USDA Natural Resources
Conservation Service

Ecological site R034AY274WY
Subirrigated Foothills and Basins West (Sb)

Accessed: 05/13/2025

General information

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

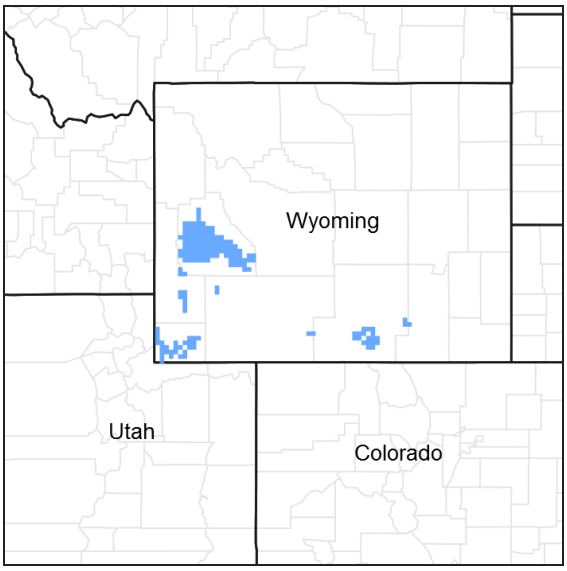


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Associated sites

R034AY228WY	**Lowland Foothills and Basins West (LL)** Lowland
R034AY238WY	**Saline Lowland Foothills and Basins West (SL)** Saline Lowland
R034AY242WY	**Saline Subirrigated Foothills and Basins West (SS)** Saline Subirrigated
R034AY278WY	**Wetland Foothills and Basins West (WL)** Wetland

Similar sites

R034AY278WY	**Wetland Foothills and Basins West (WL)** Wetland (WL) 10-14W has a higher water table and higher production.
R034AY174WY	**Subirrigated Green River and Great Divide Basins (Sb)** Subirrigated (Sb) 7-9GR has lower production

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site will usually occur on level to nearly level land along perennial or intermittent streams near seeps, springs, and sloughs. It is found on all exposures with slopes averaging 3% and elevations mostly over 7000 feet.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Stream terrace
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Rare to occasional
Ponding frequency	None
Elevation	1,981–2,286 m
Slope	1–10%
Ponding depth	0 cm
Water table depth	30–102 cm
Aspect	Aspect is not a significant factor

Climatic features

Annual precipitation ranges from 10-14 inches per year. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal 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. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 mph.

Growth of native cool season plants begins about May 1 and continues to about September 1.

The following information is from the “Pinedale” climate station:
Minimum Maximum 5 yrs. out of 10 between

Frost-free period (days): 18 67 July 5 – August 15
Freeze-free period (days): 53 97 June 15 – August 24

Annual Precipitation (inches): <7.18 >13.94 (2 years in 10)

Average annual precipitation: 11.29 inches

Average annual air temperature: 35.9 F (20.4 F Avg. Min. to 51.4 F Avg. Max.)

For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at http://www.wcc.nrcs.usda.gov/cgibin/state.pl?state=wy website. Other climate stations representative of this precipitation zone include ”Border 3 N ” and Kemmerer Wtr Trtmt” in Lincoln County; “Evanston 1 E” in Uinta County; and “Merna” in Sublette County.

Table 3. Representative climatic features

Frost-free period (average)	67 days
Freeze-free period (average)	97 days
Precipitation total (average)	356 mm

Influencing water features

Stream type: C (Rosgen)

Soil features

The soils of this site are deep and formed from alluvium. They have water tables below the surface for all of the growing season. The water table is non-saline and non-alkaline. They are loamy soils with a seasonal high water table depth of about 1 to 3 feet most years. Mottling or gleying usually occurs within 20 to 40 inches of the surface. These areas may have water over the surface from run-in, but only for short periods of time.

