

Ecological site R013XY043ID

Shallow Silt Stone

12-16 PZ STAC/ACHY

Last updated: 9/23/2020
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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): 013X–Eastern Idaho Plateaus

Land Resource Region: B (Northwestern Wheat and Range) MLRA: 13 (Eastern Idaho Plateaus) EPA EcoRegion: Level III (Middle Rockies)

LRU notes

013X-Eastern Idaho Plateaus Precipitation or Climate Zone: 12-16" P.Z. <https://soils.usda.gov/survey/geography/mlra/index.html>

Classification relationships

no data.

Ecological site concept

Site does not receive any additional water. Soils are: not saline or saline-sodic. Shallow to moderately deep, with >35% gravels (10") and cobbles (10-25") cover. skeletal within 20" of soil surface, fragment percentage increasing with depth strongly or violently effervescent in surface mineral 10". textures usually range from sandy loam to silty loam in surface mineral 4". Slope is 30%. Clay content is = 35% in surface mineral 4". Site does not have an argillic horizon with > 35% clay.

Associated sites

R013XY042ID	Loamy 12-16 PZ ARARL/PSSPS
R013XY044ID	Gravelly North 12-16 PZ ARARL/PSSPS

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Stenotus acaulis</i> (2) <i>Achnatherum hymenoides</i>

Physiographic features

This site occurs at the toe of mountain sideslopes and ridges generally on convex positions. Slopes generally range from 5-45 percent. Elevations range from 6200-6600 feet (1850-2000 meters).

This site occurs on hills generally on convex positions. Slopes generally range from 5 to 45 percent on all aspects. Elevations range from 6200 to 6900 feet (1850 to 2100 meters).

Table 2. Representative physiographic features

Landforms	(1) Hill
Flooding frequency	None
Elevation	1,890 – 2,100 m
Slope	10 – 50 %
Water table depth	50 – 100 cm
Aspect	Aspect is not a significant factor

Climatic features

MLRA 13, the Eastern Idaho Plateaus, is part of the Northwestern Wheat and Range Region. Its elevation ranges from 4209 to 9331 feet above sea level, with an average elevation of 5787 feet. The average annual precipitation is 16.41 inches, with a range of 13.56 to 18.75 inches, based on ten long term climate stations located throughout the MLRA. A spike in precipitation amount often occurs in late spring, usually in May.

Temperatures vary widely in the MLRA throughout the year. A maximum temperature of 103° Fahrenheit occurred at the McCammon climate station (# 105716; elevation 4770 feet), while a minimum of -41° was recorded at the Kilgore station (#104908). At all stations temperatures throughout the year are usually below the national average. Kilgore also recorded the greatest annual snowfall amount of 217 inches. The average temperature is 41.4 degrees F. with an average high of 55.3 degrees and an average low of 27.5 degrees.

The frost-free period ranges from 64 to 90 days, while the freeze-free period can be 98 to 123 days.

Table 3 Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	120 days
Precipitation total (average)	480 mm

Influencing water features

This site is not influenced by adjacent wetlands, streams, or run on.

Soil features

The soils on this site are well drained and moderately deep to fragmental material. They occur on hill slopes and are formed in slope alluvium, alluvium, and residuum from calcareous siltstone. Textures are dominantly gravelly silt loam, very gravelly loam, and extremely

gravelly silt loam. The depth to the fragmental material is 10 to 20 inches. The soils have very high lime content. Runoff is very high due to steep slopes, while permeability is slow to moderate. The available water holding capacity (AWC) is very low. The soils are characterized by a xeric soil moisture regime and a frigid soil temperature regime.

Soil Series Correlated to this Ecological Site

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Table 4. Representative soil features

Surface texture	(1) Gravelly silt loam
Drainage class	Well drained
Permeability class	Slow to moderate
Soil depth	50 – 100 cm
Surface fragment cover <=3"	10 – 20 %
Available water capacity (0-101.6cm)	4.06 – 7.62 cm
Calcium carbonate equivalent (0-101.6cm)	20 – 40 %
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	7.4 – 7.8
Subsurface fragment volume <=3" (Depth not specified)	20 – 40 %

Ecological dynamics

The dominant visual aspect of this site is a sparse covering of half-shrub/low shrub with Indian ricegrass. Composition by weight is approximately 30-40 percent grasses, 5-10 percent forbs, and 40-50 percent half-shrub/low shrub. Major species are Indian ricegrass and stemless goldenweed.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by dry summers and cold, wet winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, lagomorphs, and small rodents.

