is based on available experimental research, field observations, professional consensus, and interpretations. While based on the best available information, the STM will change over time as knowledge of ecological processes increases.

Plant community composition within the same ecological site has a natural range of variability across the LRU due to the naturally occurring variability in weather, soils, and aspect. Not all managers will choose the Reference Plant Community as the management goal. Other plant communities may be desired to meet land management objectives. This is valid as long as the rangeland health attributes assessment departures are none to slight or slight to moderate from the Reference State. The biological processes on this site are complex; therefore, representative values are presented in a land management context. The species lists are representative and are not botanical descriptions of all species occurring, or potentially occurring, on this site. They are not intended to cover every situation or the full range of conditions, species, and responses for the site.

Both percent species composition by weight and percent cover are used in this ESD. Most observers find it easier to visualize or estimate percent cover for woody species (trees and shrubs). Foliar cover is used to define plant community phases and states in the State-and-Transition Model. Cover drives the transitions between communities and states because of the influence of shade and interception of rainfall.

Species composition by dry weight remains an important descriptor of the herbaceous community and of site productivity as a whole and includes both herbaceous and woody species. Calculating similarity index requires data on species composition by dry weight.

Although there is considerable qualitative experience supporting the pathways and transitions within the State-and-Transition Model, no quantitative information exists that specifically identifies threshold parameters between reference states and degraded states in this ecological site. For information on STMs, see the following citations: Bestelmeyer et. al. 2003, Bestelmeyer et. al. 2004, Bestelmeyer and Brown 2005, and Stringham et. al. 2003.

A resource concern risk assessment and dominant resource concerns are provided for each Land Use, State, and/or Plant Community Phase based on NRCS resource concern and planning criteria used to determine resource treatment levels during the conservation planning process. A resource concern is the resource condition that does not meet the minimum accepted levels established by planning criteria as shown in Section III of the NRCS Field Office Technical Guide (https://efotg.sc.egov.usda.gov/#/).
• Low risk means a low probability for the category of resource concerns and additional assessment is typically not necessary.
• Medium risk means that the category of resource concerns could occur, and additional assessment is recommended if the identified resource is a client concern and/or objective.
• High risk means that a resource concern in that category is likely to occur.
The resource categories are: S (soil), W (water), A (air), P (plant), A (animal), E (energy), and H (human). The dominant resource concerns further refine the resource category to a specific resource concern within that category.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

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

Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	**Perennial Mid-Size Cool Season Bunchgrasses**			135-224	
	bluebunch wheatgrass	PSSP6	*Pseudoroegneria spicata*	56-224	10-40
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	28-112	5-20
	needle and thread	HECO26	*Hesperostipa comata*	28-112	5-20
	prairie Junegrass	KOMA	*Koeleria macrantha*	0-56	0-10
	Sandberg bluegrass	POSE	*Poa secunda*	6-56	1-10
	muttongrass	POFE	*Poa fendleriana*	6-56	1-10
	Letterman's needlegrass	ACLE9	*Achnatherum lettermanii*	6-56	1-10
	squirreltail	ELEL5	*Elymus elymoides*	6-56	1-10
	slender wheatgrass	ELTR7	*Elymus trachycaulus*	0-56	0-10
2	**Rhizomatous Grasses**			22-56	
	thickspike wheatgrass	ELLAL	*Elymus lanceolatus ssp. lanceolatus*	28-56	5-10
	western wheatgrass	PASM	*Pascopyrum smithii*	28-56	5-10
3	**Misc Grasses/Grasslikes**			22-56	
	plains reedgrass	CAMO	*Calamagrostis montanensis*	0-28	0-5
	needleleaf sedge	CADU6	*Carex duriuscula*	0-28	0-5
	threadleaf sedge	CAFI	*Carex filifolia*	0-28	0-5
	Sandberg bluegrass	POSE	*Poa secunda*	6-28	1-5
	Grass, perennial	2GP	*Grass, perennial*	0-28	0-5
Forb					
4	**Perennial Forbs**			22-50	
	buckwheat	ERIOG	*Eriogonum*	6-28	1-5
	lupine	LUPIN	*Lupinus*	0-28	0-5
	aster	SYMPH4	*Symphyotrichum*	0-28	0-5
	spiny phlox	PHHO	*Phlox hoodii*	6-28	1-5
	longleaf phlox	PHLO2	*Phlox longifolia*	0-17	0-3