Major Soil Series correlated to this site include: Becks, Canninger, Lander, Pescar, and Turson series.

Other Soil Series in MLRA34A correlated to this site include: Dogiecreek, Gas Creek, and some phases of the Havermom, Heinsaw, Saleratus, and Henrysfork series.

Table 4. Representative soil features

Surface texture	(1) Loam (2) Clay loam (3) Silt loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to moderately well drained
Permeability class	Moderately slow to moderate
Soil depth	51–152 cm
Surface fragment cover <=3"	0–20%
Surface fragment cover >3"	0–5%
Available water capacity (0-101.6cm)	6.35–13.97 cm
Calcium carbonate equivalent (0-101.6cm)	0–40%
Electrical conductivity (0-101.6cm)	0–8 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–5
Soil reaction (1:1 water) (0-101.6cm)	6.6–8.6
Subsurface fragment volume <=3" (Depth not specified)	0–30%
Subsurface fragment volume >3" (Depth not specified)	0–15%

Ecological dynamics

As this site deteriorates, species such as inland sedge and Baltic rush increase. Grasses such as tufted hairgrass, Nebraska sedge, and basin wildrye will decrease in frequency and production. Willow stands will become decadent

with a lack of diverse age classes as site declines. This site is vulnerable to noxious weed invasion by such species as Canada thistle.

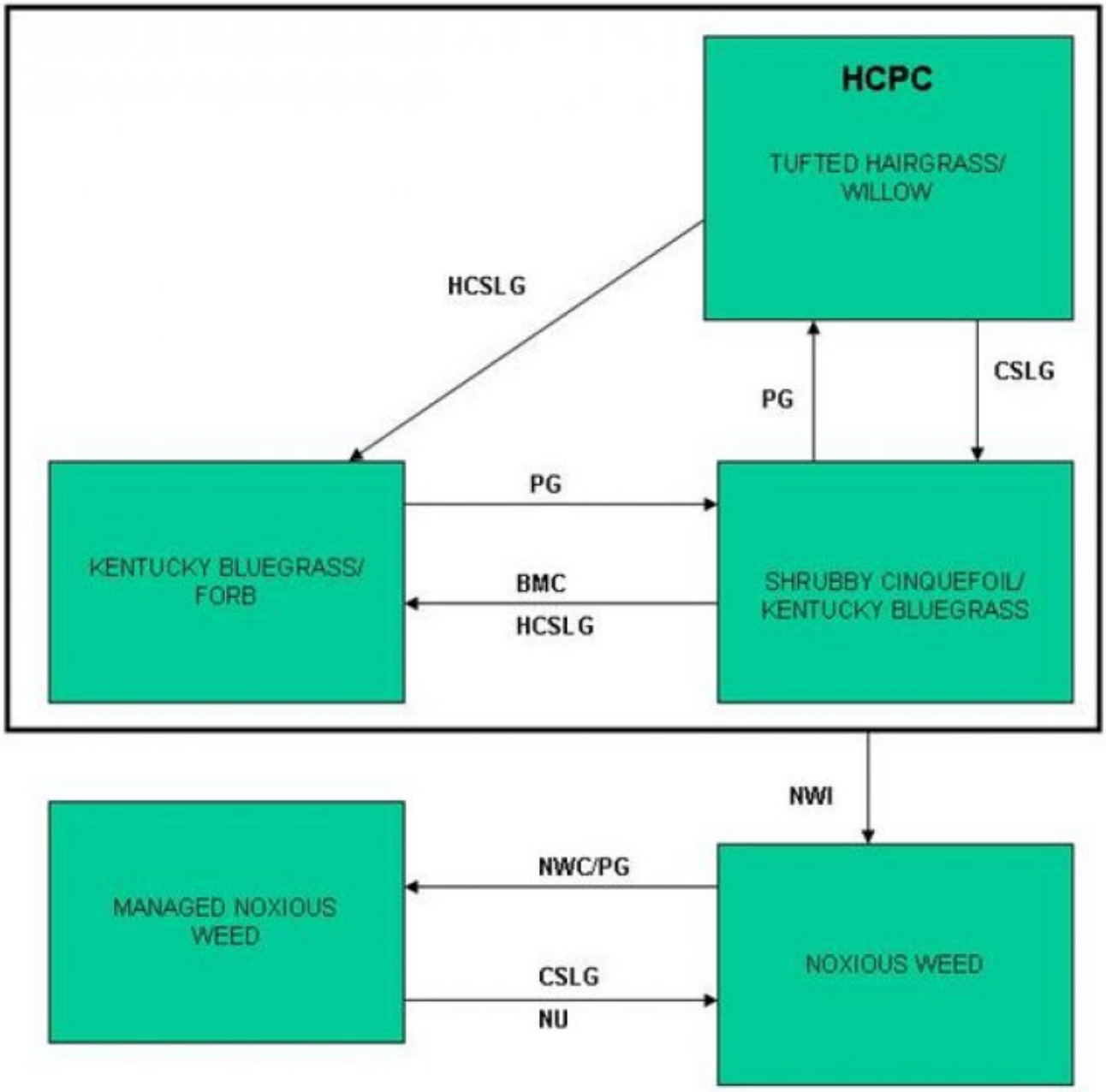
The Historic Climax Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

