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To: Forest Supervisors
Modoc, Lassen, Plumas, Tahoe, Eldorado, LTBMU, Inyo, Stanislaus, Sierra,
Sequoia and Humboldt-Toiyabe National Forests

One of the requirements under the Sierra Nevada Forest Plan Amendment – Record of Decision (ROD) is to determine the ecological status of all key areas monitored for grazing utilization prior to establishing utilization levels (ROD, Appendix A, page 58). To assist in meeting this requirement, I am providing the attached assessment protocol, *Rapid Assessment to Select and Establish Monitoring Benchmarks on Key Use Grazing Areas for Meadow and Riparian Rangelands*. This is a protocol based on accepted assessment techniques that could be applied in a fairly rapid and effective manner. During the development of this protocol a draft of these assessment procedures was shared with the Forest Range staff for their review and comment.

I want to acknowledge and thank Tom Frolli, Zone Rangeland Management Specialist located on the Tahoe NF, for his time and effort in taking the lead on the development of this rapid assessment method.

If there are any questions concerning this protocol direct them to Tom Frolli, (530) 478-6242, or Steve Bishop, (707) 562-8689.

/s/Berne Weingardt(for)

BRADLEY E. POWELL
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**Rapid Assessment to Select and Establish
Monitoring Benchmarks on Key Use Grazing Areas
For Meadow and Riparian Rangelands**

**Pacific Southwest Region - Sierra Nevada National Forests
June 2001**

The *Sierra Nevada Forest Plan Amendment, Record of Decision (January 2001)* directs the Sierra Nevada forests to determine ecological status on all key use grazing areas, as soon as practicable and prior to establishing proper utilization levels. Established utilization levels are based on the applied land allocations for the site, hydrological function, seral status, and vegetative type. Each forest is further directed to analyze key areas every 3 to 5 years to determine if management objectives are being achieved (re: ROD -- Grazing Permits, pg. 49; and Appendix A -- Riparian Conservation Objective #5, pg 58).

To accomplish this progressive time schedule, a rapid assessment protocol is described here for determining apparent ecological conditions for each area. Utilization and residual forage standards would be based on the classification of a key area as being either in late seral, mid seral or early seral ecological condition. This initial classification would focus specifically on the soil and vegetation ecological indicators described below. Soil stability would be given the primary consideration in determining whether a key area is in desired condition. Once a key area is selected and physically monumented it is referred to as a utilization benchmark. Utilization monitoring would be conducted using the key species concept on benchmarks selected. The rapid assessment process described below is based upon several technical reference guides found in the *R5 Rangeland Analysis and Planning Guide, 1997* (R5-EM-TP-004), *California Rangeland Interagency Video Series* (R5 USFS) and *R5 Range Meadow Monitoring Project* (2001). Field forms for this process are included below or found in the *Rangeland Guide*.

Note to Reader: If you have current range analysis which has already determined the ecological status of an particular key area and have adequate documentation of the study site than this protocol is not be necessary to determine a proper utilization level. Use the *Benchmark Analysis Summary* to document the proper use criteria, grazing use method, key species and transect location.

Conversely, this protocol is not intended to account for all the resource inventories the may be required during an allotment NEPA analysis. A more detailed and interdisciplinary analysis would include surveys of critical areas, presence or absence of sensitive or federally listed animals and plant species, noxious weeds and invasive plants, heritage resource impacts, Range Best Management Practices for water quality, range facility inventories and stream condition inventories.

Definition of Terms

Key Area: A key area is a portion of the range which because of its location, grazing and browsing value, and/or uses, serves as an indicative sample of rangeland condition, trend, or degree of seasonal use.

Key Species: Key management species are plant species on which management of a specific unit is based. Key forage species are plant species used as an indicator to the degree of use of associated species. Those species which must, because of their importance, be considered in the management program. There can be several key species or different key species for each season.

Critical Area: An area which must be treated with special consideration because of inherent site factors, size, location, condition, values, or significant potential conflicts among uses. Critical sites should be evaluated separately from the remainder of the management unit because they contain special or unique values.

