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June 19, 2015

**OBJECTION to Programmatic Plan Amendment for Big Game Security Forest Plan Standard 4a**

**Divide Travel Plan, Helena Ranger District, Helena National Forest**

**Responsible Official: Supervisor William Avey**

Participants in this objection include:

**Helena Hunters & Anglers Association**  
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Helena Hunters and Anglers (HHAA) members live, work, and recreate on the Helena National Forest and several of the organization's members are intimately familiar with the Helena Ranger District and Divide Travel Planning Area in particular. Helena Hunters' membership is made up of professionally trained natural resource managers. They are now or have previously worked in the fields of fish, wildlife, forestry, recreation management, water quality, and environmental assessment. Helena Hunters' mission statement is commensurate with stated management objectives for the Helena National Forest:

"The Helena Hunters & Anglers Association is dedicated to protecting and restoring fish and wildlife to all suitable habitats and to conserving all natural resources as a public trust, vital to our general welfare. HHAA promotes the highest standards of ethical

conduct and sportsmanship, and promotes outdoor recreation opportunity for all citizens to share equally.”

Members of HHAA depend on healthy, functional, intact public lands of the Helena National Forest because they sustain and nurture our way of life.”

**Clancy-Unionville Citizens Task Force**

**Contact: Kathy Lloyd, Board Chair**

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The Clancy-Unionville Citizens’ Task Force (CUCTF) is a non-member public benefit group (filed with the State of Montana) formed in 1997. CUCTF is concerned with land management issues on public lands south of Helena. CUCTF is composed of local residents who use the public lands near our homes for non-motorized recreation, hunting, hiking, wildlife viewing, and public educational programs. For the last 17 years CUCTF has actively engaged the Helena National Forest in productive discussion about travel planning for this area. A Record of Decision for the Clancy-Unionville area was signed in February 2003, and since that time CUCTF has been vigorously involved in trying to get it fully implemented. CUCTF is commenting on the proposed Forest Plan amendment 4a for the Divide Travel Plan because we believe it will have consequences upon the Clancy-Unionville travel planning area.

**Anaconda Sportsman’s Club**

**Contact: Chris Marchion, President**

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The Anaconda Sportsman’s Club is a member-based organization whose core values depend upon Montana’s exceptional wildlife resource and the landscapes that sustain us all. We are dedicated to the heritage and tradition of hunting and conservation of our wildlife legacy. Many of our members have a long-time history of bird and big game hunting the Divide landscape.

**Montana Wildlife Federation**

**Contact: Nick Gevock, Conservation Director**

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The Montana Wildlife Federation was founded in 1936 when landowners and sportsmen banded together to restore depleted wildlife in our state. We work every day to ensure abundant wildlife, healthy habitat and public hunting and fishing opportunity to enjoy our public fish and wildlife resources. We are comprised of 20 affiliate clubs from throughout the state and more than 5,000 members who are spread across the country. MWF is our state's oldest and largest wildlife conservation organization.

The following objection is submitted in response to the Helena National Forest Divide Travel Plan Programmatic Plan Amendment for Big Game Security.

Collectively, we are objecting to the proposed amendment that deletes cover as a crucial element of big game security and replaces it with a scientifically unsupported proposed amendment to Helena Forest Plan Standard 4a for big game security for the Helena Ranger District. Hiding cover is a measurable component of the existing Forest Plan Standard 4a.

We are supportive of the Divide Travel Plan Draft ROD that selects Alternative 5, because that Alternative will go a long-way to improve conditions for wildlife, water quality and fisheries, soils, and a healthier landscape. And, we applaud the Draft ROD in applying any big game standard for the duration of the hunting season, from September 1 to December 1.

The programmatic amendment proposal would negatively affect big game security on Elk Herd Units (EHU) throughout the planning area, because Alternative B removes from the existing Forest Plan Standard the hiding cover component of security, and non-specifically addresses it in guidelines.

