

Ecological site R034AY140WY

Saline Lowland Drained Green River and Great Divide Basins (SLDr)

Last updated: 9/28/2023
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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.

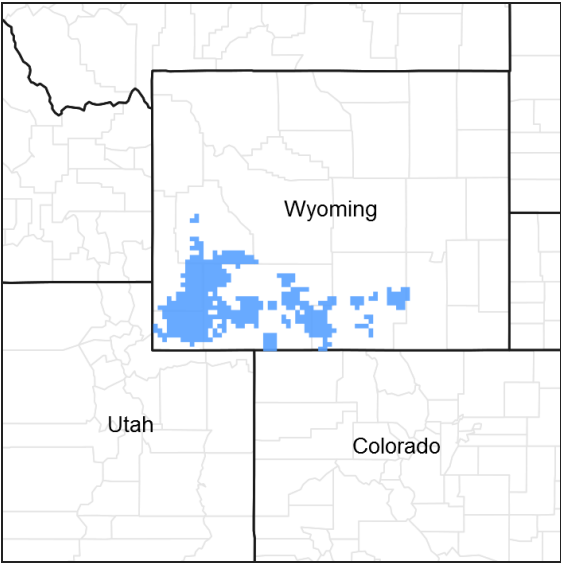


Figure 1. Mapped extent

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

R034AY138WY	Saline Lowland Green River and Great Divide Basins (SL) Saline Lowland
R034AY144WY	Saline Upland Green River and Great Divide Basins (SU) Saline Upland

Similar sites

R034AY138WY	Saline Lowland Green River and Great Divide Basins (SL) Saline Lowland (SL) 7-9GR is a moister site without Gardner's Saltbush.
R034AY240WY	Saline Lowland Drained Foothills and Basins West (SLDr) Saline Lowland, drained (SLdr) 10-14W has higher production.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site usually occurs on nearly level to gently sloping alluvial fans and alluvial bottoms. These sites receive additional run-in water from higher sites, but have a rare flood hazard because they normally have deep, well defined stream channels.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan
Flooding frequency	None
Ponding frequency	None
Elevation	1,829–2,195 m
Slope	0–5%
Ponding depth	0 cm
Water table depth	152 cm
Aspect	Aspect is not a significant factor

Climatic features

Annual precipitation ranges from 7-9 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 April 15 and continues to about July 15. Some green up of cool season plants may occur in September if moisture is available.

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 “Bitter Creek”, “Farson”, “Rock Springs FAA AP”, and “Wamsutter” in Sweetwater County; “Church Buttes Gas PLT”, and Mountain View” in Uinta County; “Fontenelle”, “La Barge”, and “Sage 4 NNW” in Lincoln County; and “Big Piney” in Sublette County.

Table 3. Representative climatic features

Frost-free period (average)	121 days
Freeze-free period (average)	132 days
Precipitation total (average)	229 mm

Influencing water features

There are no water features associated with this site.

Soil features

The soils of this site are moderately deep (greater than 20”to bedrock) to deep well-drained soils formed in alluvium from sodic or alkaline materials. Layers of the soil most influential to the plant community vary from 3 to 6 inches thick. These soils are moderately to strongly saline and/or alkaline. The surface soil will vary from 2 to 6 inches in

thickness. The surface soil will be one or more of the following textures: very fine sandy loam, fine sandy loam, loam, clay loam, silt loam, and silty clay loam. Some soils may contain more soluble salts in the subsoils than in the surface soils.

Major Soil Series correlated to this site include: Absher and Shellcreek variant.

Other Soil Series correlated in MLRA 34A to this site include: Debone and Corlett and some phases of the Hooper series.

Table 4. Representative soil features

Surface texture	(1) Loam (2) Very fine sandy loam (3) Silt loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Slow to moderate
Soil depth	38–152 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	7.11–14.48 cm
Calcium carbonate equivalent (0-101.6cm)	0–10%
Electrical conductivity (0-101.6cm)	4–16 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	10–25
Soil reaction (1:1 water) (0-101.6cm)	6.6–9
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

As this site deteriorates from improper grazing management, species such as greasewood will increase and annual forbs will invade. Basin wildrye, Indian ricegrass, and Gardner's saltbush will decrease in frequency and production.