Schedule of Work

Develop a priority schedule of work for all active allotments on the forest beginning in 2001 and ending in 2003. Give a weighted ranking to each active allotment based on the sum of one or more applicable criteria for a given allotment. Some suggested criteria used for this ranking in decreasing order of weighted importance included:

- (++++) Allotments scheduled for NEPA or Condition & Trend Analysis in FY2001
- (+++) Allotments scheduled for NEPA analysis in FY2002
- (++) Allotments with completed NEPA or Condition & Trend Analysis
- (+) Remaining active allotments on NEPA schedule

Selection of Key Area Benchmarks

The key use area concept is described in *Utilization Studies and Residual Measurements* (BLM TR 1734-3). A visual demonstration of the process and practical adaptation to rangelands in California is presented in the video *Selecting Key Areas and Key Species* (1999). To assure a consistent approach to benchmark selection and evaluation, range managers, interdisciplinary teams and interested cooperators need to study these technical guides before beginning the tasks. Key points made from the video demonstrate that well selected benchmarks should:

- Reflect acceptable grazing levels to achieve desired conditions
- Contain key forage species in adequate abundance to apply a use standard
- Be well monumented and photographed on the ground and documented in the record
- Be accurately delineated on an aerial photo or map and geolocated for GIS application
- Have a sketched layout of the monitoring transect
- The selection of the location needs to be agreed upon collaboratively by the assessment team and grazing permittee.

Review existing planning records for historic utilization mapping, condition and trend studies, allotment suitability maps, and GIS data layers to locate key grazing areas. **Confirm current allotment grazing patterns and representative sites with the grazing permittee(s) and other resource specialists.** Select one or more potential key areas per grazing unit within the allotment.

Verifications of Site Selection

The surest way to identify livestock preference use areas for selection of a key use benchmark is near the end of the grazing season while the livestock are still present or sign of livestock is still fresh. Note the presence or absence of where livestock grazing, loaf and water. Use the Landscape Appearance Method grazing and browsing utilization classes to develop your skills to ocular estimate of grazing use. These basic skills are necessary to make accurate observations and conclusions about onsite vegetation disturbances, properly select key area benchmarks and reliable field reconnaissance for utilization mapping. Adjust or reset benchmark transect locations, if necessary, as you gain more knowledge about a specific key use area.

Field Assessment of Benchmarks

Limit field time for the rapid assessment to 2 hours per benchmark. A minimum documentation and assessment of benchmark sites would include the following steps to be completed on site:

STEP 1. Categorize the selected site by vegetation types described in the *R5 Rangeland Plant List (2000)*. Classify meadows by elevation, topographic position, hydrogeomorphic class and hydrologic category as provided for in the sampling methods section. Use a topographic map, GPS receiver or altimeter to determine the sites elevation. Use a soil auger to validate soil saturation and soil mottling depths. Document the meadow naming system on the *Benchmark Analysis Summary* form

STEP 2. Monument and document starting and ending point of a paced transects across the length of the selected homogeneous plant community within the selected key area. Geolocate and map the starting point. Record the transect bearing, sampling interval and length of transect. Use the *Study Location & Documentation* form.

STEP 3. Establish a photo point along the transect bearing from the starting point and showing the witness post or tree. Use the *Benchmark Photo Identification* form. A digital camera is preferable.

STEP 4 (Optional). Assess proper functioning condition of the meadow or riparian complex using either the *Lotic Riparian Standard Checklist* for perennial streams and springs or the *Lentic Riparian-Wetland Standard Checklist* for meadows, seeps, and fens. In large meadow complexes, with stream systems, use both methods. These are team observation checklists. If you lack experience to make a specific observation note the need for additional specialist review and concurrence under Summary Determination, pg 12..

STEP 5. On key areas that have had condition-and-trend frequency studies established within the last three years, use existing data from the *R5 Range Monitoring Project (2001)* for determining ecological state and percent ground cover. Establish a utilization transect within the same plant community.

On key use wet and moist meadows, that will not have a condition-and-trend frequency study, complete a paced frequency vegetation transect to determine the graminoid to forb ratio and percent ground cover on each benchmarked plant community. Use the *Paced Frequency* form and protocol described below to complete this survey.