	flaxleaf plainsmustard	SCLI	*Schoenocrambe linifolia*	0-17	0-3
	ragwort	SENEC	*Senecio*	0-17	0-3
	scarlet globemallow	SPCO	*Sphaeralcea coccinea*	0-17	0-3
	stemless mock goldenweed	STAC	*Stenotus acaulis*	0-17	0-3
	fleabane	ERIGE2	*Erigeron*	0-17	0-3
	hoary tansyaster	MACA2	*Machaeranthera canescens*	0-17	0-3
	rayless tansyaster	MAGR2	*Machaeranthera grindelioides*	0-17	0-3
	bluebells	MERTE	*Mertensia*	0-17	0-3
	beardtongue	PENST	*Penstemon*	0-17	0-3
	hairy false goldenaster	HEVI4	*Heterotheca villosa*	0-17	0-3
	milkvetch	ASTRA	*Astragalus*	0-17	0-3
	Wyoming besseya	BEWY	*Besseya wyomingensis*	0-17	0-3
	pussytoes	ANTEN	*Antennaria*	6-17	1-3
	tapertip hawksbeard	CRAC2	*Crepis acuminata*	0-17	0-3
	western yarrow	ACMIO	*Achillea millefolium var. occidentalis*	0-17	0-3
	agoseris	AGOSE	*Agoseris*	0-17	0-3
	onion	ALLIU	*Allium*	0-6	0-1
	cryptantha	CRYPT	*Cryptantha*	0-6	0-1
	larkspur	DELPH	*Delphinium*	0-6	0-1
	rockcress	ARABI2	*Arabis*	0-6	0-1
	sandwort	ARENA	*Arenaria*	0-6	0-1
	Indian paintbrush	CASTI2	*Castilleja*	0-6	0-1
	pale bastard toadflax	COUMP	*Comandra umbellata ssp. pallida*	0-6	0-1
	ipomopsis	IPOMO2	*Ipomopsis*	0-6	0-1
	desertparsley	LOMAT	*Lomatium*	0-6	0-1
	western wallflower	ERAS2	*Erysimum asperum*	0-6	0-1
	stonecrop	SEDUM	*Sedum*	0-6	0-1
	sagebrush buttercup	RAGL	*Ranunculus glaberrimus*	0-6	0-1
	hollyleaf clover	TRGY	*Trifolium gymnocarpon*	0-6	0-1
	clover	TRIFO	*Trifolium*	0-6	0-1
	violet	VIOLA	*Viola*	0-6	0-1
	deathcamas	ZIGAD	*Zigadenus*	0-6	0-1
	Forb, perennial	2FP	*Forb, perennial*	0-6	0-1
5	**Annual Forbs**			0-6	
	rockjasmine	ANDRO3	*Androsace*	0-6	0-1
	bushy bird's beak	CORA5	*Cordylanthus ramosus*	0-6	0-1
	cryptantha	CRYPT	*Cryptantha*	0-6	0-1
	smallflower gymnosteris	GYPA2	*Gymnosteris parvula*	0-6	0-1
	flatspine stickseed	LAOC3	*Lappula occidentalis*	0-6	0-1
	bushy blazingstar	MEDI	*Mentzelia dispersa*	0-6	0-1
	broomrape	OROBA	*Orobanche*	0-6	0-1
	wirelettuce	STEPH	*Stephanomeria*	0-6	0-1
	Forb, annual	2FA	*Forb, annual*	0-6	0-1
Shrub/Vine					
6	**Sagebrush**			45-112	
	mountain big sagebrush	ARTRV	*Artemisia tridentata ssp. vaseyana*	0-112	0-15

