Appendix I:
Land Health Standards

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I. Land Health Standards

(derived from: Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management for Montana and the Dakotas)

I.1 Preamble

Rangeland health can be defined as the degree to which the integrity of the physical and ecological processes of the rangeland ecosystems are sustained.

The capacity of rangelands to produce commodities and satisfy values on a sustained basis depends upon the internal, self-sustaining ecological processes such as soil development, nutrient cycling, energy flow, and the structure and dynamics of plant and animal communities.

Rangeland health is the minimum ecological standard, independent of the rangeland's use and how it is managed. If rangeland health is protected, a variety of uses could be appropriate for any particular rangeland.

Standards apply to rangeland health and not to the important by-products of healthy rangelands such as more fish, higher livestock weaning weights, regional social and cultural values, increased timber production, economic viability of livestock operations or higher numbers of game animals. It is sustainability of the processes, of rangeland health, that produces these social values and commodities.

The Bureau of Land Management is committed to grazing as an appropriate use of public rangelands and to maintaining healthy and productive rangelands that support stable western communities. This is a commitment that began with the Taylor Grazing Act, which reversed the decline in the health of the range, is reiterated in the Federal Land Policy Management Act that ensures public lands are managed for multiple use and guarantees grazing as an activity on the public lands.

Standards for Rangeland Health and Guidelines for Livestock Grazing Management are intended to maintain healthy and productive public rangelands that are essential to support long-term grazing and stable communities that rely on the land.

Standards apply to the health of the land. All uses of public rangeland need to be conducted in such a manner that standards are achieved. Standards are measurable levels of resource quality, condition, or function upon which management decisions are based. It is BLM's policy to achieve rangeland health standards through management of existing uses when feasible.

Standards provide the technical and scientific basis for measuring progress towards healthy productive rangelands.

Disturbance regimes such as fire, climatic events, geology, the natural and historic range of variability and the potential of the area are considered when assessing rangeland health.

Standards are not expected to recreate theoretical "pristine" rangeland conditions that may have existed before livestock grazing began. It is assumed that most areas will be grazed unless there is no way to graze them and still achieve standards or the area is dedicated to other uses such as campgrounds, mining, and cultural or historical sites, like Pompeys Pillar.

At a minimum, State or regional standards must address:

- watershed function; - nutrient cycling and energy flow; - water quality; - habitat for endangered, threatened, proposed, Candidate 1 or 2 or special status species; and - habitat quality for native plant and animal populations and communities.

Guidelines for grazing management are the types of grazing management methods and practices determined to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting standards.

Guidelines are best management practices (BMP), treatments, and techniques and implementation of range improvements that will help achieve rangeland health standards. Guidelines are flexible and are applied on site specific situations.

Field managers must determine if standards are being met, consider what factors are causing standards not to be met, and take appropriate action to deal with those factors. If livestock grazing is preventing achievement of standards, then guidelines would be applied through terms and conditions. If an area is not meeting standards due to conditions that are not related to livestock grazing then the grazing management may not need to be adjusted.

Guidelines may be adapted or changed when monitoring or other information indicates the guidelines are not effective or a better means of meeting applicable standards exist.

The new grazing regulations under 43 CFR 4180.2(e) require that minimum, state or regional guidelines developed must address a list of attributes:

- maintain or promote adequate amounts of vegetative ground cover;
- maintain or promote subsurface soil conditions;
- maintain, improve or restore riparian-wetland functions;
- maintain or promote stream channel morphology;
- maintain or promote appropriate kinds and amounts of soil organisms, plants and animals;
- promote the opportunity for seedling establishment;
- maintain, restore, enhance water quality;
- restore, maintain or enhance T&E habitat;
- restore, maintain, enhance T&E candidate and special status species habitat;

- maintain or promote native populations and their communities;
- emphasize native species in the support of ecological function; and
- only incorporate the use non-native plant species when native species are not available or are incapable of achieving proper functioning condition.

Terms and conditions of permits and leases are specific actions in the permit or lease that implement the spirit and intent of the standards and guidelines.

