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Scoping Comments on the proposed Brock Cattle & Horse Grazing Allotment Project EA

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The Oregon Chapter Sierra Club and the League Of Wilderness Defenders – Blue Mountains Biodiversity Project express our appreciation of the agency’s decision to extend the scoping comment period for the Brock Cattle and horse Grazing Allotment EA until February 5, 2009, due to the original period of public review and comment occurring during the winter season holidays.

Our organizations have reviewed the Umatilla NF’s scoping letter dated December 9, 2008 giving notice of the proposed development of a new Allotment Management Plan for the area referred to as the “Brock Cattle and Horse Grazing Allotment.” We have the following comments on the proposed allotment management project EA, submitted on behalf of the Oregon Chapter Sierra Club and the League Of Wilderness Defenders – Blue Mountains Biodiversity Project.

The Oregon Chapter Sierra Club represents over 23,000 members throughout Oregon, including the Club’s Juniper Group, which has over 1,000 members throughout central and eastern Oregon. LOWD-Blue Mountains Biodiversity Project has many members and volunteers throughout the Northwest. Sierra Club members feel strongly about nature, wilderness, natural forest ecosystems - including ecological recovery, wildlife, fisheries, and the environment. Sierra Club members regularly enjoy hiking, camping, wildlife watching, birding, ecological study, and photography within the national forests of central and eastern Oregon, including the allotment areas within the Umatilla National Forest. Members and volunteers of the LOWD-Blue Mountains Biodiversity Project regularly use the Umatilla National Forest, including the allotment areas, for hiking, ecological study, watching wildlife, viewing forest native botanical diversity, and avian species study. The Sierra Club and the Blue Mountains Biodiversity Project have long-standing and well-documented interest in the management of the forests in which the proposed continued livestock grazing is located. In addition to our comments which follow below and our Exhibit A, our organizations herein reference and concur with comments submitted by the Hells Canyon Preservation Council (HCPC).

Adequate Depth and Range of NEPA Analysis

The Brock Allotment encompasses approximately 927 acres of Umatilla National Forest public lands and another 295 acres of private lands within Union County, Oregon. The allotment information and

maps provided with the scoping notice are poor at best to adequately ascertain possible areas of concern. However it appears that waterways in or near the area may include Jarboe, Sheep, and Little Lookingglass Creeks. It also appears that the allotment area may include travel and dispersal routes for wildlife moving between and from the relatively nearby Wenaha Tucannon and North Fork Umatilla Wilderness Areas. We request that whether this analysis project is conducted with an EIS (recommended) or an EA, that the agency clearly disclose and assess the locations and conditions of:

- All inventoried roadless and uninventoried unroaded areas that are within or adjacent to the allotment area;
- The names and status of all waterways in, adjacent to, and downstream from the allotment, including the Oregon State 303(d) listed status of streams in the greater allotment area and downstream watersystems;
- Old growth areas, RHCAs, and areas of special concern that may exist within or adjacent to the allotment area;
- Wildlife habitat and corridor areas within and adjacent to the allotment;
- Terrestrial wildlife and avian species of concern with current and historical habitat within or nearby the allotment area (including wilderness area species in the greater area);
- Past, current, and foreseeable future predator and animal control management actions and planning in the allotment area and throughout the greater adjoining Umatilla NF Walla Walla District, as well as existent programs on private allotment lands, area state lands, and within Union and Troy Counties;
- Aquatic species that currently or historically have habitat within the greater allotment area (again including aquatic species that may be found in the two nearby wilderness areas and/or downstream waterways);
- Salmonid watersystem restoration and recovery efforts throughout the greater allotment area;
- Native plant species of concern that current exist or historically were found within or nearby the allotment area;
- Locations of invasive exotic plants within, adjacent to, or downstream from the allotment area, including locations and extent of these on both public and private lands within and nearby the allotment;
- Past, current, and likely future management actions addressing invasive exotic plants both within the allotment and in the overall greater area;
- Allotment use-compliance monitoring for the past 10 years, allotment resource trends, direct and cumulative impacts from past and current livestock grazing in, nearby, and downstream from the allotment, and all significant resource issues of concern. Are RMOs for the greater allotment area, including downstream of the allotment, being met?, etc.;
- Monitoring frequency and effectiveness of agency efforts to prevent resource damage and permittee compliance with allotment management goals and provisions;