“Programmatic amendments provide direction that would be applied to future management activities (See Forest Plan amendment, Cumulative Effects section)” (FEIS Appx D pg 212). As such, a programmatic amendment should not be tailored specifically for travel planning, but rather should address all management activities that may impinge on big game security. In the DEIS, big game hiding cover was not considered at all. In the FEIS and Draft ROD, cover is mentioned in non-specific guidelines, but not addressed in the legal standard.

As per Legal Notice direction of 4/23/2015, each item listed in this objection reflects concerns raised previously (219.53(a) and 36 CFR 219.54(c)) in comment submitted in correspondence of May 19, 2014, September 26, 2014, and October 4, 2014, or addresses issues relative to the newly modified amendment.

**1. The Service’s proposed amendment to big game standard 4(a) in the Helena National Forest Plan qualifies as a significant amendment and thus, under the National Forest Management Act (NFMA), requires an EIS and full-blown analysis of impacts.**

**1a. Suggested Remedy:** Address revision of this standard in the Forest Plan revision process

**1b Suggested Remedy:** Conduct an EIS consistent with the significant change that development of a new security Standard brings. This is necessary in order to evaluate and provide for the long-term goals and objectives for managing the Divide analysis area for big game and other species that depend on hiding cover (grizzlies and lynx), as well as Inventoried Roadless Areas and Wilderness Areas that they rely upon.

**1c Suggested Remedy:** Develop a big game security standard that represents the seasonal habitat needs of all big game species, in order to achieve population and composition objectives within a herd unit or management area defined by the species.

**2. Adoption of an inadequate programmatic plan amendment for big game security is arbitrary and capricious and should not preclude implementation of a responsible travel plan.**

**2a. Suggested Remedy:** In order to not foreclose the opportunity to achieve desired conditions or objectives over the long-term, adopt the new travel management plan Alternative 5 and work towards meeting the existing Forest Plan Standard 4a during the 9/1 – 12/1 hunting season.

**3. Promised amendment Goals will not be met because Guidelines are not Standards and can be applied at administration's discretion.**

**3a. Suggested Remedy:** Assure, through biennial monitoring and responsive management, that Guidelines and Goals with measurable components will be achieved, if not entirely, then through substantial incremental improvement (e.g. 10% improvement over existing condition) toward the Goal/Guideline at each monitoring phase (by providing citizens procedural recourse to affect accomplishment).

**4. Decades of cumulative impacts that have affected cover on the landscape to such a degree that an apparent change in a big game security definition is now being promoted, should have been fully disclosed. Acknowledgement of these circumstances should have been done in the Purpose and Need section for the proposed amendment. Documenting how we got into these circumstances is an important foundation to building a new standard.**

**4a. Suggested Remedy:** In the background information that will describe any new Forest Plan Standard, or project amendment, an acknowledgement of the historic disregard for Standard 4a should be documented. Recognition of past mistakes will help to avoid their repetition.

**4b. Suggested Remedy:** Conduct a cover analysis as per Forest Plan Standard 2 with respect to existing security and potential security (See Remedy 6b)

**4c. Suggested Remedy:** If a standard includes measurable hiding cover, those species for which elk are supposed to be a surrogate, will be better served. The existing standard 4a does a better job of this than the proposed amendment.

**4d. Suggested Remedy:** Implement Divide Travel Plan Alternative 5.

**5. Best Available Science is not being used to develop the proposed amendment.**

**5a. Suggested Remedy:** Utilize the published literature to acknowledge in the standard itself, that hiding cover is a crucial component of big game security.

**5b. Suggested Remedy:** Retain hiding cover as a functional and measurable component of the landscape, which is not simply relegated to designated security areas.

**5c. Suggested Remedy:** Maintain frequent dense cover areas adjacent to roads.

**5d. Suggested Remedy:** Recognize that bull elk vulnerability on public lands is an important measure in defining elk security on public lands.

**5e. Suggested Remedy:** Until the forthcoming revised Forest Plan is issued (estimated in 2020), work toward improving the hiding cover component of existing Forest Plan standard 4a during the entire hunting season, 9/1 – 12/1. Alternative 5 of the Travel Plan will positively address the road density issue.