Terms and conditions are site specific. They are determined by an interdisciplinary team in consultation with permittees and interested parties for each individual allotment. Terms and conditions are a tool to achieve resource conditions in the standard. They are meant to be modified if monitoring data shows those terms and conditions currently being applied are not achieving desired results.

I.2 Standards for Rangeland Health

Standards are statements of physical and biological condition or degree of function required for healthy sustainable rangelands. Achieving or making significant progress towards these functions and conditions is required of all uses of public rangelands. Historical data, when available, should be utilized when assessing standards.

MILES CITY STANDARD #1: Uplands are in proper functioning condition.

This means that soils are stable and provide for the capture, storage and safe release of water appropriate to soil type, climate and landform. The amount and distribution of ground cover (i.e., litter, live and standing dead vegetation, microbiotic crusts, and rocks/gravel) for identified ecological site(s) or soil plant associations is appropriate for soil stability. Evidence of accelerated erosion in the form of rills and/or gullies, erosional pedestals, flow patterns, physical soil crusts/surface sealing and compaction layers below the soil surface is minimal. Ecological processes including hydrologic cycle, nutrient cycle and energy flow are maintained and support healthy biotic populations. Plants are vigorous, biomass production is near potential and there is a diversity of species characteristic of and appropriate to the site.

As indicated by:

- Physical Environment
  - erosional flow patterns; - surface litter; - soil movement by water and wind; - infiltration; - soil crusting and surface sealing; - compaction layer; - rills; - gullies; - cover amount; and - cover distribution.
- Biotic Environment
  - community diversity; - community structure; - exotic plants; - photosynthesis activity; - plant status; - seed production; - recruitment; and - nutrient cycle.

MILES CITY STANDARD #2: Riparian areas and wetlands are in proper functioning condition.

This means that the functioning condition of riparian-wetland areas is a result of the interaction among geology, soil, water, and vegetation. Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid flood plain development; improve flood water retention and ground water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity.

The riparian/wetland vegetation is controlling erosion, stabilizing streambanks, shading water to reduce stream temperature in the summer and provide thermal protection in the winter, stabilizing shorelines, filtering sediment, aiding flood plain development, dissipating energy, delaying floodwater, and increasing recharge of ground water where appropriate to landform. The stream channels and flood plain dissipate the energy of high water flows and transport sediment appropriate for the geomorphology (e.g., gradient, size, shape, roughness, confinement, and sinuosity), climate, and landform. Soils support appropriate riparian-wetland vegetation, allowing water movement, filtering sediment, and storing water for later release. Stream channels are not entrenching and water levels maintain appropriate riparian/wetland species.

Riparian Areas are defined as an area of land directly influenced by permanent water. It has visible vegetation or physical characteristics reflective of permanent water influence. Lake shores and streambanks are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil.

Proper functioning condition of riparian areas are Indicated by:

- Hydrologic
  - floodplain inundated in relatively frequent events;
  - amount of altered streambanks;
  - sinuosity, width/depth ratio, and gradient are in-balance with the landscape setting (i.e., landform, geology, and bioclimatic region);
  - riparian zone width; and
  - upland watershed not contributing to riparian degradation.

- Erosion Deposition
  - floodplain and channel characteristics, i.e., rocks, coarse and/or woody debris adequate to dissipate energy;
  - point bars are vegetating;
  - lateral stream movement is associated with natural sinuosity;
  - system is vertically stable;

  - stream is in-balance with water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition); and
  - bare ground.

- Vegetation
  - reproduction and diverse age structure of vegetation;
  - diverse composition of vegetation;
  - species present indicate maintenance of riparian soil moisture characteristics;
  - streambank vegetation is comprised of those plants or plant communities that have deep binding root masses capable of withstanding high streamflow events;
  - utilization of trees and shrubs;
  - healthy riparian plants; and
  - adequate vegetative cover present to protect banks and dissipate energy during high flows.

MILES CITY STANDARD #3: Water quality meets Montana State standards.

This means that surface and ground water on public lands fully support designated beneficial uses described in the Montana Water Quality Standards.