III. An EIS or EA should be prepared pursuant to NEPA.

NEPA requires the Forest Service to prepare an EIS for all major federal actions that “may significantly affect the quality of the human environment.” 42 U.S.C. § 4332(2)(C). If an agency decides not to prepare an EIS, it must supply a “convincing statement of reasons” to explain why a project’s impacts are insignificant. *Blue Mtns. Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998) (also holding that a “plaintiff need not show that significant effects will in fact occur” that it is enough for the plaintiff to raise “substantial questions whether a project may have a significant effect” on the environment). Because this decision includes broad-scale grazing and affects populations of sensitive species, at least an EA should be prepared to determine whether there are significant impacts. When

completing the EIS or EA, please be sure to analyze the following issues, which were given inadequate treatment in the scoping letter.

- Ensure that the analysis adequately assesses and discusses the cumulative effects of continued grazing. The analysis should include quantifying previous and cumulative impacts when possible.
- Ensure that the preferred alternative meets the mandatory standards in INFISH and PACFISH as applicable.
- Conduct viability assessments for regional fish, wildlife, and plant species populations most affected by livestock grazing.
- Evaluate the population trends of all management indicator species, based on field monitoring and relationships of populations to habitat changes caused by grazing.
- Evaluate not only the effects of livestock grazing on riparian areas, but also on the health of upland areas.
- Discuss all aspects of riparian conditions, including the presence of water quality- limited streams and whether livestock grazing contributes to non-complying water parameters such as temperature, turbidity, bank stability, and any changes in density or type of riparian vegetation that have occurred either due to previous grazing or that are likely to occur as a result of the proposed project.
- Discuss how and when scheduled TMDLs will be integrated into allotment planning.
- Discuss how far current soil conditions deviate from their potential natural conditions and how long the Forest Service anticipates it will take to restore soils to normal function.
 - It is essential to disclose and address the full impacts of livestock grazing on soils, soil microbial communities, soil hydrological functioning, and seasonal water retention – addressing current conditions in comparison with ungrazed areas and historical pre-grazing conditions.
- Discuss the project area's suitability and capability for grazing. Please provide a citation regarding whether the allotments are capable and suitable for domestic livestock grazing, when such determination was made, and based upon what site-specific analysis and NEPA process?

We request the agency include in its NEPA analysis disclosures of the range of scientific research recommendations, and any range of related controversy, pertaining to livestock grazing and management resource objectives in the greater allotment area. We also request the NEPA analysis include a full range of reasonable alternatives, including eliminating livestock grazing from the allotment area, both in whole and part.

Reasonable Range of Alternatives

NEPA requires that federal agencies provide a detailed evaluation of alternatives to the proposed action in every NEPA document. 42 U.S.C. § 4332; 40 C.F.R. § 1502.14(a). This discussion of alternatives is essential to NEPA's statutory scheme and underlying purpose. *See, e.g., Bob Marshall Alliance v. Hodel*, 852 F.2d 1223, 1228 (9th Cir. 1988), cited in *Alaska Wilderness Recreation & Tourism Ass'n v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995). Indeed, NEPA's implementing regulations recognize that the consideration of alternatives is "the heart of the environmental impact statement." 40 C.F.R. § 1502.14.

The Forest Service must "[r]igorously explore and objectively evaluate all reasonable alternatives" in order "to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of [the agency's] actions upon the quality of the human environment." 40 C.F.R. §§ 1502.14(a), 1500.2(f). In this instance, the Forest Service should analyze reasonable alternatives such as reducing the level of authorized AUMs, implementing more rest, and a no-grazing alternative.

Impacts to Water Quality

The EA or EIS should assess the impacts of large amounts of livestock waste deposited on the land, with nutrients, coliform bacteria and other disease organisms washing into downstream waters. This assessment should determine the amount of vegetation available to slow down water and nutrient runoff into these stream systems. Any new grazing plan should be accompanied by a protective level of utilization, trampling standards and other mandatory, measurable use standards. This should include mandatory, quantifiable standards for riparian area use, such as stubble heights, bank damage/stability standards, riparian browse standards, width-to-depth ratios, and the use of these standards to trigger livestock removal from pastures or riparian areas.