On key use dry meadows and dry terraces complete a *Step-Point* or *Point-Intercept* transect as described in the *Rangeland Guide*. Use the data for indicators in STEP 6.

STEP 6. Assess ecological condition of the meadow or riparian complex using the soil and vegetation ecological indicators from the *Ecological Condition Checklist*. Use team observation for these subjective indicators.

STEP 7. Use the *Benchmark Analysis Summary* form to document (a) the Proper Functioning Condition Summary Determination; (b) Bank Stability Rating; (c) Soil Stability Rating; (d) Vegetative Ecological Condition rating; (e) Ground Cover; and (f) Note the apparent trend of soil and vegetative conditions going toward or away from the range of natural variability for the vegetative community. Provide the reasons or criteria for why the area was selected as a key use benchmark. List the observations and rationale for this determination for Proper Use Criteria on the *Benchmark Analysis Summary* form. **Make a team determination of ecological condition and Proper Use Criteria before leaving the site.**

Meadow Classification

The *Region 5 Range Monitoring Project* describes and classification of Sierran meadows has been an on-going process. Use the following meadow classification hierarchy to describe and classify the benchmark site selected by elevation, topographic position, hydrogeomorphic class and hydrologic category.

Elevation (Account for latitudinal variation):

- Lower montane - 4,000 to 6,000 ft.
- Upper montane - 6,000 to 8,000 ft.
- Subalpine - 8,000 to 9,500 ft.

Topographic Position (Use the most dominant feature):

- **Slope** - formed below seeps or springs, and may or may not be strongly sloped
- **Basin** - formed in old lakes or behind terminal moraines
- **Stream** - formed along either permanent or intermittent streams, aka stringer meadows

Hydrogeomorphic Classes (Judge the site using a panoramic view and topographic maps):

- **Raised-convex** - sites occurring as a mound above the surrounding meadow. These are bog sites, which accumulate peat and obtain water and nutrients primarily through precipitation. These sites are uncommon in the Sierra. These sites have low pH, mosses dominate these sites including the mosses in the genus *Sphagnum*.
- **Hanging** - a site occurring on a slope and constantly watered by flows from springs and seeps. These sites may be fens if peats are greater than 15 cm in thickness.
- **Lotic** - a site characterized by moving water across the surface and constantly watered by flows from upstream. They may be fens or wet meadows.
- **Sunken-concave** - a site characterized by ponded water and seasonally recharged by flows from upstream. Generally these sites are in the wet meadow category.
- **Normal** - a site that obtains water from the water table, is recharged by precipitation occasionally, and may dry in the surface during summer. These are typically meadows on floodplains or terraces, often along stream bottoms or stringer meadow systems.
- **Xeric** - a site occurring on a slope, bench, or edge of a meadow, seasonally recharged by precipitation, and becoming quite dry during summer. These sites obtain water solely from precipitation or have water tables deeper than 100 cm.

Hydrologic Category (Depth to Soil Saturation during mid growing season):

- **Wet Meadows** have with soil saturation and/or soil mottling at a depth of less than 50 cm.
- **Moist meadows** have soil saturation or soil mottling greater than 50 cm and less than 100 cm depth in mid growing season.
- **Dry meadows** have soil saturation and mottling greater than 100 cm depth.

Vegetation Series:

- A vegetation series is named for the dominant plant species by canopy cover. List associated species in order of comparative abundance. There are currently 74 vegetation series described in the *Region 5 Range Monitoring Project*.

Naming system. A category is assigned at each level of the hierarchy. If a meadow is at 7,000 ft elevation it is MONTANE. If it has a stream association its topographic position is STREAM. If it obtains water from the water table its hydrogeomorphic class is NORMAL. If the depth to soil saturation is less than 50 cm its saturation depth is WET. If is dominated by Nebraska sedge its series is NEBRASKA SEDGE. *Example: Montane/stream/normal/wet/Nebraska sedge*

Sampling Methods

Landscape Appearance Method (ref. BLM Technical Report 1734-3). This method uses an ocular estimate of forage utilization based on the general appearance of the rangeland. Utilization levels are determined by comparing observations with written descriptions of each utilization class. The method is adapted to areas where perennial grasses, forbs, and/or browse plants are present and to situations where utilization data must be obtained over large areas using only a few examiners. Seven utilization classes are used to show relative degree of use. Each class represents a numerical range of percent utilization. Herbaceous forage plant types are referred to as rangeland in the utilization class. Browse utilization class descriptions follow:

(0-5%) The rangeland shows no evidence of grazing use or only negligible use -OR- Browse plants show no evidence of use; or only negligible use.