The following is a State and Transition Model Diagram that illustrates the common plant communities (states) that can occur on the site and the transitions between these communities. The ecological processes will be discussed in more detail in the plant community narratives following the diagram.

State and transition model

Site Type: Rangeland
MLRA: 34A-Cool Central Desertic Basins and Plateaus

Subirrigated (Sb) 10-14W
R034AY274WY



BMA – Brush Management (all methods)
BMC – Brush Management (chemical)
BMF – Brush Management (fire)
BMM – Brush Management (mechanical)
CSP – Chemical Seedbed Preparation
CSLG – Continuous Season-long Grazing
DR – Drainage
CSG – Continuous Spring Grazing
HB – Heavy Browse
HCSLG – Heavy Continuous Season-long Grazing
HI – Heavy Inundation
LPG – Long-term Prescribed Grazing
MT – Mechanical Treatment (chiseling, ripping, pitting)

NF – No Fire
NS – Natural Succession
NWC – Noxious Weed Control
NWI – Noxious Weed Invasion
NU – Nonuse
P&C – Plow & Crop (including hay)
PG – Prescribed Grazing
RPT – Re-plant Trees
RS – Re-seed
SGD – Severe Ground Disturbance
SHC – Severe Hoof Compaction
WD – Wildlife Damage (Beaver)
WF - Wildfire

State 1
Tufted Hairgrass/Willow Plant Community (HCPC)

Community 1.1
Tufted Hairgrass/Willow Plant Community (HCPC)

The interpretive plant community for this site is the Historic Climax Plant Community. This state evolved with grazing by large herbivores and is suited for grazing by domestic livestock. Potential vegetation is estimated at 70% grasses or grass-like plants, 15% forbs and 15% woody plants. The major grasses and grass-like plants include basin wildrye, tufted hairgrass, Nebraska sedge, inland sedge, slender wheatgrass and rhizomatous wheatgrasses. Other grasses and grass-like species that may occur on this site include Baltic rush, Canby bluegrass, mat muhly, northern reedgrass, and American and tall mannagrass. Woody plants are mainly willows and shrubby cinquefoil, but may also include chokecherry, wild rose, and rubber rabbitbrush. A typical plant composition for this state consists of Basin wildrye 15-35%, tufted hairgrass 15-30%, Nebraska sedge 5-10%, inland sedge 1-10%, slender wheatgrass 1-10%, rhizomatous wheatgrass 1-10%, other grasses and grass-like plants 10-20%, perennial forbs 5-15%, willows 5-10%, shrubby cinquefoil 5-10%, and 5-10% other woody plants. Ground cover, by ocular estimate, varies from 85-100%. The total annual production (air-dry weight) of this state is about 3700 pounds per acre, but it can range from about 3000 lbs./acre in unfavorable years to about 4300 lbs./acre in above average years. The state is stable and well adapted to the Cool Central Desertic Basins and Plateaus climatic conditions. The diversity in plant species and the reliable water table, allow for high drought resistance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity). Transitions or pathways leading to other plant communities are as follows: • Continuous Season-long Grazing will convert this plant community to the Shrubby Cinquefoil/Kentucky Bluegrass State. • Heavy Continuous Season-long Grazing will convert this plant community to the Kentucky Bluegrass/Forb State.