The primary cause of water quality degradation on the public lands is pollution from nonpoint sources. As you likely know, the evidence linking livestock grazing to riparian degradation and water quality problems is overwhelming and conclusive. Grazing degrades water quality by causing bacterial contamination, decreasing oxygen levels, stimulating algal blooms, and causing increased water temperatures as a result of trampled stream banks and denuded riparian vegetation. *See, e.g., A.J. Belsky et al., "Survey of Livestock Influences on Stream and Riparian Ecosystems in the Western United States,"* 54 J. Soil & Water Cons. 419 (1999).

In addition, the Forest Service is subject to the requirements of the Clean Water Act (CWA), 33 U.S.C. §§ 1271–1387. Section 303 of the CWA addresses water quality via water quality standards, which specify the appropriate uses of water bodies and set standards to protect those uses. Implementation of water quality standards requires states to place those waters not meeting water quality standards on the 303(d) list. 33 U.S.C. § 1313(d)(1)(A)–(B). States must then calculate total maximum daily loads (TMDLs) for those waters not meeting water quality standards. *Id.* § 1313(d)(1)(C); 40 C.F.R. § 130.7.

The scoping notice does not indicate what, if any, water bodies within the analysis area are listed on the State of Oregon's 303(d) list. Please include this information in the EA or EIS, whether any corresponding TMDLs have been established, and address any proposed compliance measures. In the event the area does contain 303(d) listed streams, the Forest Service must insure that its proposed management approach does not lead to violations of the CWA.

Impacts to Sensitive Riparian Habitat

Of particular concern are adverse impacts from livestock grazing on sensitive riparian areas. Dozens of peer-reviewed studies have concluded that grazing has serious impacts on public land and particularly on riparian areas. In a paper summarizing dozens of peer-reviewed papers on the impacts of grazing, the authors concluded:

Livestock grazing has damaged approximately 80% of stream and riparian ecosystems in the western United States. Although these areas compose only 0.5-1.0% of the overall landscape, a disproportionately large percentage (~70-80%) of all desert, shrub, and grassland plants and animals depend on them. The introduction of livestock into these areas 100-200 years ago caused a disturbance with many ripple effects. Livestock seek out water, succulent forage, and shade in riparian areas, leading to trampling and overgrazing of stream banks, soil erosion, loss of stream bank stability, declining water quality, and drier, hotter conditions.

These changes have reduced habitat for riparian plant species, cold-water fish, and wildlife, thereby causing many native species to decline in number or go locally extinct. Such modifications can lead to large-scale changes in adjacent and downstream ecosystems. Despite these disturbances, some people support continued grazing. These advocates argue that most of the damage occurred 50-100 years ago; however, recent studies clearly document that livestock continue to degrade western streams and rivers, and that riparian recovery is contingent upon total rest from grazing.

A.J. Belsky, A. Matzke, S. Uselman, Survey of Livestock Influences on Stream and Riparian Ecosystems in the Western United States, *Journal of Soil and Water Conservation*, 1999, Vol. 54, pp. 419-431 (emphasis added).

Impacts to Native Vegetation, Soils, TES Species, MIS and Wildlife Habitat

In addition, the proposed grazing may negatively impact native vegetation on the allotments. The potential adverse impacts of grazing on native vegetation is well known. Another chief concern is grazing's role in the establishment and spread of noxious weeds. This is a high priority problem throughout the public lands in the West. The Department of Agriculture recently observed that on the western ranges and wildlands, "[t]he foremost issue in most restoration or rehabilitation projects is the establishment of seeded [noxious weed] species." USDA Forest Service, *Restoring Western Ranges and Wildlands*, RMRS-GTR-136-vol. 1, at 62 (2004). The EA or EIS should address how the further spread of invasive weeds will be avoided or mitigated under each proposed alternative.