(6-20%) The rangeland has the appearance of very light grazing. The herbaceous forage plants may be topped or slightly used. Current seedstalks and young plants are little disturbed -OR- Browse plants have the appearance of very light use. The available leaders of browse plants are little disturbed.

(21-40%) The rangeland may be topped, skimmed, or grazed in patches. The low value herbaceous plants are ungrazed and 60 to 80 percent of the number of current seedstalks of herbaceous plants remain intact. Most young plants are undamaged -OR- There is obvious evidence of leader use. The available leaders appear cropped or browsed in patches and 60 to 80% of the available leader growth of browse plants remains intact.

(41-61%) The rangeland appears entirely covered as uniformly as natural features and facilities will allow. Fifteen to 25 percent of the number of current seedstalks or herbaceous species remain intact. No more than 10 percent of the number of low-value herbaceous forage plants are utilized -OR- Browse plants appear uniformly utilized and 40 to 60% of the available leader growth of browse plants remains intact.

(61-80%) The rangeland has the appearance of complete search. Herbaceous species are almost completely utilized, with less than 10 percent of the current seedstalks remaining. Shoots of rhizomatous grasses are missing. More than 10 percent of the number of low-value herbaceous forage plants have been utilized -OR- The use of browse gives the appearance of complete search. The preferred browse plants are hedged and some plant clumps may be slightly broken. Nearly all available leaders are used and few terminal buds remain on browse plants. Between 20 and 40% of the available leader growth of browse plants remains intact.

(81-94%) The rangeland has a mown appearance and there are indications of repeated coverage. There is no evidence of reproduction or current seedstalks of herbaceous species. Herbaceous forage species are completely utilized. The remaining stubble of preferred grasses is grazed to the soil surface -OR- There are indications of repeated coverage. There is no evidence of terminal buds and usually less than 20% of available leader growth on browse plants remains intact. Some patches of second and third years' growth may be browsed. Hedging is readily apparent and the browse plants are more frequently broken. Repeated use at this level will produce a definitely hedged or armored growth form.

(95-100%) The rangeland appears to have been completely utilized. More than 50 percent of low-value herbaceous plants have been utilized -OR- Less than 5% of the available leader growth on browse plants remains intact. Some, and often much, of the more accessible second and third years' growth of the browse plants has been utilized. All browse plants have major portions broken.

Sampling Methods - continued

Proper Functioning Condition. Proper Functioning Condition process (BLM TRs 1737-9, 1739-11, & 1739-15) is used to assess the hydrologic function of meadow, riparian, wetland and other special aquatic features during range management analysis. Since natural meadow and riparian areas are characterized by the interactions of vegetation, soils, and hydrology, the process of assessing and making summary determinations on whether an area is functioning properly requires an interdisciplinary team of specialists in vegetation, soils, and hydrology. For the rapid assessment, if the analysis team has limited skills in any of these three fields of expertise, note that is a tentative determination and that a final summary determination will require further review by the appropriate specialist(s) during NEPA analysis.

Paced Frequency. Paced frequency will be used to determine the graminoid to forb ratio for wet and moist meadows sites by lifeform group and species count. The *R5 Range Monitoring Project* (2001) has developed a grass to forb ratio index which can rate the probable ecological status of a sampled community type based upon lifeform abundance and community diversity. Taxonomic identification of individual species may be done but is not required. The observer must be able to distinguish the different number of species within the following life forms: cyperaceae, juncaceae, poaceae, and forb. Also, It is also recommended that shrubs and trees are noted.

Sampling is based on counting the total number of different species, within a lifeform group using a 5X5 cm sample frame. A minimum of 60 sample frames are read within a homogeneous plant community. At the current time, lump all grass and grasslike life forms together for the purpose of calculating the grass:forb ratio. Further statistical analysis will be continued using data collected on multiple life forms therefore the *Region 5 Range Monitoring Project* is requesting that data be gathered to distinguish between cyperaceae, juncaceae and poaceae.