As indicated by:

- dissolved oxygen concentration;
- pH;
- turbidity;
- temperature;
- fecal coliform;
- sediment;
- color;
- toxins; and
- others: ammonia, barium, boron, chlorides, chromium, cyanide, endosulfan, lindane, nitrates, phenols, phosphorus, sodium, sulfates, etc.

MILES CITY STANDARD #4: Air quality meets Montana State standards.

This means that air quality on public lands helps meet the goals set out in the State of Montana Air Quality Control Implementation Plan. Efforts will be made to limit unnecessary emissions from existing and new point or non-point sources.

Bureau of Land Management management actions or use authorizations do not contribute to air pollution that violates the quantitative or narrative Montana Air Quality Standards or contributes to deterioration of air quality in selected class areas.

As indicated by:

Section 176(c) Clean Air Act which states that activities of all Federal agencies must conform to the intent of the appropriate State Air Quality Implementation Plan and not:

- cause or contribute to any violations of ambient air quality standards;
- increase the frequency of any existing violations; and
- impede the State's progress in meeting their air quality goals.

MILES CITY STANDARD #5: Habitats are provided for healthy, productive, and diverse native plant and animal populations and communities. Habitats are improved or maintained for special status species (federally threatened, endangered, candidate or Montana species of special concern).

This means that native plant communities will be maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant lifeforms. Where native communities exist, the conversion to exotic communities after disturbance will be minimized. Management for native vegetation is a management priority. Ecological processes including hydrologic cycle and energy flow are maintained and support healthy biotic populations. Plants are vigorous, biomass production is near potential and there is a diversity of species characteristic of and appropriate to the site. The environment contains all the necessary components to support viable populations of a sensitive/threatened and endangered species in a given area relative to site potential. Viable populations are wildlife or plant populations that contain an adequate number of reproductive individuals distributed on the landscape to ensure the long-term existence of the species.

As indicated by:

- plants and animals are diverse, vigorous and reproducing satisfactorily, noxious weeds are absent or insignificant in the overall plant community;
- an effective weed management program is in place;
- spatial distribution of species is suitable to ensure reproductive capability and recovery; - a variety of age classes are present (at least two age classes);
- connectivity of habitat or presence of corridors prevents habitat fragmentation
- diversity of species (including plants, animals, insects and microbes) are represented; and
- plant communities in a variety of successional stages are represented across the landscape.

This will be accomplished by allowing progression of succession in conjunction with livestock grazing.

The following table lists the number of allotments assessed to date and the number of acres by category in the planning area:

Table I-1: Rangeland Conditions

Rangelands meeting all Standards		Rangelands making significant progress toward meeting Standards		Rangelands not meeting Standards, but changes have been made		Rangelands not meeting Standards and no changes have been made		Rangelands not meeting Standards due to causes other than livestock grazing		No Assessment Completed	
309 Allotments	309,658 Acres*	34 Allotments	41,153 Acres*	8 Allotments	3,675 Acres	1 Allotment	80 Acres*	2 Allotments	80 Acres*	16 Allotments	6,835 Acres*

Note:
Source: 2012 year end rangeland monitoring report.
* Due to acreage accounting differences in the PMWHR, the administrative pastures are double counted as an allotment and as part of the HMA.

I.3 Guidelines

Guidelines for grazing management are preferred or advisable approaches to grazing management practices determined to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting the standard(s).

Guidelines are provided to maintain or improve resource conditions in upland and riparian habitats available to livestock grazing. In both riparian and upland habitats, these guidelines focus on establishing proper functioning conditions. The application of these guidelines is dependent on individual management objectives. Desired future conditions in plant communities and streambank characteristics will be determined on a case-by-case basis.

MILES CITY GUIDELINE #1:

Grazing will be managed in a manner that will maintain the proper balance between soils, water, and vegetation over time. This balance varies with location and management objectives, but acceptable levels of use can be developed that are compatible with resource objectives.