**5f. Suggested Remedy:** Ultimately assure, through biennial monitoring and responsive management, that measurable Guidelines and Goals will be achieved, if not entirely, then through substantial incremental improvement (eg. 10% improvement over existing condition) toward the Goal/Guideline at each monitoring phase (by providing citizens procedural recourse to affect accomplishment).

**6. The programmatic amendment attempts to adapt the Hillis security model without applying required criteria, and meld it with an untested scheme to draw polygons of security that at the same time can be increasingly roaded, harvested, and under administrative authority, sustain administrative motorized use – even during security periods. Such an amendment is not in the best interest of big game, nor does it reflect Best Available Science.**

**6a. Suggested Remedy:** Adopt the September 1 – December 1 security period and Alternative 5 of the Travel Plan, but leave in place, the existing security standard features for hiding cover and road densities. OR

**6b. Suggested Remedy:** Accept the basic tenants of the Hillis model:

- i) keep at least 30% of the entire EHU in security (more when bull elk vulnerability is problematic),
- ii) security areas must be at least ½ mile from an open road, and further when closed roads occur within the security area,
- iii) areas of biological potential for forested cover blocks should be identified and managed to encourage regeneration across the landscape in regularly distributed blocks so that wildlife movement and security habitat can be measured, improved, and ultimately maintained at or above the needs of all ungulates and rare carnivores
- iv) limit road densities

**6c. Suggested Remedy:** Smaller acreage of forested cover can provide important visual screening, travel corridors, and connectivity between actual security blocks. This suggestion has been addressed by acknowledging and defining *Screening Cover and Concealment Cover* in the proposed standard. Even so, Screening and Concealment cover were not quantified in the amendment; and *Intermittent Refuge Areas* do not require cover and only provide 0-6% of this type of security areas ½ mile from a road in the Divide EHUs (FEIS Table 4). This recognition of cover and smaller refuge areas is a positive step. However the existing standard does a better job of recognizing all important aspects of security.

**6d. Suggested Remedy:** Display a cover analysis for Alternative B.

**7. A broad range of reasonable alternatives was not offered. In fact, only one action alternative, Alternative B, was developed. Another alternative was previously suggested and could have analyzed the open, topographically gentle “east-side” Helena Forest – to address the biological potential of various landscapes of the HNF to provide cover, as has been requested in previous comment. We believe that such an effort could produce a realistic, achievable, science-based, security standard.**

**7a. Suggested Remedy:** Develop a Forest Plan standard that recognizes forest cover as an important component of security and requires retention of existing cover and steady restoration of hiding cover where biological potential allows.

**7b. Suggested Remedy:** HNF should undertake a well defined process to quantify the biological/vegetative potential of the Travel Planning Area (and on the rest of the Forest), as well as the proportion of the landscape that is not meeting that potential. This information is likely already available on the HNF.

**7c. Suggested Remedy:** HNF vegetative cover types should be classified as to whether they are capable of providing elk hiding cover at a 40% canopy closure. This metric must be clearly described.

- Does the 40% canopy closure involve trees that are of a certain height?
- Does 40% mean that 40% of the ground is covered at a height of at least 8 feet (the height of a bull elk and his antlers)?
- Does the 40% closure account for steep terrain where security is reduced such as a situation in which a person on a road on a side hill can look across the drainage and see down through the canopy cover?
- Is there an option for hiding cover on relatively flat ground using the HNF definition of hiding cover where 90% of an elk at 200 feet is obscured? This might occur in dead timber stands, regenerating clearcuts, or tall shrubs.

**7d. Suggested Remedy:** Conduct an analysis similar to that conducted on the Big Horn National Forest in Wyoming.<sup>1</sup> Such an analysis would put to rest the question, “What is the capability of the Helena National Forest to provide big game hiding cover

(potential and actual hiding cover in acres)?” The Wyoming report addresses big game security in Strategy 3:

“Strategy 3: Detect natural and anthropogenic temporal changes to elk habitats using Landsat TM or similar sensor data every five years. These techniques are proven to be an efficient and cost effective means of gauging federal agency progress towards managing and preserving their elk habitats. The data also facilitates landscape analysis and allows biologists to determine issues and formulate solutions, irrespective of land ownership and accessibility of habitats.”