Example: Frame #1 equals 2 counts for 2 distinct grass species, 1 count for 1 distinct sedge species and 2 counts for 2 distinct forb species. The grass/grasslike to forb ratio for that sample frame is 3:2 or 67%. All other attributes considered, this site would be rated as high seral ecological condition.

Step Point Composition. Paced point sampling will be used for dry meadows to determine apparent ecological status based upon species composition. Taxonomic identification of plant species to the genus level is necessary and identification to the species level is preferable. Sampling is based on counting the total number of hits on different species, litter, bare ground or rock using a survey pin off the end of the selected toe point. A minimum of 100 sample points are read within a homogeneous plant community. These methods are intended to be used as a vegetation indicator (e.g. *Ecological Condition Checklist*). They are not intended to be used as a trend transect. Combine use with the monumented utilization transect line as described in *Selecting Key Areas and Key Species* video. Refer to *Sampling Vegetation Attributes* (BLM TR 1734-4) for conducting the paced frequency or step point methods.

BENCHMARK ANALYSIS SUMMARY

(ref. R4 Amendment FSH 2209.21-93-1)

Forest _____ District _____ Date _____

Examiner (s) _____ Range Mgt Unit _____

Name and Location of Benchmark Area _____

Meadow Classification Name _____

Proper Functioning Condition: Functional -or- At Risk -or- Nonfunctional -or- Unknown (*circle one*)

Trend if Functionally At Risk: Upward -or- Downward -or- Not Apparent (*circle one*)

Bank Stability: Stable Banks -or- Vulnerable Banks -or- Unstable Banks (*circle one*)

Soil Stability: No Erosion -or- Erosion Evident -or- Erosion Widespread (*circle one*)

Potential Ground Cover % _____ Present Ground Cover % _____

Vegetation Seral Stage: Late Seral -or- Mid Seral -or- Early Seral (*circle one*)

Apparent Soil Trend toward -or- away Apparent Vegetative Trend toward -or- away
(*circle one*) (*circle one*)

Cause of Soil Disturbance and Movement _____

Key Species _____

Principal Forage Species _____
(in order of comparative abundance)

Reasons or criteria why this area is selected as a benchmark _____

List Proper Use Criteria, as determined by the Assessment Team

Studies to be read on this benchmark area _____

STUDY LOCATION & DOCUMENTATION (BLM TR 1734-4)

STUDY METHOD											STUDY NUMBER										
RMU											USE AREA										
DISTRICT							NATIONAL FOREST							WATERSHED NAME & NUMBER							
SOIL TYPE											PLANT ASSOCIATION										
DATE ESTABLISHED					ESTABLISHED BY						MAP REFERENCE										
ELEVATION				SLOPE				EXPOSURE				AERIAL PHOTO REFERENCE									
TOWNSHIP			RANGE			SECTION			1/4			LATITUDE				LONGITUDE					
LOCATION																					
											1. DISTANCE & BEARING TO BENCHMARK										
											2. TRANSECT BEARING (AZIMUTH)										
											3. BEARING LANDMARK FEATURE										
											4. LENGTH OF TRANSECT										
											5. PLOT/FRAME SIZE										
											6. SAMPLING INTERVAL										
											7. TOTAL NO. OF SAMPLES										

Scale: _____

BENCHMARK PHOTO IDENTIFICATION

(BLM Technical Reference 1734-4, pg 159)

DATE

BENCHMARK NUMBER

BENCHMARK NAME

RANGELAND MANAGEMENT UNIT

RANGER DISTRICT

Lotic Riparian Standard Checklist
(Alluvial Systems with Moving Water)

Proper Functioning Condition
BLM Technical Report 1737-9

Name of Riparian-Wetland Area: _____

Date: _____ Area/Segment ID: _____ Miles: _____

Team Observers: _____

Yes	No	N/A	HYDROLOGIC
			1) Floodplain inundated in "relatively frequent" events (1-3 years)
			2) Active/stable beaver dams
			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
			4) Riparian zone is widening or has achieved potential extent
			5) Upland watershed not contributing to riparian degradation