Figure 4. Plant community growth curve (percent production by month). WY0303, 10-14W, Free Water Sites - WL, Sb, SS. WL, SB, SS Free Water Sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	20	40	20	15	5	0	0	0

State 2
Managed Noxious Weed Plant Community

Community 2.1
Managed Noxious Weed Plant Community

This plant community is the result of noxious weed control and prescribed grazing. Grazing is used as a tool to control introduced and noxious weeds by selecting livestock type and timing use during the flowering of the identified weed such as Canada thistle. Other weed control efforts such as chemical, mechanical, or biological methods are employed in conjunction with a grazing management scheme. The native plant community responds to this management by increasing in production and vigor, however it is very sensitive to any management change that allows the seed production and increase of noxious weeds such as nonuse or overuse. Noxious weeds are still present, but in smaller amounts and may be isolated to exposed or bare ground areas such as sandbars. The total annual production (air-dry weight) of this state is about 3500 pounds per acre, but it can range from about 2800 lbs./acre in unfavorable years to about 4200 lbs./acre in above average years. Bare ground has decreased. The soil of this state is moderately protected. Degraded stream banks may still erode, but increased amounts of deep-rooting sedges provide adequate stability to the system. The biotic community has been compromised, but is relatively stable and at risk due to invasive plants. The watershed is functioning, but is at risk of degrading rapidly with the introduction of improper management techniques. Transitional pathways leading to other plant communities are as follows: • Nonuse OR Continuous Season-long Grazing will convert this plant community to the Noxious Weed State.

Figure 5. Plant community growth curve (percent production by month). WY0303, 10-14W, Free Water Sites - WL, Sb, SS. WL, SB, SS Free Water Sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	20	40	20	15	5	0	0	0

State 3
Shrubby Cinquefoil/Kentucky Bluegrass Plant Community

Community 3.1
Shrubby Cinquefoil/Kentucky Bluegrass Plant Community

This plant community is the result of frequent and severe grazing. Kentucky bluegrass and Baltic rush are the dominant species with other grasses including rhizomatous wheatgrass and bearded wheatgrass. The site overall has dried due to downcutting associated with soil erosion from overgrazing. Common forbs include herbaceous cinquefoils, elephanthead, arrowgrass, and Rocky Mountain iris. Cinquefoil often dominates the landscape and produces more than 10-15% of the annual production on the site. Willow communities will lack a diversity of age classes. The total annual production (air-dry weight) of this state is about 3000 pounds per acre, but it can range from about 2300 lbs./acre in unfavorable years to about 3600 lbs./acre in above average years. The state is moderately stable and protected from excessive erosion. The biotic integrity of this plant community is intact. The watershed is functioning. Transitional pathways leading to other plant communities are as follows: • Prescribed Grazing will result in a plant community very similar to the Historic Climax Plant Community (Tufted Hairgrass/Willow State) although Kentucky bluegrass will remain a part of the plant community. • Continued Heavy Continuous Season-long Grazing and Brush Management will convert this plant community to the Kentucky Bluegrass/Forb State. • Noxious Weed Invasion will convert this plant community to the Noxious Weed State.