**7e. Suggested Remedy:** A combination of principles regarding security from Hillis et al.<sup>2</sup>, along with an evaluation of existing and potential forest cover as per Jellison<sup>3</sup> should be explored to design and implement revised Forest Plan Standard that reflects security for bull elk on public lands.

**8. Ensure the viability of MIS. Under NFMA, the implementing regulations, and the Helena Forest Plan, the Service is required to manage wildlife habitat on the Helena National Forest to ensure viable populations of existing native species are maintained.**

**8a. Suggested Remedy:** Do not use elk (MIS) population numbers as proxy for deer and moose population health.

**8b. Suggested Remedy:** Develop a security standard for big game that represents the habitat cover needs of deer and moose as well as elk.

**9. The direct and indirect impacts of the proposed amendment upon the species for which elk are a surrogate, have not been adequately evaluated. Additionally, the cascading consequences upon other wildlife species such as goshawks, lynx, and grizzly bear as a result of the proposed amendment were not disclosed.**

**9a Suggested Remedy:** If a standard includes measurable hiding cover and road densities both within and between potential security areas, big game species for which elk are supposed to be a surrogate, will be better served. The existing standard 4a does a better job of this than the proposed amendment.

**9b. Suggested Remedy:** Conduct an analysis of both existing and potential cover within and between proposed security areas. Such an analysis should reflect how elk, and species that are supposed to be represented by elk (deer and moose), would fare with vegetative cover recruitment or removal.

**10. Inadequate and unfunded maintenance, monitoring, and enforcement of roads/trails and motorized travel as allowed under the Divide Travel Plan, virtually assures that any standard for big game security will not function properly.**

**10a. Suggested Remedy:** Display a monitoring plan that will quantify whether big game are benefiting from any standard or amendment relative to big game security. Then provide for methods to correct deficiencies.

**10b. Suggested Remedy:** Reduce actions on the Helena National Forest to fit within its budget for Forest Plan monitoring and compliance.

**10c. Suggested Remedy:** Tailor the HNF Divide landscape road system to fit within its road budget.

**10d. Suggested Remedy:** To meet the objectives of the security amendment Alternative B, select travel plan Alternative 5.

**11. The proposed amendment for big game security for the Divide Travel Plan area encroaches on Elk Herd Units in an area that has already gone through an EIS process and ROD (2003) that included travel planning and vegetation manipulation using Standard 4a. That standard should remain for those EHUs.**

**11a. Suggested Remedy:** All EHUs that occur within the Clancy-Unionville Vegetation Manipulation Project, and for which ROD was issued in 2003, should remain under Standard 4a.

**11b. Suggested Remedy:** Other east-side Forests have similar big game security issues. Therefore we recommend that this big game amendment process be put on hold while an eastside Forest process that is more comprehensive and applies proper scientific method and peer-reviewed scientific literature is conducted. We suggest a process such as defined in Objection Item #6 above.

**12. Non-compliance with other Forest Plan Standards. Pursuant to NFMA, the Forest Service must ensure that the proposed amendment is consistent with the Helena Forest Plan. 16 U.S.C. § 1604 (i).**

**12a. Suggested Remedy:** All Forest Plan Wildlife Standards that rely on timber, hiding cover, or certain minimum road densities should be evaluated with respect to the proposed amendment for big game security that would replace Standard 4a and thus delete measurable hiding cover requirements.

**12b. Suggested Remedy:** Address revision of this standard, and how it influences other Standards, in the Forest Plan revision process that is currently underway.

**Our suggested over-arching remedy is:**

- **to default to the existing Forest Plan Standard 4a for big game security that actually is met in 67% of the EHUs with application of Travel Plan Alternative 5 (while 0% are met with the proposed standard)**



- implement hunting season dates inclusive of the archery season, 9/1 to 12/1
- implement Alternative 5 of the Travel Plan
- at the same time, for the pending Forest Plan revision, initiate an effort to evaluate the Helena National Forest’s various landscapes’ abilities to meet their respective biological potential to produce vegetation capable of providing hiding cover;
- then based on this information, establish a minimum percentage of each landscape’s biological potential to produce hiding cover that would be important in meeting the security needs of big game;
- ultimately, greater than some minimum percentage of each landscape’s biological potential to produce hiding cover would be applied in conjunction with a prudently monitored and responsively managed transportation system.