Yes	No	N/A	VEGETATION
			6) Diverse age-class distribution (recruitment for maintenance/recovery)
			7) Diverse composition of vegetation (for maintenance/recovery)
			8) Species present indicate maintenance of riparian soil moisture characteristics
			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow
			10) Riparian plants exhibit high vigor
			11) Adequate vegetative cover present to protect banks and dissipate energy during high flows
			12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris

Yes	No	N/A	SOILS-EROSION DEPOSITION
			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
			14) Point bars are re-vegetating
			15) Lateral stream movement is associated with natural sinuosity
			16) System is vertically stable
			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Lentic Riparian-Wetland Standard Checklist
(Depositional Systems with Standing Water)

Proper Functioning Condition
BLM Technical Report 1737-11

Name of Riparian-Wetland Area: _____

Date: _____ Area/Segment ID: _____ Miles: _____

Team Observers: _____

Yes	No	N/A	HYDROLOGIC
			1) Riparian-wetland area is saturated at or near the surface or inundated in "relatively frequent" events (1-3 years)
			2) Fluctuation of water level is not excessive
			3) Riparian zone is widening or has achieved potential extent
			4) Upland watershed not contributing to riparian degradation
			5) Water quality is sufficient to support riparian-wetland plants
			6) Natural surface or subsurface flow patterns are not altered by disturbance (i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
			7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway)
Yes	No	N/A	VEGETATION
			8) Diverse age-class distribution (recruitment for maintenance/recovery)
			9) Diverse composition of vegetation (for maintenance/recovery)
			10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
			11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flow (e.g., storm events, snowmelt)
			12) Riparian-wetland plants exhibit high vigor
			13) Adequate vegetative cover present to protect shorelines/soil surface and dissipate energy during high wind and wave events or overland flows
			14) Frost or abnormal hydrologic heaving is not present
			15) Favorable microsite condition (i.e., woody debris, water temperature, etc.) is maintained by adjacent site characteristics
Yes	No	N/A	SOILS-EROSION DEPOSITION
			16) Accumulation of chemicals affecting plant productivity/composition is not apparent
			17) Saturation of soils (i.e., ponding, flooding frequency and duration) is sufficient to compose and maintain hydric soils
			18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
			19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
			20) Islands and shoreline characteristics (i.e., rocks, course and/or large woody debris) adequate to dissipate wind and wave event energies

Remarks

Lotic or Lentic Riparian (Circle One)

Summary Determination

Was this determination by an Interdisciplinary Team? yes no (circle one)

If no, list the specialists which are necessary for final review and concurrence with this determination.

Functional Rating:

Proper Functioning Condition _____
Functional -- At Risk _____
Nonfunctional _____
Unknown _____

Trend for Functional -- At Risk:

Upward _____
Downward _____
Not Apparent _____

Are factors contributing to unacceptable conditions outside Forest Service's control or management?

Yes _____
No _____

If yes, what are those factors?

_____ Dewatering _____ Mining activities _____ Watershed condition
_____ Dredging Activities _____ Road encroachment _____ Land ownership
_____ Other (specify) _____

ECOLOGICAL CONDITION CHECKLIST
Rapid Assessment for Soil and Vegetation Indicators
Riparian Areas, Wet Meadows and Special Aquatic Features