	Wyoming big sagebrush	ARTRW8	*Artemisia tridentata ssp. wyomingensis*	28-112	5-15
	little sagebrush	ARARL	*Artemisia arbuscula ssp. longiloba*	0-28	0-5
	prairie sagewort	ARFR4	*Artemisia frigida*	0-28	0-5
	black sagebrush	ARNO4	*Artemisia nova*	0-28	0-5
7	**Misc Shrubs**			11-28	
	shadscale saltbush	ATCO	*Atriplex confertifolia*	0-28	0-5
	Gardner's saltbush	ATGA	*Atriplex gardneri*	0-28	0-5
	yellow rabbitbrush	CHVI8	*Chrysothamnus viscidiflorus*	6-28	1-5
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	0-28	0-5
	winterfat	KRLA2	*Krascheninnikovia lanata*	0-28	0-5
	granite prickly phlox	LIPU11	*Linanthus pungens*	0-28	0-5
	plains pricklypear	OPPO	*Opuntia polyacantha*	0-28	0-5
	bud sagebrush	PIDE4	*Picrothamnus desertorum*	0-28	0-5
	greasewood	SAVE4	*Sarcobatus vermiculatus*	0-28	0-5
	shortspine horsebrush	TESP2	*Tetradymia spinosa*	0-28	0-5
	Shrub (>.5m)	2SHRUB	*Shrub (>.5m)*	0-28	0-5
	spineless horsebrush	TECA2	*Tetradymia canescens*	0-28	0-5

Table 7. Community 2.1 plant community composition

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

Table 8. Community 2.2 plant community composition

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

Table 9. Community 3.1 plant community composition

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

Table 10. Community 4.1 plant community composition

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

Table 11. Community 4.2 plant community composition

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

Animal community

Livestock: The following table lists suggested stocking rates for cattle under continuous season-long grazing under normal growing conditions with a harvest efficiency (HE) of 25 percent. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). A field visit is required to document actual plant composition and production. More precise carrying capacity estimates, considering forage preference and accessibility (slope, distance to water, etc.), should be calculated using field data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies (up to 35 percent) can result in an increased carrying capacity, but recovery time for upland sites is much longer. If distribution problems occur, stocking rates should be reduced or facilitating conservation practices (i.e., cross-fencing, water development) implemented to maintain plant health and vigor. Initial Suggested Stocking Rate: Plant Community Production (lbs./ac.) (AUMs/ac.)* Ac./AUM 1.1 Big Sagebrush/Bunchgrass 300-500-700 0.05 20 1.2 Bunchgrass/Big Sagebrush 300-500-700 0.08 13 2.1 Big Sagebrush/Short-stature Grass 200-400-600 0.04 25 2.2 Short-stature Grass/Big Sagebrush 200-400-600 0.05 20 3.1 Rabbitbrush/Rhizomatous Grass 200-400-600 0.05 20 4.1 Reclaimed 300-500-700 0.10 10 4.2 Annual 100-200-300 0.03 33 * Continuous, season-long grazing by cattle under average growing conditions. Calculation for stocking rates are as follows: Using RV values for production, take forage palatable to grazing cattle and multiply by 0.25 HE and divide by 912.5 pounds per AUM air-dry weight (ADW) to arrive at the initial suggested stocking rate in AUMs per acre. Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide year-long forage for cattle, sheep, or horses. During the dormant period, the forage for livestock must be supplemented with protein because the quality does not meet minimum livestock requirements. Distance to water, shrub density, and slope can affect grazing capacity within a management unit. Accessibility adjustments should be