There are several remedial suggestions provided in this Objection that demonstrate options other than what has been offered as the single Alternative B that we find seriously lacking.

A clear and distinct problem with implementation of Alternative B is that there is no recourse for correction once the proposed amendment is in place and cover is removed and/or additional administrative roads are built – at point elk will be vulnerable on public lands for a long time to come. Retention of cover as called for in the existing Forest Plan standard, and reasonable road densities, would meet the security objective in 67%, or 4 of the 6 EHUs, while 0% of the EHUs meet the proposed amendment objective of 50% security.

The proposed amendment to Big Game Standard 4a of the Forest Plan of the Helena National Forest will impact recreational activities of our respective members by reducing wildlife security habitat and recklessly implementing a model that has not been validated and that ungulate biologists have cautioned against.

We appreciate the opportunity to be involved in the management and future of our treasured public lands and the biological resources that depend upon them. A scientifically-based big game security standard is fundamental to the well-being of all wildlife.

Gayle Joslin, Lead Objector  
Helena Hunters & Anglers Association

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Kathy Lloyd, Board Chair  
Clancy-Unionville Citizens Task Force

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Chris Marchion, President  
Anaconda Sportsman’s Club

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Nick Gevock, Conservation Director  
Montana Wildlife Federation

**DETAILED OBJECTION POINTS**

The detailed points to which the groups below object, and specific remedies aimed at promoting the above “Over-arching Remedy,” are provided below.

NEPA (40 CFR 1500-1508) requires: (1) considering a broad range of reasonable alternatives; (2) disclosing cumulative effects; (3) using best scientific information; (4) consideration of long-term and short-term effects; and (5) disclosure of unavoidable adverse effects.

As compared to the existing condition, Amendment Alternative B does not constitute a “broad range of reasonable alternatives,” nor does it reflect “using best scientific information.” The analysis of Alternative B does not accurately “disclose cumulative effects” specifically the thousands and thousands of acres that no longer have forested cover as a result of HNF projects, nor does it “consider long-term and short-term effects” of permanently affixing security areas to specific polygons, or “unavoidable adverse effects” of increased landscape fragmentation as a result of identifying permanently fixed security areas, between which intense actions such timber harvest and additional roading could occur.

**1. Amending big game standard 4(a) is a significant amendment.**

The Service’s proposed amendment to big game standard 4(a) in the Helena National Forest Plan qualifies as a significant amendment and thus, under the National Forest Management Act (NFMA), requires an EIS and full-blown analysis of impacts. See 16 U.S.C. § 1604(f)(4).

According to the Forest Service Manual (FSM) 1926.51, the types of non-significant changes to Forest Plans include:

(1) Actions that do not significantly alter the multiple-use goals and objectives for long-term land and resource management.

**1a. Suggested Remedy:** Address revision of this standard in the Forest Plan revision process

**1b Suggested Remedy:** Conduct an EIS consistent with the significant change that development of a new security Standard brings. This is necessary in order to evaluate and provide for the long-term goals and objectives for managing the Divide analysis area for big game and other species that depend on hiding cover (grizzlies and lynx), as well as Inventoried Roadless Areas and Wilderness Areas that they rely upon.

**1c Suggested Remedy:** Develop a big game security standard that represents the seasonal habitat needs of all big game species, in order to achieve population and composition objectives within a herd unit or management area defined by the species.

(2) Adjustments of management area boundaries or management prescriptions resulting from further on-site analysis when the adjustments do not cause significant changes in the multiple-use goals and objectives for long-term land and resource management.

(3) Minor changes in standards and guidelines.

(4) Opportunities for additional projects or activities that will contribute to achievement of the management prescription.

FSM 1926.52 explains that the types of changes that are “significant” and thus require a comprehensive EIS include:

(1) Changes that would significantly alter the long-term relationship between levels of multiple-use goods and services originally projected.