Forest _____ District _____ RMU _____

Benchmark _____ By _____ Date _____

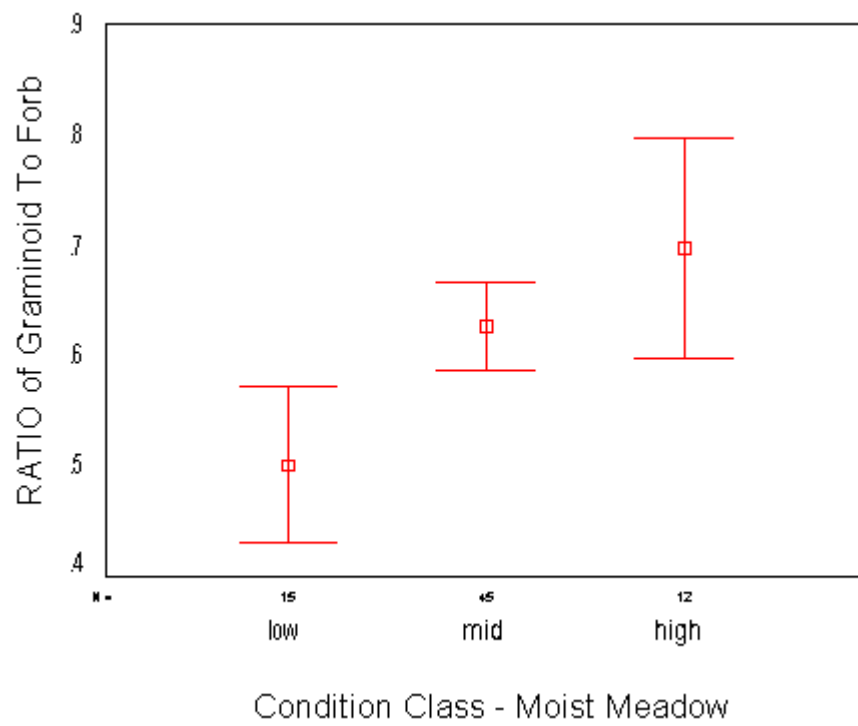
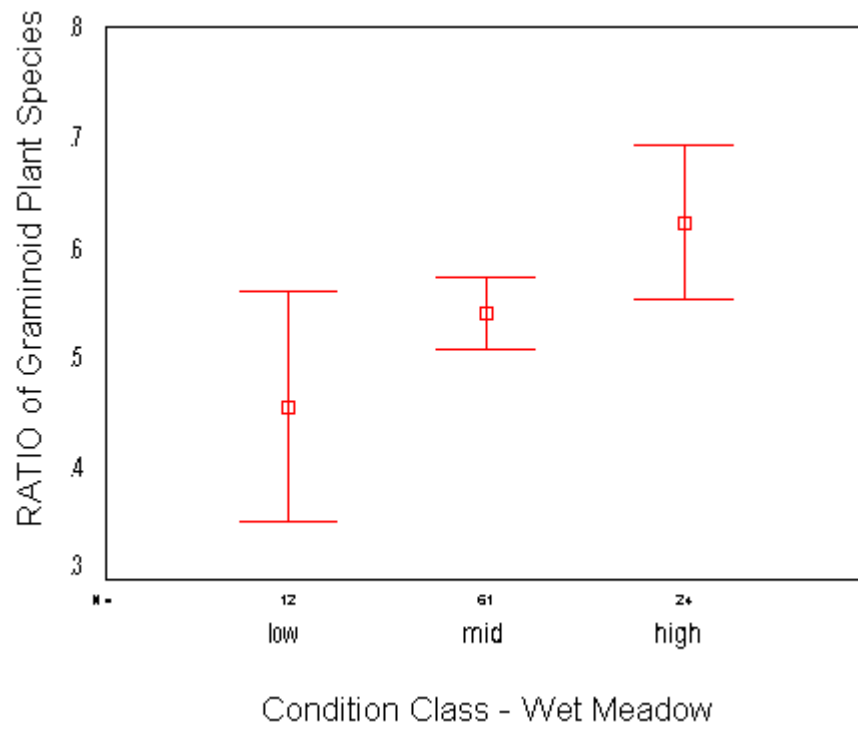
Check Observation	BANK STABILITY is within the range of natural variability as site conditions allow per R5 SCI Protocol and Definitions
	<u>Stable Banks</u> : Streambanks and lakeshores are stable with low vulnerability to become unstable. A,B,C, and E channels are classified as "stable". No signs of instability occur, such as bare or exposed banks, cracking or bank collapse. D,F, & G channels are not present.
	<u>Vulnerable Banks</u> : Streambanks and lakeshores are classified as "vulnerable". Instability occurs, as evidenced by bare and exposed banks with sections that are collapsing, and some cracking along Streambanks may be evident. D,F, and G channels may be present.
	<u>Unstable Banks</u> : Streambanks and lakeshores are classified as "unstable". Instability is evidenced by collapsing Streambanks commonly occurring in all stream types. D,F, and G channels are present.
	SOIL STABILITY meadows and drainways reflect site capability for the landform, soil type & climate. See Also R5 BMP G24 Range Management
	<u>No Erosion Evident</u> : Soil cover is $\geq 95\%$. Rills and gullies are absent or features of old rills and gullies are blunted and muted. Trails are few, shallow (≤ 6 inches) and not growing. No pedestalled plants, sods or rock features. Sods are intake and continuous. Accelerated erosion is evident in less than 5% of the riparian complex.
	<u>Accelerated Erosion Evident</u> : Soil cover is $\geq 90\%$. Rills and gullies are small and are not connected into a dendritic pattern. Trails are becoming prominent but are not growing. Some pedestalled plants, sods or rock features. Sods are punched with small to moderate amounts of exposed soils. Accelerated erosion is evident over 5 to 10% of the riparian complex.
	<u>Accelerated Erosion Widespread</u> : Soil cover is $< 90\%$. Rills and gullies are well defined, are actively expanding, and may form a dendritic pattern. Trails are ≥ 12 inches and/or numerous. Obviously pedestalled plants, sods or rock features. Sods are punched, torn and discontinuous. Accelerated erosion is evident over more than 10% of the riparian complex.