MILES CITY GUIDELINE #2:

Manage grazing to maintain watershed vegetation, biodiversity, and flood plain function. Maintain riparian vegetative cover and structure to trap and hold sediments during run-off events to rebuild streambanks, restore/recharge aquifers, and dissipate flood energy. Promote deep-rooted herbaceous vegetation to enhance streambank stability. Where potential for woody shrub species (willows, dogwood, etc.) exists, promote their growth and expansion to aid in controlling animal access to streambanks, and to provide wildlife cover.

MILES CITY GUIDELINE #3:

Pastures and allotments will be identified based on their sensitivity and suitability for livestock grazing. Unsuitable or potentially unsuitable areas may be fenced into separate management areas, or managed more intensively.

MILES CITY GUIDELINE #4:

Based on long-term monitoring, management strategies for livestock grazing will ensure that long-term resource capabilities can be sustained over time. Natural and management induced streambank alteration, end of season stubble heights, and utilization of herbaceous and woody vegetation are critical factors which must be evaluated in any grazing strategy. These considerations are essential to achieving long-term vegetation or stream channel objectives.

Where appropriate, acceptable levels of streambank alteration and herbaceous/woody utilization should be identified on a site-specific basis, and used as terms and conditions. Compatible seasons and duration of use, rest periods, stocking rates, structural facilities, and management activities can then be designed to ensure that standards are achieved.

MILES CITY GUIDELINE #5:

Frequency of grazing and extent of defoliations will be managed to promote desired plants and plant communities, based on the rate and physiological conditions of plant growth. To meet these plant growth considerations, the following could be applied: No grazing unit should be grazed for more than half the growing season of key plant species. Periods of use throughout the growing season (early, mid, late) should be alternated from year to year. Defer each field from grazing until seeds set at least once every 3 years. The season of use should be alternated from year to year to allow for regeneration of woody and herbaceous species. Stages of plant growth, length of grazing period, target utilization levels, and frequency of grazing should be used to determine when livestock are ready to be moved to another grazing unit, instead of calendar dates. Caution should be used with early spring grazing use when soils and streambanks are wet and susceptible to compaction and physical damage that occurs with animal trampling. Likewise, late summer and fall treatments in woody shrub communities can result in excessive utilization.

MILES CITY GUIDELINE #6:

Monitoring is essential to determine if management guidelines and terms and conditions are meeting standards or making significant progress towards achieving standards. Monitoring data over time shall be used to make adjustments to grazing management as needed. In monitoring standards, Bureau of Land Management will consider the impacts of all multiple uses on public rangelands.

MILES CITY GUIDELINE #7:

The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect the ecological functions and processes of those sites.

MILES CITY GUIDELINE #8:

Locate new facilities (e.g., corrals, water developments) away from riparian-wetland areas.

MILES CITY GUIDELINE #9:

When provided, supplemental salt and minerals should not be placed adjacent to watering locations or in riparian-wetland areas so not to adversely impact streambank stability, riparian vegetation, water quality, or other sensitive areas. Generally, salt and minerals should be placed in upland sites to draw livestock away from watering areas or other sensitive areas and to contribute to more uniform grazing distribution.

MILES CITY GUIDELINE #10:

For guidelines for noxious weed management refer to "Guidelines for Coordinated Management of Noxious Weeds in the Greater Yellowstone Area." These guidelines provide a unified effort in developing a public awareness program; a prevention program; and a common inventory, mapping, monitoring, and reporting procedure. An overall management plan and specific action plans can be developed for logical units of land called weed management areas.

MILES CITY GUIDELINE #11:

Grazing management practices should maintain or promote the interaction of the hydrologic cycle, nutrient cycle and energy flow that will support the appropriate types and amounts of soil organisms, plants, and animals appropriate to soil type, climate and landform.

MILES CITY GUIDELINE #12:

Livestock management should utilize management practices for livestock grazing that meet or exceed those best management practices approved by the State of Montana in order to maintain, restore or enhance water quality.

MILES CITY GUIDELINE #13:

Grazing management practices should maintain or improve habitat for federally listed threatened, endangered, and special status plants and animals.

MILES CITY GUIDELINE #14:

Grazing management practices should maintain or promote physical, ecological and biological functions and conditions to sustain native plant and animal communities.

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