The detrimental effects of cattle grazing on wildlife and federally listed threatened and endangered species are numerous and far reaching. Nearly one-quarter of all of the imperiled species listed under the ESA are imperiled by livestock grazing.¹ Grazing depletes food sources necessary for sustaining wildlife by denuding the landscape of vegetation. Native plants are integral components of the ecosystem, and they not only provide direct nutritional value for herbivorous species, but this serves to nourish the prey base for carnivorous ones. As native vegetation is overgrazed, exotic weeds invade, threatening grass and shrub ecosystems and disturbing the soil surface. Even under moderate stocking rates, livestock grazing can substantially contribute to deterioration of soil stability. This leads to increased soil erosion. Soil erosion is further exacerbated by increased surface runoff triggered by loss of vegetation cover and litter, both of which have been shown by numerous studies to be reduced by livestock grazing. The EA or EIS should engage in a thorough analysis of soils and native vegetation and the effects of the proposed grazing on the soils and vegetation within the planning area.

Monitoring data for the presence of TES species must be gathered prior to environmental analysis and incorporated into that process. The Forest Service must additionally demonstrate that project level surveys have been conducted and current population data gathered for forest plan Management Indicator Species (MIS). The Forest Plan for the UNF states that the applicable National Forest Management Act (NFMA) implementing regulations require that "[h]abitat conditions for management indicator species, as well as for all other wildlife species on the Forest will be managed to maintain viable populations." LRMP at 2-9.

¹ Flather, C. T., L. A. Joyce, and C. A. Bloomgarden. 1994. Species endangerment patterns in the United States. Pp. 42. USDA Forest Service, Ft Collins.

The point of conducting TES and MIS surveys is to determine population numbers so that viability can be assured and so impacts from management can be known. The UNF LRMP also imposes a forest-wide requirement for surveying for MIS species. LRMP 5-11. In some instances, a habitat model may be used as a proxy to determine MIS viability in lieu of surveys. Inland Empire Pub. Lands Council v. United States Forest Serv., 88 F.3d 754, 760 n.6 (9th Cir. 1996). However, where the Forest Service's "methodology does not reasonably ensure viable populations of the species at issue," using habitat evaluation as a proxy for monitoring population trends can be deemed arbitrary and capricious. See Idaho Sporting Congress, Inc. v. Rittenhouse, 305 F.3d 957, 972 (9th Cir. 2002).

As you know, the UNF Forest Plan was amended by two regional aquatic conservation strategies, commonly referred to as PACFISH and INFISH, to protect anadromous and inland native fish species. To achieve riparian goals, the plans set Riparian Management Objectives (RMOs) as "criteria against which attainment or progress toward attainment of the riparian goals is measured." INFISH DN at A-2. The RMOs are "good indicators of ecosystem health, are quantifiable, and are subject to accurate, repeatable measurements." Id. at A-3. The RMOs include: pool frequency; water temperature (no measurable increase in maximum water temperature, which must be below 59 degrees F in adult holding habitat and below 48 degrees F in spawning and rearing habitats); bank stability (more than 80% stable); lower bank angle (more than 75% of banks must have an angle of less than 90 degrees); and width/depth ratio (the mean wetted width divided by mean depth must be under ten). Id.

To achieve the RMOs, INFISH grazing standard GM-1 requires the Forest Service to:

[m]odify grazing practices . . . that retard or prevent attainment of [RMOs] or are likely to adversely affect listed anadromous fish. Suspend grazing if adjusting practices is not effective in meeting [RMOs] or avoiding adverse effects on listed anadromous fish.

To "retard" means "to slow the rate of recovery below the near natural rate of recovery if no additional human caused disturbance was placed on the system." INFISH DN at A-3. In other words, the "do not retard" standard prohibits status quo grazing practices where those practices are degrading, maintaining, or slowing the rate of recovery in areas with unacceptable ecological conditions. Instead, it imposes an affirmative duty on the Forest Service to move toward achievement of RMOs and riparian recovery. Thus, to determine compliance with INFISH, the Forest Service must monitor both RMOs and the rate of recovery. The EA or EIS must provide quantitative monitoring data demonstrating the effectiveness for meeting PACFISH/INFISH standards.