Field Notes:

Riparian Areas, Meadows and Special Aquatic Features - continued

Check Observation	VEGETATION FOR WET, MOIST & DRY MEADOWS and drainways reflect site capability for the landform, soil type & climate.
	<p><u>Late Seral Ecological Condition:</u> No more than 30% of vegetation consists of early-seral stage plants, and 50% or more of the vegetative composition is native mid- to late seral stage plants -OR- The graminoid to forb diversity ratio is $\geq 55:45$ for wet meadows and $\geq 66:34$ for moist meadows.</p> <p>Mid- to late-seral species are well distributed and show evidence of reproduction and good vigor. Woody riparian species are present on sites capable of sustaining woody riparian species, and exhibit growth patterns consistent with adequate riparian soil moisture. Woody riparian species are well distributed with a wide range of size classes. Plants show evidence of reproduction and good vigor.</p>
	<p><u>Mid Seral Ecological Condition:</u> Between 25-49% of vegetation is mid- to late seral native plants. Mid- to late-seral species are fragmented, but reproducing. Some show good vigor. -OR- The graminoid to forb diversity ratio is between 40:60 and 55:45 for wet meadows and between 55:45 and 65:35 for moist meadows.</p> <p>Woody riparian species are present on sites capable of sustaining woody riparian species, but with fragmented distribution or clumping. The range of size classes may be limited. Some plants show good vigor, others may show signs of stress, but are reproducing.</p>
	<p><u>Early Seral Ecological Condition:</u> Less than 25% of vegetation is mid- to late-seral native plants. Mid- to late-seral species are clumped and are not reproducing. Plants show poor vigor. -OR- The graminoid to forb diversity ratio is $< 40:60$ for wet meadows and $< 54:46$ for moist meadows.</p> <p>Woody riparian species are clumped and are not reproducing. Plants show poor vigor, with a narrow range of size classes. Woody riparian species may be absent on sites capable of sustaining woody riparian species.</p>

Field Notes:



Paced Frequency or Step Point Record

Benchmark	Date	Examiner	RMU Name	RMU Number
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Method Used: Frequency or Point Intercept (<i>circle one</i>)	Required Sample Size: 60 Quadrates -or- 100 Point Intercepts	Quadrat Size 5 X 5 CMs
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Plant Count	Species Group	Quadrat Number															Total/ %				
		0	5	10	15	20	0	5	10	15	20	0	5	10	15	20					
	Grass & Grasslikes																				
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
	Forbs																				
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
	Shrubs & Trees																				
1																					
2																					

Ground-Level Cover

Vegetation (Basal)		Moss & Lichens		Litter		Bare Ground		Gravel/Stone	
1)									
2)									
3)									
Hits	% Cover	Hits	%Cover	Hits	% Cover	Hits	% Cover	Hits	% Cover

Count on different grass/grasslike Species	Total	%	Remarks:	
Count on different forb species				
Count on different shrub/tree species				