Figure 6. Plant community growth curve (percent production by month). WY0303, 10-14W, Free Water Sites - WL, Sb, SS. WL, SB, SS Free Water Sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	20	40	20	15	5	0	0	0

State 4
Kentucky Bluegrass/Forb Plant Community

Community 4.1
Kentucky Bluegrass/Forb Plant Community

This plant community evolved under continuous heavy grazing pressure by domestic livestock. Kentucky bluegrass dominates as the site dries out. Shrubby cinquefoil remnants provide little protection for the herbaceous understory. American licorice and herbaceous cinquefoils are dominant forbs. Willows and other woody species are rare to nonexistent. The total annual production (air-dry weight) of this state is about 2000 pounds per acre, but it can range from about 1300 lbs./acre in unfavorable years to about 2600 lbs./acre in above average years. The state is unstable and vulnerable to excessive erosion. The biotic integrity of this plant community and watershed is nonfunctioning. Transitional pathways leading to other plant communities are as follows: • Prescribed Grazing will convert this plant community to the Shrubby Cinquefoil/Kentucky Bluegrass State and over the long term, can result in a plant community very similar to the Historic Climax Plant Community (Tufted Hairgrass/Willow State). • Noxious Weed Invasion will convert this plant community to the Noxious Weed State.

Figure 7. Plant community growth curve (percent production by month). WY0303, 10-14W, Free Water Sites - WL, Sb, SS. WL, SB, SS Free Water Sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	20	40	20	15	5	0	0	0

State 5
Noxious Weed Plant Community

Community 5.1
Noxious Weed Plant Community

This plant community is the result of long-term improper grazing use and subsequent downcutting of watercourses resulting in a lowered water table. Bare ground has allowed the invasion of noxious weeds such as Canada thistle. The site has dried out, and most plants requiring additional moisture have disappeared. Rhizomatous wheatgrass and Kentucky bluegrass are dominant grasses. Rubber rabbitbrush and woods rose are the dominant woody plants. Willows may have disappeared although remnants may still exist. The total annual production (air-dry weight) of this state is about 1000 pounds per acre, but it can range from about 500 lbs./acre in unfavorable years to about 1600 lbs./acre in above average years. Bare ground has increased. The soil of this state is not well protected. Degraded stream banks erode due to the lack of deep-rooted riparian plants. The watershed is nonfunctioning and usually produces excessive runoff. The biotic community is nonfunctioning due to invasive plants. Transitional pathways leading to other plant communities are as follows: • Noxious Weed Control in conjunction with Prescribed Grazing will convert this state to the Managed Noxious Weed State.

Figure 8. Plant community growth curve (percent production by month). WY0303, 10-14W, Free Water Sites - WL, Sb, SS. WL, SB, SS Free Water Sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	20	40	20	15	5	0	0	0

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				622–1451	
	basin wildrye	LECI4	*Leymus cinereus*	622–1451	–
2				622–1244	
	tufted hairgrass	DECE	*Deschampsia cespitosa*	622–1244	–
3				207–415	
	Nebraska sedge	CANE2	*Carex nebrascensis*	207–415	–
4				41–415	
	inland sedge	CAIN11	*Carex interior*	41–415	–
5				41–415	
	slender wheatgrass	ELTR7	*Elymus trachycaulus*	41–415	–
6				41–415	
	western wheatgrass	PASM	*Pascopyrum smithii*	41–415	–
7				415–829	
	Grass, perennial	2GP	*Grass, perennial*	0–207	–
	northern reedgrass	CASTI3	*Calamagrostis stricta ssp. inexpansa*	0–207	–
	American mannagrass	GLGR	*Glyceria grandis*	0–207	–
	mountain rush	JUARL	*Juncus arcticus ssp. littoralis*	0–207	–
	mat muhly	MURI	*Muhlenbergia richardsonis*	0–207	–
Forb					
8				207–622	
	Forb, perennial	2FP	*Forb, perennial*	0–207	–
	yarrow	ACHIL	*Achillea*	0–207	–