Socio-Economics and Impacts to Recreation

Although continued grazing on this allotment may bring a slight benefit to an individual permittee or small handful of permittees, public lands grazing delivers a heavy burden to the public at large. The Government Accountability Office (GAO) has reported that the federal government spends at least \$144 million each year managing private livestock grazing on federal public lands, but collects only \$21 million in grazing fees. This equates to an annual net loss of at least \$123 million.² Considering the additional direct and indirect costs not included in the GAO report, economists have estimated that the

² GAO. 2005. Livestock grazing: federal expenditures and receipts vary, depending on the agency and the purpose of the fee charged. GAO-05-869. Government Accountability Office. Washington, D.C.

federal public lands grazing on BLM and USFS lands may cost as much as \$500 million to \$1 billion annually.³

The benefits that would flow from the elimination of cattle, however, are numerous. Besides its inherent value, livestock-free and fence-free wildlife habitat enhances opportunities for ecological services and recreational uses. There is rising demand for outdoor recreation on our public lands. As a recently released report emphatically illustrates, the economic contribution of recreationists to the national economy is staggering in the United States today.⁴

From birdwatchers to mountain bikers, outdoor enthusiasts bring in almost \$300 billion in annual retail sales, and contribute more than twice that to the United States economy. Outdoor recreationists spend \$46 billion a year on the gear they need to recreate in the American woods, rivers, and slopes. They spend five times that much- \$243 billion--on the food, lodging, entertainment, and transportation they require along the way. In all, active outdoor recreation pumps \$730 billion annually into the United States economy. The recreation industry supports about 6.5 million jobs, and associated annual tax revenues add up to \$88 billion a year. Wildlife viewing is currently the most common outdoor activity, with birding alone attracting 66 million people last year. The Forest Service should include a cost/benefit analysis in its NEPA document that encompasses the socio-economic impacts to the broader public, the owners of public lands, and not just a small minority of grazing permittees.

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Cultural Resources

The EA or EIS must present evidence that the Forest Service has complied with Section 106 of the National Historic Preservation Act, 16 U.S.C. § 470(f), and its implementing regulations, 36 C.F.R. §§ 800 *et seq.* The purpose of the NHPA is to preserve the history and prehistory of this country and protect for future generations the historical and cultural resources that are part of the Nation's heritage. Section 106 requires federal agencies to consider the impact of their "undertakings" on historical properties:

Section 106 of NHPA is a "stop, look, and listen" provision that requires each federal agency to consider the effects of its programs. . . . Under NHPA, a federal agency must make a reasonable and good faith effort to identify historic properties; determine whether identified properties are eligible for listing on the National Register based on criteria in 36 C.F.R. § 60.4; assess the effects of the undertaking on any eligible historic properties found; determine whether the effect will be adverse; and avoid or mitigate any adverse effects.

Muckleshoot Indian Tribe v. U.S. Forest Serv., 177 F.3d 800, 805 (9th Cir. 1999) (citations omitted).

³ Moscowitz, K. and C. Romaniello. 2002. *Assessing the full cost of the federal grazing program*. Center for Biological Diversity. Tuscon, AZ. The estimated cost of the federal grazing program at \$500 million is consistent with estimates developed by other experts.

⁴ Joanne Kelly, *US Impact of Outdoor Recreation: \$730 Billion*, Scripps Howard News Service, Sept. 18, 2006 (information cited in the following paragraph also came from this article).

The EA or EIS must also contain information that demonstrates the Forest Service adequately consulted with members of the interested public, including potentially affected tribes or tribal members concerning cultural resources. *See* 36 C.F.R. § 800.4(a) (requiring the Forest Service to “determine and document the area of potential effects, as defined in [36 C.F.R.] § 800.16(d),” identify historic properties, and to affirmatively seek out information from the State Historic Preservation Officer, Native American tribes, consulting parties, and other individuals and organizations likely to have information or concerns about the project’s potential effects on cultural properties).

Conclusion

Thank you for your consideration of our scoping comments. Please retain both the Oregon Chapter Sierra Club and the LOWD-BMBP on the project mailing list and continue to update us with any developments, such as the release of the project EA or EIS for public review. We look forward to working with agency staff and decision-makers on proactive efforts to protect and restore the area’s natural resources. If you have any questions regarding these comments, please contact me.