Due to the sparse vegetation on the site, this site rarely burns.

The Historic Climax Plant Community (HCPC), the Reference State (State 1), moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The Reference Plant Community Phase is Phase A. This plant community is dominated by stemless goldenweed, Indian ricegrass, and needle and thread grass. Other species that may be found on the site in low amounts include Sandberg bluegrass, Hoods phlox, and alkali sagebrush. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 300 pounds per acre (333 kilograms per hectare) in a normal year. Production in a favorable year is 500 pounds per acre (560 kilograms per hectare). Production in an unfavorable year is 75 pounds per acre (84 kilograms per hectare). Structurally, half-shrubs are dominant, followed by cool season deep-rooted perennial bunchgrasses, followed by perennial forbs, followed by shallow rooted perennial bunchgrasses.

FUNCTION:

This site is suited for grazing by domestic livestock in the late spring and summer season, however, production is low. The site offers little recreational value.

Due to the surface gravels on this site, it is fairly resistant to disturbances that can potentially degrade it. Gravels on the surface provide a stabilizing effect on surface erosion potential.

Impacts on the Plant Community.

Influence of fire:

Production on this site is so low that the site rarely burns.

Influence of improper grazing management:

Indian ricegrass and needle and thread grass can be impacted by improper grazing management especially if grazing always occurs in the spring.

Weather influences:

Extended periods of drought significantly impact this site due to the low available water holding capacity and very shallow soil. Extended drought reduces vigor of the perennial grasses. Extreme drought may cause plant mortality.

Influence of insects and disease:

Outbreaks can affect vegetation health. An outbreak of a particular insect is usually influenced by weather but no specific data is available for this site.

Influence of noxious and invasive plants:

Annual and perennial invasive species compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory.

Influence of wildlife:

Relatively low numbers of wildlife use this site and have little impact on it. Pronghorn antelope is the dominant large herbivore using the site. They use the site yearlong but prefer it in the spring, fall, and early winter. Winter and spring use by mule deer occasionally occurs.

Watershed:

The site experiences decreased infiltration and increased runoff on slopes greater than 10 percent occur with an increase in annual grasses. The increased runoff also increases sheet and rill erosion. The long-term effect is a transition to a different state.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.

Phase A to B. Develops with improper grazing management. Fire is not a factor since production is low.

Phase B to A. Develops under a prescribed grazing management program and no fire.

State 1 to State 2.

Develops from Phase B with continued improper grazing management. This site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

State 2 to Unknown Site.

The site has deteriorated further and soil loss has occurred resulting in a loss of site potential. This has resulted from improper grazing management. This site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

Practice Limitations.

Only slight limitations exist on this site for implementing vegetative management practices. Slight to moderate limitations exist for implementation of facilitating practices. Severe limitations exist for implementation of accelerating practices due to shallow soils and low production potential. Brush management is generally not economically feasible.

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 (%)
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Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 4.1 plant community composition