These plant communities narratives may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as "Desired Plant Communities". According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (DPC's) will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

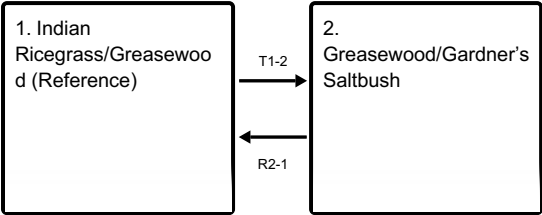
The Reference Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical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

The following is a State and Transition Model Diagram that illustrates the common plant communities (states) that

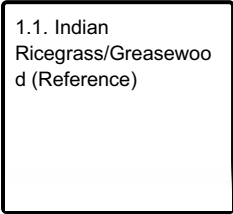
can occur on the site and the transitions between these communities. The ecological processes will be discussed in more detail in the plant community narratives following the diagram.

State and transition model

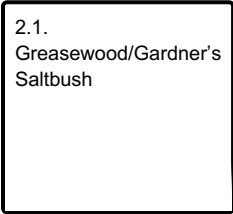
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1
Indian Ricegrass/Greasewood (Reference)

Community 1.1
Indian Ricegrass/Greasewood (Reference)

The interpretive plant community for this site is the Reference Plant Community. This state evolved with grazing by large herbivores and is suited for grazing by domestic livestock. Potential vegetation is estimated at 60% grasses or grass-like plants, 10% forbs, and 30% woody plants. Saline tolerant plants dominate this site. The major grasses include western wheatgrass, Indian ricegrass, basin wildrye, and bottlebrush squirreltail. Other grasses may include Sandberg bluegrass, Nuttall’s alkaligrass, alkali muhly, alkali sacaton, and alkali bluegrass. Greasewood and Gardner’s saltbush are the dominant woody plants. Other shrubs may include fourwing saltbush, bud sagebrush, and winterfat. A typical plant composition for this state consists of western wheatgrass 15-25%, Indian ricegrass 10-25%, Basin wildrye 10-15%, bottlebrush squirreltail 5-15%, other grasses and grass-like plants 5-20%, perennial forbs 5-10%, greasewood 10-20%, Gardner’s saltbush 5-15%, and 0-5% other woody species. Ground cover, by ocular estimate, varies from 35-50%. The total annual production (air-dry weight) of this state is about 700 pounds per acre, but it can range from about 400 lbs./acre in unfavorable years to about 900 lbs./acre in above average years. This state is fragile, but well adapted to the Cool Central Desertic Basins and Plateaus climatic conditions. This is a sustainable plant community, but is difficult to reestablish when damaged. (Site/soil stability, watershed function, and biologic integrity). Transitions or pathways leading to other plant communities are as follows: • Heavy Continuous Season-Long Grazing will convert this plant community to the Greasewood/Gardner’s Saltbush Vegetation State.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	269	471	605
Shrub/Vine	135	235	303
Forb	45	78	101
Total	449	784	1009

Figure 5. Plant community growth curve (percent production by month).
WY0401, 7-9GR, UPLAND SITES. ALL UPLAND SITES.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	35	40	10	0	5	0	0	0

State 2

Greasewood/Gardner's Saltbush

Community 2.1

Greasewood/Gardner's Saltbush

This plant community is a result of heavy, season-long grazing by livestock. Greasewood dominates, often exceeding 60% of the annual production. Gardner's saltbush, rhizomatous wheatgrass and bare ground are also a major part of this state. Sparse saline tolerant grasses and annual forbs make up the majority of the understory. The total annual production (air-dry weight) of this state is about 300 pounds per acre, but it can range from about 100 lbs./acre in unfavorable years to about 500 lbs./acre in above average years. The site is at risk and not well protected from excessive erosion. Grazing for wildlife and cattle has been reduced. The biotic integrity of this plant community is not intact. The amount of bare ground puts the watershed at risk for increased runoff. Transitional pathways leading to other plant communities are as follows: • Chemical Brush Management and Re-seeding followed by deferment for 1 to 2 years as part of a Prescribed Grazing plan may return this state to near Reference Plant Community (Indian Ricegrass/Greasewood State). Additional deferment may be necessary and should be prescribed on an individual site basis.

Figure 6. Plant community growth curve (percent production by month).
WY0401, 7-9GR, UPLAND SITES. ALL UPLAND SITES.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	35	40	10	0	5	0	0	0

Transition T1-2

State 1 to 2

Heavy Continuous Season-Long Grazing will convert this plant community to the Greasewood/Gardner's Saltbush Vegetation State.