	milkvetch	ASTRA	*Astragalus*	0–207	–
	water hemlock	CICUT	*Cicuta*	0–207	–
	shootingstar	DODEC	*Dodecatheon*	0–207	–
	scouringrush horsetail	EQHY	*Equisetum hyemale*	0–207	–
	aster	EUCEP2	*Eucephalus*	0–207	–
	American licorice	GLLE3	*Glycyrrhiza lepidota*	0–207	–
	common cowparsnip	HEMA80	*Heracleum maximum*	0–207	–
	waterleaf	HYDRO4	*Hydrophyllum*	0–207	–
	iris	IRIS	*Iris*	0–207	–
	flax	LINUM	*Linum*	0–207	–
	mint	MENTH	*Mentha*	0–207	–
	sweetroot	OSMOR	*Osmorhiza*	0–207	–
	elephanthead lousewort	PEGR2	*Pedicularis groenlandica*	0–207	–
	common plantain	PLMA2	*Plantago major*	0–207	–
	American bistort	POBI6	*Polygonum bistortoides*	0–207	–
	cinquefoil	POTEN	*Potentilla*	0–207	–
	buttercup	RANUN	*Ranunculus*	0–207	–
	goldenrod	SOLID	*Solidago*	0–207	–
	goldenbanner	THERM	*Thermopsis*	0–207	–
	clover	TRIFO	*Trifolium*	0–207	–
	arrowgrass	TRIGL	*Triglochin*	0–207	–
	violet	VIOLA	*Viola*	0–207	–
Shrub/Vine					
9				207–415	
	shrubby cinquefoil	DAFR6	*Dasiphora fruticosa*	207–415	–
10				207–415	
	willow	SALIX	*Salix*	207–415	–
11				207–415	
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	207–415	–
	chokecherry	PRVIV	*Prunus virginiana var. virginiana*	207–415	–
	Woods' rose	ROWOW	*Rosa woodsii var. woodsii*	207–415	–

Animal community

Animal Community – Wildlife Interpretations
Tufted Hairgrass/Willow Plant Community (HCPC): This plant community is very important for most wildlife in the area. Over 80% of all wildlife use this site to fulfill some part of their habitat needs. It provides forage and thermal and hiding cover for mule deer and moose. It provides nesting habitat for shorebirds, songbirds, and waterfowl as well as ground nesting birds such as harriers. The lush herbaceous material produces insects for sage grouse brood rearing and foraging. Dense ground cover provides escape cover, forage, and breeding areas for small mammals which draw predators such as raptors, red fox and coyote. Other birds that would frequent this plant community include red-wing blackbirds, sandhill cranes, western meadowlarks, neotropical migrants, and golden eagles.

Managed Noxious Weed Plant Community: This plant community may be beneficial for the same wildlife that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when

it occurs proximal to woody cover due to enhanced insect populations.

Shrubby Cinquefoil/Kentucky Bluegrass Plant Community: This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover.

Kentucky Bluegrass/Forb Plant Community: This plant community may be beneficial for some of the same wildlife that would use the Historic Climax Plant Community. However, the woody component is typically less productive and unable to support large browsers such as moose. As woody plants decrease, structural diversity is lost for neotropical migrants, cover decreased for deer, and nesting for shrub-nesting birds is impacted. It may provide some brood rearing and foraging opportunities for sage grouse when it occurs proximal to woody cover.

Noxious Weed Plant Community: This plant community is less diverse, and thus, less able to meet the habitat needs of many wildlife. Herbaceous forage and cover is not as dense and will aid in successful predation of nesting birds, therefore improving habitat for predators such as raptors, red fox, and coyote. It may provide some brood rearing and foraging opportunities for sage grouse when it occurs proximal to woody cover.