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

Wildlife Interpretations. Animal Community – Wildlife Interpretations This rangeland ecological site has a sparse plant community. The plant production on the site is low with a mixture of forbs, grasses, and subshrubs offering habitat for pollinators in spring and summer. Mule deer and pronghorn antelope are the large herbivores using the site. The rangeland provides seasonal habitat for resident and migratory animals including ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, and prairie falcon. Sage-grouse, an area sensitive species, may utilize the plant community for brood-rearing. Encroachment of noxious and invasive plant species (cheatgrass and bulbous bluegrass) in isolated areas can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Water features are sparse provided by artificial water catchments and springs adjacent to the site. State 1 Phase 1.1 –Stemless Goldenweed/ Indian Ricegrass/ Needle and Thread/ Alkali Sagebrush Reference Plant Community (RPC) This plant community provides grasses, forbs, and shrubs used throughout the growing season by native insect communities that assist in pollination. The reptile community is limited due to sparse cover. Sage-grouse may utilize this plant community for brood-rearing and winter habitat when sagebrush canopy is adequate for cover. The plant community provides forage for mule deer and pronghorn in the spring, fall, and early winter. A limited small mammal population would include ground squirrels and chipmunks. State 1 Phase 1.2 – Stemless Goldenweed/Sandberg Bluegrass Community: This phase has developed due to improper grazing management and no fire. The plant community, dominated by herbaceous vegetation would provide less vertical structure for animals. A native forb plant community would be similar to that in Phase 1.1 and would support select pollinators. Habitat quality for reptiles may decline with the loss of sagebrush. Winter forage use by sage-grouse is eliminated. Large mammal (mule deer and pronghorn) use for forage would be limited to herbaceous vegetation in the spring and fall. State 2 – Sandberg Bluegrass/ Cheatgrass Plant Community: This plant community is the result of continued improper grazing management. The reduced forb and shrub components in the plant community would support a very limited population of pollinators. Most reptilian species are not supported with food, water, or cover. This plant community does not support any habitat requirements for sage-grouse. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large mammals may utilize the herbaceous vegetation in the early part of the year when the invasive annuals (cheatgrass) are more palatable. At other times of the year large mammals would not regularly utilize these areas due to poor food and cover conditions. Grazing Interpretations: This site is best adapted for livestock grazing in the late spring and summer season, however, production is low. Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use, and seasonal preference. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings.

Hydrological functions

Soils on this site are in hydrologic group D. They have high run-off potential.

Recreational uses

Little recreational opportunity exists on this site.

Wood products

none.

Other products

none.

Other information

Field Offices American Falls, ID Blackfoot, ID Burley, ID Driggs, ID Fort Hall, ID Idaho Falls, ID Malad, ID Pocatello, ID Rexburg, ID Soda Springs, ID St. Anthony, ID

Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include: Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC Jim Cornwell, Range Management Specialist, IASCD Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho Kristen May, Resource Soil Scientist, NRCS, Idaho Lee Brooks, Range Management Specialist, IASCD

Type locality

Location 1: Bear Lake County, ID	
Township/Range/Section	T14S R45E S32

Other references

Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho. Moscow, Idaho. Bulletin Number "35".

USDA Forest Service, Rocky Mountain Research Station. 2004. Restoring Western Ranges and Wildlands. General Technical Report RMRS-GTR-136-vols. 1-3.

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database.

USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service, Agricultural Research Service; Interpreting Indicators of Rangeland Health. Technical Reference 1734-6; Version 4-2005.

Approval

Kendra Moseley, 9/23/2020

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	05/15/2008
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** rills rarely occur on this site due to the gravelly surface soils.

2. **Presence of water flow patterns:** water-flow patterns rarely occur on this site. When they do occur they are short and disrupted by cool season grasses, shrubs, and surface gravel. They are not extensive.

3. **Number and height of erosional pedestals or terracettes:** pedestals can occur on the site especially where flow patterns are present and on slopes greater than 20%. Terracettes are rare.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** it ranges from 5-15 percent but additional data is needed.

5. **Number of gullies and erosion associated with gullies:** none.

6. **Extent of wind scoured, blowouts and/or depositional areas:** usually not present.

7. Amount of litter movement (describe size and distance expected to travel): fine litter in the interspaces typically moves up to three feet. Coarse litter generally does not move. Fine litter can be moved by wind.

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values): values should range from 4 to 6 but needs to be tested.

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): structure ranges from weak very fine and fine granular to moderate very fine and fine granular. Soil organic matter (SOM) ranges from 1 to 2 percent. Surface color is pale brown. The A or A1 horizon is typically 2 to 5 inches thick.

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: bunchgrasses and half-shrubs, especially deep rooted perennials, and surface gravels slow runoff and increase infiltration.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): not present.

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: half shrubs

Sub-dominant: cool season deep rooted perennial bunchgrasses

Other: perennial forbs

Additional: shallow rooted perennial bunchgrasses-warm season grasses

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): very little mortality or decadence is expected on this site. Mortality of shallow rooted grasses may occur due to extended periods of drought.

14. Average percent litter cover (%) and depth (in): ranges from 1-5 percent.

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production): is 300 pounds per acre (333 Kg/ha) in a year with normal precipitation and temperatures. Perennial grasses produce 30-40 percent of the total production, forbs 5-10 percent and shrubs and half-shrubs 40-50 percent.

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: includes cheatgrass and bulbous bluegrass.
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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in normal and favorable years.
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