Sincerely, for the natural heritage of us all,

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Exhibit A: Oregon Chapter Sierra Club et al Comments on the Brock Cattle and Horse Allotment, Walla Walla District, Umatilla National Forest

The following issues raised in Exhibit A of our comments is illustrative of ecological issues that the NEPA analysis for the Brock Cattle and Horse Allotment must address, albeit different as pertains to Walla Walla District plant association groups, site-specific allotment area conditions, and overall cumulative impacts; as well as the attainment of agency management objectives for the greater allotment area; including watersystems, riparian and uplands vegetation, and the recovery and abundance of rare native plants:

1. Issues and concerns relating to domestic livestock grazing

In order to avoid effects listed below, the Forest Service should administratively defer livestock grazing for several years following both thinning and burning treatments in order to facilitate understory recovery. Livestock grazing management, as it affects native understory recovery and native understory recovery is critical to restoring forests, must be included within the scope of the Woody Ridge project.

We would all be remiss to relive known ecological effects of livestock grazing rather than to take the appropriate precautions, as outlined in the Ecological Restoration Institute's "Working Paper for Understory Plant Community Restoration in the Uinkaret Mountains, Arizona"ⁱ. This paper, based on research of understory responses to ponderosa forest restoration at Mt. Trumbull, recommends removing livestock grazing for a period of years following restoration treatments:

"Limit livestock grazing. Rest from grazing following treatment will allow establishment of herbaceous species, which may take several years."

We feel that the following categories of anticipated effects of livestock grazing adequately substantiate the need for multi-year deferrals following both mechanical thinning and prescribed burning:

a. Anticipated effect of livestock grazing: introduction and spread of invasive weeds

The spread of invasive nonnative weeds has been described as one of the greatest threats to the ecological integrity and biological diversity of interior western ecosystems^{ii,iii}. Two factors that contribute to the vulnerability of nonnative weed invasion of ponderosa forest restoration sites are: (1) high invasibility due to (machine-caused) soil disturbance and selective grazing, and (2) introduction and spread of invasive weed seeds by domestic livestock.

Restoration treatments are highly vulnerable to nonnative weed invasions following treatments. The three primary factors contributing to invisibility are (1) "safe sites" available for seed germination^{iv}, (2) relatively low native plant cover^v, and (3) high resource availability^{vi}. Each of these factors favors invasive weeds following restoration treatments: Soil disturbance caused by mechanical thinning creates an abundance of "safe sites" for weed establishment at landings, in burn pile scars, on and along temporary roads, and throughout thinning units in locally impacted areas. The vigor and cover of native grasses and forbs immediately following thinning prior to recovery is very low, particularly in high canopy closure pre-treatment stands where soil disturbance from required heavy thinning is likely to be greatest. In the absence of high tree densities and native grasses and forbs, resource availability (light, nutrients, and water) is high following treatments.

By preferentially grazing native plant species while avoiding most weeds and releasing them from competition, domestic livestock add a fourth factor increasing community invasibility: selective

grazing^{vii,viii,ix,x,xi}. Selective grazing may be particularly pronounced immediately following restoration treatments where new growth of native grasses and forbs is especially palatable (relatively high in nutrients and low in digestion inhibiting fibers and compounds) and more easily killed due to a lack of established root reserves.

Invasive weed transport and deposition by livestock to these highly invasive sites magnifies the threat of weed establishment and spread undermining the recovery of native understory community immediately following soil disturbing activities like mechanical thinning and prescribed burning. For example, sheep have been shown to transport 17 knapweed seeds per animal per day in dung and 39 knapweed seeds per animal per day in fleece^{xii}, 4.5 knapweed achenes per 10 grams of wool^{xiii} and up to 13 nonnative weed species seeds in dung^{xiv}. Cattle have been shown to deposit as many as 37,000 viable seeds per cow per day in dung^{xv} and disperse *Cynoglossum officinale* (houndstounge) from their heads, chests, and undersides by rubbing on trees, shrubs or poles^{xvi}.