Animal Community – Grazing Interpretations
The following table lists suggested stocking rates for cattle under continuous season-long grazing under normal growing conditions. 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). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using this information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community Production Carrying Capacity*
(lb./ac) (AUM/ac)
Tufted Hairgrass/Willow (HCPC) 3000-4300 1.2
Managed Noxious Weed 2800-4200 1.1
Shrubby Cinquefoil/Kentucky Bluegrass 2300-3600 .8
Kentucky Bluegrass/Forb 1300-2600 .6
Noxious Weed 500-1600 .3

* - Continuous, season-long grazing by cattle under average growing conditions.

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage for cattle, sheep, or horses. During the dormant period, the forage for livestock use needs to be supplemented with protein because the quality does not meet minimum livestock requirements.

Hydrological functions

Climate is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group C. Infiltration rate is slow when soils are thoroughly wet. These soils have a slow rate of water transmission due to moderately fine to fine textures and/or high water table conditions. However, high forage production on this site diminishes runoff potential as long as site is managed for maintaining adequate residual vegetation. (Refer to Part 630, NRCS National Engineering Handbook for detailed hydraulic information).

Rills and gullies should not typically be present. Water flow patterns may be present if associated with a perennial flowing stream. Litter typically falls in place, and signs of movement are not common unless associated with a perennial flowing stream. Chemical and physical crusts are rare to non-existent.

Recreational uses

This site provides a variety of hunting opportunities as well as providing popular camping areas for recreationists. This site has a wide variety of forbs which bloom throughout spring and summer, providing esthetic values that appeal to visitors.

Wood products

No appreciable wood products are present on the site.

Other products

None noted.

Inventory data references

Inventory Data References (narrative)
Information presented here 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: Bill Christensen, Range Management Specialist, NRCS; Karen Clause, Range Management Specialist, NRCS; and Everet Bainter, 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.

Inventory Data References
Data Source Number of Records Sample Period State County
SCS-RANGE-417 15 1966-1988 WY Sublette & others

Contributors

K. Clause

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.

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Date	03/16/2007
Approved by	E. Bainter
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rare to nonexistent.

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2. **Presence of water flow patterns:** Water flow patterns sometimes evident in floodplain zone where this site occurs.

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

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is typically less than 5%.

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5. **Number of gullies and erosion associated with gullies:** Active gullies should not be present.

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

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7. **Amount of litter movement (describe size and distance expected to travel):** Herbaceous litter exhibits slight movement only associated with water flow patterns.

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil Stability Index ratings typically 6.0.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface highly variable, from 2 to 20 inches (5-50 cm) in depth with OM of 1-3%.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant community consists of 55-75% grasses, 15% forbs, and 10-30% shrubs. Dense plant canopy (75-100%) and litter plus moderate to moderately rapid infiltration rates result in minimal to nonexistent runoff until soils are saturated. Basal cover is typically greater than 5% for this site and effectively reduces runoff on this site.

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** No compaction layer exists.

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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: mid-size, cool season bunchgrasses>tall, cool season bunchgrasses>perennial shrubs>rhizomatous grass-likes>perennial forbs>cool season rhizomatous grasses

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Minimal decadence, typically associated with shrub component.

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14. **Average percent litter cover (%) and depth (in):** Litter ranges from 1-25% of total canopy measurement with total litter (including beneath the plant canopy) from 75-100% expected. Herbaceous litter depth typically ranges from 10-25 mm. Woody litter can be up to a couple inches (4-6cm).

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** English: 3000-4300 lb/ac (3700 lb/ac average); Metric: 3360-4816 kg/ha (4144 kg/ha average).

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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:** Bare ground greater than 20% and presence of noxious weeds or Kentucky bluegrass are the most common indicators of a threshold being crossed. Baltic rush, inland sedge, herbaceous cinquefoil, pussytoes, and shrubby cinquefoil are common increasers. Kentucky bluegrass and Canada thistle are common invasive species.

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17. **Perennial plant reproductive capability:** All species are capable of reproducing, except in drought years.