Restoration pathway R2-1

State 2 to 1

Chemical Brush Management and Re-seeding followed by deferment for 1 to 2 years as part of a Prescribed Grazing plan may return this state to near Reference Plant Community (Indian Ricegrass/Greasewood State). Additional deferment may be necessary and should be prescribed on an individual site basis.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				78–196	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	78–196	–
2				78–196	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	78–196	–
3				78–118	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	78–118	–
4				39–118	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	39–118	–
5				39–157	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–39	–
	saltgrass	DISP	<i>Distichlis spicata</i>	0–39	–
	scratchgrass	MUAS	<i>Muhlenbergia asperifolia</i>	0–39	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–39	–
	Nuttall's alkaligrass	PUNU2	<i>Puccinellia nuttalliana</i>	0–39	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	0–39	–
Forb					
6				39–78	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–39	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–39	–
	spiny phlox	PHHO	<i>Phlox hoodii</i>	0–39	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	0–39	–
	seepweed	SUAED	<i>Suaeda</i>	0–39	–
	woodyaster	XYLOR	<i>Xylorhiza</i>	0–39	–
Shrub/Vine					
7				78–157	
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	78–157	–
8				39–118	
	Gardner's saltbush	ATGA	<i>Atriplex gardneri</i>	39–118	–
9				0–39	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	0–39	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	0–39	–
	bud sagebrush	PIDE4	<i>Picrothamnus desertorum</i>	0–39	–

Animal community

Animal Community – Wildlife Interpretations

Indian Ricegrass/Greasewood Plant Community (HCPC): The predominance of woody plants in this plant community provides winter grazing for deer and antelope. Suitable thermal and escape cover for deer may be limited due to the low quantities of tall woody plants. Structural diversity provides foraging, roosting, and nesting areas for song birds as well as desirable habitat for jackrabbits and cottontail rabbits. Sagebrush obligate species may frequent the area, but do not prefer this habitat.

Greasewood/Gardner's Saltbush Plant Community: The predominance of woody plants in this plant community provides winter grazing for deer and antelope. Suitable thermal and escape cover for deer may be slightly improved

from the Historical Climax Plant Community. Structural diversity provides foraging, roosting, and nesting areas for song birds as well as desirable habitat for jackrabbits and cottontail rabbits. Sagebrush obligate species may frequent the area, but do not prefer this habitat.

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 (lb./ac) and Carrying Capacity* (AUM/ac)

Indian Ricegrass/Greasewood (HCPC) 400-900 lb./ac and .2 AUM/ac

Greasewood/Gardner's Saltbush 100-500 lb./ac and .05 AUM/ac

* - 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

Water and salinity/alkalinity are the principal factors limiting forage production on this site. This site is dominated by soils in hydrologic group C, with localized areas in hydrologic groups B and D. Infiltration ranges from slow to moderate. Runoff potential for this site varies from moderate to high depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

Rills are not typically present, but ephemeral gullies may be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses and greasewood. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are common.

Recreational uses

This site provides limited hunting opportunities.

Wood products

No appreciable wood products are present on the site.

Other products

None noted.

Inventory data references

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.

Contributors

Karen Clause

Approval

Kirt Walstad, 9/28/2023

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	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rare to nonexistent. Where present, short and widely spaced.

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

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

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground can range from 25-60%.

5. **Number of gullies and erosion associated with gullies:** Active gullies typically present associated with ephemeral drainages associated with this site.

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

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

only in small amounts (to leeward side of shrubs) due to wind.

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 range from 2 (interspaces) to 5 (under plant canopy), but average values should be 3.5 or greater.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Typically an A-horizon of 3-9 inches (7-23 cm) with weak to moderate platy or sometimes granular structure and color hues of 10YR or 2.5Y, values of 4-7, and chromas of 2-4. Sometimes a shallow E-horizon of 2 inches (6 cm) with platy structure will replace the A-horizon. Organic matter typically ranges from .5 to 1%.
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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 40-75% grasses, 10% forbs, and 15-50% shrubs. Evenly distributed plant canopy (25-60%) and litter, but very slow infiltration rates result in slight to moderate runoff. Basal cover is typically less than 5% for this site and does very little to effect 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, but some soil crusting in dry conditions is typical.
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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: perennial shrubs>mid-size, cool season bunchgrasses>cool season rhizomatous grasses>>tall, cool season bunchgrasses=perennial forbs
-
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.
-
14. **Average percent litter cover (%) and depth (in):** Litter ranges from 10-25% of total canopy measurement with total litter (including beneath the plant canopy) from 15-40% expected. Herbaceous litter depth is typically very shallow, ranging from 1-5mm. Woody litter can be up to a couple inches (4-6 cm).
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** English: 400-900 lb/ac (700 lb/ac average); Metric: 448-1008 kg/ha (784 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 70% is the most common indicator of a threshold being crossed. Greasewood, inland saltgrass, and alkali bluegrass are common increasers. Annual weeds such as halogeton, kochia, and Russian thistle are common invasive species in disturbed sites.
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17. **Perennial plant reproductive capability:** All species are capable of reproducing, except in drought years.
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