Numerous additional studies have demonstrated higher invasive plant cover in grazed vs. adjacent ungrazed areas, inferring that livestock transport and spread of viable invasive weed seeds also results in increased invasive weed establishment and persistence. We would be happy to provide a separate bibliography of these studies upon request.

For these reasons, we are concerned that livestock grazing following mechanical thinning and prescribed burning, while invasibility of sites is high, will cause significant establishment and spread of invasive nonnative weeds. Accordingly, we urge the Forest Service to implement livestock grazing deferrals following treatments and until such time that invasibility of sites is sufficiently reduced.

b. Anticipated effect of livestock grazing: retarded initial establishment and subsequent proliferation and production of native C4 grasses due to reduced numbers and colonization of arbuscular mycorrhizal fungi.

A central objective of restoring Southwest ponderosa pine forests is to increase understory diversity and productivity trending toward the range of natural variability. Arbuscular mycorrhizal (AM) fungi, by forming symbiotic relationships with plant roots facilitating transport of water and nutrients from soil to plants, favor the development, diversity and productivity of native plant communities^{xvii,xviii} including that of obligatory mycotrophic C4 warm season grasses typical of the pre Euro-American ponderosa pine understory community (emphasis added)^{xix}. In fact, some obligate C4 grasses have been shown to be unable to grow or survive in the absence of AM fungi^{xx}.

Livestock grazing has been shown to reduce the number of AM fungi in soil and reduce their colonization of perennial grasses. In two separate studies, Bethlenfalvay and Dakessian found that AM fungal colonization of perennial grasses (five native species in one study and crested wheat grass in the other) was 28-60% and 50% lower in grazed versus ungrazed areas^{xxi,xxii}. Similar results have been recorded in studies using crusted vs. non-crusted soils—used as a surrogate for grazing history^{xxiii}.

Given the importance of fungal colonization to native grass establishment and vigor, we are concerned that livestock grazing in the years immediately following treatment will (1) reduce the numbers of arbuscular mycorrhizae present in the soil, and (2) reduce AM fungal colonization of native C4 grasses, reducing their access to soil moisture and nutrients and retarding their establishment and productivity following restoration treatments. While we admit that additional research would better inform the relationships between domestic livestock grazing and AM fungal colonization and persistence, existing evidence and uncertainty provides adequate justification to err on the side of precaution by deferring

grazing after mechanical thinning and prescribed burning until understory recovery is sufficient to withstand livestock grazing.

c. Anticipated effects of livestock grazing: altered understory composition, reduced understory cover and biomass, and associated effects on fire regimes, tree densities and stand dynamics

Although the effects of livestock grazing and trampling on understory cover and composition vary with precipitation, slope, soil, vegetation types, animal numbers, duration, and season, studies comparing livestock excluded and included forest ecosystems consistently show that livestock grazing reduces native perennial grass cover and/or frequency^{xxiv xxv xxvi}. As noted above in “b”, native perennial grasses constitute a critical and typical component of the native understory of ponderosa pine forests. These studies indicate (and we are concerned) that livestock grazing will inhibit rather than promote reestablishment and recovery of native grasses in active allotments within the Woody Ridge Forest Restoration Project by altering understory composition and reducing cover and biomass of native grasses.

We also feel it’s important for the environmental analysis to consider long-term effects of livestock-caused understory biomass reduction on tree densities. Prior to Euro-American settlement, two phenomena maintained trees at relatively low densities (1) competitive exclusion of tree seedlings by dense native grasses (primary factor) and (2) frequent thinning of trees in regenerating groups by low-intensity surface fires (secondary factor). Long-term ecological restoration should seek to reestablish these regulatory ecosystem processes (sometimes referred to the “competition fire filter”). Both of these phenomenon were interrupted by livestock overgrazing in Southwest ponderosa forests in the late 19th century, and in combination with an adequate seed crop and abnormally heavy late spring rains, facilitated anomalous recruitment of pine seedlings in the 1910’s—the same overly dense cohort of trees contributing to abnormally high fire severity today.