made for the planning area as necessary. For example, 30 percent of a management unit may have 25 percent slopes and distances of greater than one mile from water, resulting in a 50 percent reduction in grazing access; therefore, the adjustment is calculated for 30 percent of the unit (i.e. 50 percent reduction on 30 percent of the management unit). Fencing, slope length, management, access, terrain, kind and class of livestock, and breeds are all factors that can increase or decrease the percent of grazing access within a management unit. Adjustments should be made that incorporate these factors when calculating the carrying capacity of a management unit. Wildlife: Reference State: 1.1 Big Sagebrush/Bunchgrass: This community phase provides optimal transitional and summer habitat for sage-grouse, mule deer, pronghorn, and elk. A diverse suite of herbaceous species also provide important micronutrient requirements for big game species throughout the year. These areas also provide high quality bird nesting habitat where sagebrush canopy and residual bunchgrasses hide nests and young from predators. This very common community is used widely as migration and stopover habitat by big game. Spring green-up of grass is a critical nutritional component of this community for migrating big game. 1.2 Bunchgrass/Big Sagebrush: This community phase tends to have higher herbaceous plant diversity that may attract more diverse wildlife use. The plant community provides suitable forage and cover for sagebrush obligate species. The more open canopy promotes higher diversity and quantity of forbs that are important for early sage-grouse brood-rearing habitat. It also provides high quality habitat for mule deer, elk and pronghorn as they transition between winter and summer ranges. This very common community is used widely as migration and stopover habitat by big game. Spring green-up of grass and forb diversity is a critical nutritional component of this community for migrating big game. Grazing Resistant State: 2.1 Big Sagebrush/Short-stature Grass: This community phase is variable in its value to wildlife. The value of the sagebrush community is similar to the reference state but the value of the grass community decreases. In periods of high plant vigor, the herbaceous understory provides cover for nesting birds and small mammals. In periods of drought and low plant vigor, the herbaceous understory is short and not dense enough to provide adequate cover and habitat value declines. Diversity is low, and mat-forming forbs often occupy the space and nutrients needed for more desirable forbs. 2.2 Short-stature Grass/Big sagebrush: This community phase is variable in its value to wildlife. Value is low for species dependent on sagebrush unless in close proximity to areas with sagebrush cover. In periods of high plant vigor, herbaceous species provide cover for some birds and small mammals. In periods of drought and low plant vigor, the herbaceous community is often too short and not dense enough to provide adequate cover and habitat. Plant and animal diversity is low. Disturbed State: 3.1 Rabbitbrush/Rhizomatous Grass: This community phase is highly variable in its value to wildlife. It typically is less diverse, has lower forage value and has limited structure that wildlife need for cover. This state is vulnerable to repeated disturbance which can result in a complete loss of value for wildlife. In addition, sites in this state are more susceptible to invasion of non-native species, further degrading the value for wildlife. Highly Disturbed State 4.1 Reclaimed: This community phase is highly variable in its value to wildlife. Reclamation success, size and configuration of the reclaimed area, the species planted, and the time it takes for plants to establish will determine the value of the site for wildlife. A fully reclaimed site containing a diversity of herbaceous and woody native plants can eventually provide the same wildlife habitat benefits as the reference state. In most cases, grasses and forbs establish early in the reclamation process, whereas shrubs take significantly longer to establish. Wildlife species dependent on herbaceous plant communities for forage (such as elk) will benefit from reclamation sooner than those species dependent on a mixed shrub/grass community. Suitable habitat for wildlife species that require tall, dense sagebrush (sage-grouse, pronghorn, mule deer, and sagebrush obligate songbirds) is likely possible within a decade, providing appropriate shrub species were planted. It is possible to achieve successful, diverse reclamation on linear disturbances (i.e. pipelines) without seeding shrubs, but it will take longer than a decade for seed from shrubs adjacent to the area to established on-site. 4.2 Annual Plant Community: This plant community exhibits a low level of plant species diversity, and thus, is less apt to meet the seasonal needs of most wildlife who frequent this community. Small mammals and songbirds will still utilize this phase, although not to the capacity as the above states.

Hydrological functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group D. Infiltration is low when soils are wet due to shallow depth to bedrock or impervious subsurface layer. Runoff potential for this site varies from high to moderate depending on soil depth, bedrock type (impervious vs. permeable) and ground cover (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information). Rills and gullies are not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are rare to non-existent. Biological crusts are present, but only cover one to two percent of the soil surface.

Recreational uses

This site provides hunting opportunities for upland game species. The wide variety of plants which bloom in the spring have an aesthetic value that appeals to recreationists.

Wood products

No appreciable wood products are present on the site.

Other products

None

Inventory data references

Information has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel were also used. Those involved in developing this site include: Bryan Christensen, Range Management Specialist, NRCS and Karen Clause, Range Management Specialist, NRCS. Other sources used as references include: USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

References

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Approval

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	02/18/2025
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

   _____

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

   _____

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

   _____

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

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

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

---

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

---

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

---

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

---

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

---

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

---

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

---

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

---

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

---

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

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