Although domestic livestock numbers are nowhere near what they were during the late 19th century, it’s critical that, as part of the Woody Ridge Forest Restoration Project, native grasses reestablish to sufficiently (1) competitively exclude pine seedlings to maintain relatively low tree recruitment and (2) carry frequent low intensity surface fires. We are concerned that not doing so will result in another flush of tree regeneration causing the same set of problems we’re contending with today.

While we admit that additional research is needed to better inform threshold indicators of these functional goals for understory development, we believe the afore mentioned studies and historical precedent demonstrate that the chances of meeting understory recovery goals are significantly diminished by domestic livestock grazing. This provides adequate justification to err on the side of precaution by deferring grazing for a period of years following mechanical thinning and prescribed burning until understory recovery is sufficient to withstand livestock grazing.

The Forest Service Manual (FSM) and Forest Service Handbook (FSH) contain legal authorities, objectives, policies, responsibilities, instructions, and guidance needed on a continuing basis by Forest Service line officers and primary staff in more than one unit to plan and execute assigned programs and activities. Service-wide and region 3 issuances set forth the following authorities providing the Forest Service with the discretion to defer domestic livestock grazing for a period of years following mechanical thinning and prescribed burning to avoid each of the anticipated effects listed above:

FSM Title 2200 – Range Management: Service-wide issuances provide three authorities by which domestic livestock grazing may be deferred to facilitate ecological restoration.

FSM 2231.03 (8) — Policy

“In emergencies where resources are being seriously damaged by livestock use or by such other occurrences as fire, drought, or insect infestation, the Forest Supervisor may withhold validation of a permit or require that livestock be removed from the range without advance notice to the permittee.”

2231.6 (2) — Changes in Grazing Permits. Refer to FSM 2204 for delegations of authorities. Make changes in grazing permits for the following reasons (36 CFR 222.4):

“To comply with forest land management plans, laws, regulations and policy.”

2231.61(2, 6) - Modification of Grazing Permits. Modify grazing permits at any time during the term period to:

“Increase or decrease livestock numbers or period of use.”

“Comply with laws, regulations, executive orders, or other resource needs.”

FSH 2209.13 – Grazing Permit Administration Handbook WO Amendment 2209.13-92-1

16.13 - Modifications That Result in Reduced Numbers or Period of Use:

Forest Supervisors may modify numbers permitted, periods of use or both as determined necessary because of resource conditions. Except in emergency, any such modification not agreed to by the permittee may be made only after the permittee has received written notification at least 1 full year in advance of the modification becoming effective. Such notice shall be by certified or registered letter (sec. 16.1).

If the permittee and the Forest Supervisor agree to a program for making changes in a permit, document such agreement. The 1 year advance notice may be waived by the provisions of the agreement.

Before formally announcing any required permit change, thoroughly discuss the need for such action with the permittee. Give the permittee an opportunity to inspect the range with local Forest officers. Reports of studies and other pertinent records on which range conditions were judged shall be made available for review by the permittee or the authorized representative. The Supervisor must use every reasonable method to assure that the permittee is fully informed concerning the action to be taken.”

16.2 - Suspension or Cancellation of Grazing Permits:

“Grazing permits may be suspended or cancelled, in whole or in part, for various reasons. Circumstances and prevailing conditions must be considered in deciding the kind and extent of appropriate action.

Suspend a permit if a temporary change is necessary to accomplish a specific resource purpose. Suspensions may also be made as a penalty for violating terms and conditions of a grazing permit. Suspension of a grazing permit should be considered before cancellation. Small percentage suspensions, lasting 1 to a maximum of 5 years, are often effective in obtaining compliance with the grazing permit and allotment management plan. If violation persists, cancel the suspended portion of the permit. Do not issue a temporary permit to the permittee in lieu of the suspended term permit.

Approach permit cancellation with discretion. Cancellation applies if a permanent change in the permit is necessary. Total cancellation is seldom justified in first offense cases unless violation is flagrant and willful.

A permit should not be suspended or cancelled until the permittee has been notified in writing of the violation, and given an opportunity to "show cause" why the action should not be taken.

In addition to cancellation or suspension action, require the permittee to pay the unauthorized use rate for the additional use if more livestock than permitted were grazed, or livestock grazed longer than the permitted season. Bill for such use according to instructions in FSM 2238.”

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