(2) Changes that may have an important effect on the entire land management plan or affect land and resources throughout a large portion of the planning area during the planning period.

As explained above, the Service’s proposed amendment, which fails to include any requirements for hiding cover within big game security areas across the entire Divide (and neighboring Blackfoot) analysis area is not a minor change.

On the contrary, such action will significantly alter the long-term goals and objectives for managing the Divide analysis area for big game and other species that depend on hiding cover (grizzlies and lynx). Such action will “significantly alter” how this important area is managed and will likely impact and influence how the Helena National Forest manages habitat for threatened species and wilderness quality lands into the future. This is a significant change to the Helena Forest Plan.

**2. Adoption of a faulty programmatic plan amendment for big game security is arbitrary and capricious and should not preclude implementation of a responsible travel plan.**

The FEIS states (Summary – vii):

“Programmatic Plan Amendment: Implementing any of the action alternatives would require a plan amendment to the Helena National Forest Plan for the planning area regarding the standard for the hiding cover/open road density index. The proposed programmatic plan amendment would establish a new standard for elk security for those herd units within the planning area.”

Though related, the USFS is issuing two separate RODs and they should not be contingent upon one another.

Retention of Forest Plan Standard 4a for big game security and adoption of Alternative 5 of the Divide Travel plan would “contribute to the ... attainment of ... desired conditions or objectives, [and would] not foreclose the opportunity to maintain or achieve any goals, desired conditions, or objectives, over the long term” (36 CFR 219.15(d)(1)) as compared to adoption of the proposed amendment.

Under a *Forest Plan* amendment proposed for the Divide Travel Plan and applicable to future projects in the Divide landscape, a “security area” approach would replace the current “hiding cover/open road density index” as the *Forest Plan* standard for gauging the vulnerability of elk to hunting FEIS 304

The new standard [*Forest Plan Programmatic Amendment*] is based on three basic statements, clarified by a series of definitions, guidelines, goal statements and site-specific data for Divide elk herd units. The standard reads as follows:

- Road management will be implemented to maintain or improve big game security and hunting opportunity.
- Road management will also be implemented to maintain or improve big game intermittent refuge areas [discussed below].
- The standard applies only to the National Forest System lands within those portions of an elk herd unit that are within the Helena Ranger District, Helena National Forest administrative boundary. (FEIS 304)

The FEIS designs the proposed amendment to address only the travel plan, yet the FEIS clearly states that the amendment will be “applicable to future projects” that would address vegetation and hiding cover so it should be capable of independently evaluating cover as security for other projects:

“Hiding cover will change over time, decreasing with losses to fire, insects and disease, commercial timber harvest, thinning and stand aging. It will increase as conifer regeneration fills in forest openings and the understories of mature stands. However, in this case, hiding cover changes will be the same for all five Travel Plan alternatives. Thus, the variable that separates alternatives is open road density” (FEIS 413) (limiting the scope of the amendment)

**2a. Suggested Remedy:** In order to not foreclose the opportunity to achieve desired conditions or objectives over the long-term, adopt the new travel management plan Alternative 5 and work toward meeting the existing Forest Plan Standard 4a during the 9/1 to 12/1 hunting season.

**3. Promised amendment Goals will not be met because Guidelines are not Standards and can be applied at administration’s discretion.**

The proposed amendment inappropriately concludes that forest cover no longer need be included in the standard and can be relegated to non-specific guidelines that do not specify the amount or distribution of cover.

The Environmental Law Institute<sup>4</sup> notes:

As defined in the 2012 NFMA regulations: “A standard is a mandatory constraint on project and activity decision making established to help achieve or maintain the desired condition or conditions to avoid or mitigate undesirable effects or to meet applicable

legal requirements<sup>20</sup>. A guideline, on the other hand, is “a constraint on project and activity decision making that allows for departure from its terms, so long as the purpose of the guideline is met.”<sup>21</sup>

We are concerned about relegating important ecological benchmarks to the status of guidelines or goals that, in our experience with the HNF, are rarely achieved for wildlife.

**3a. Suggested Remedy:** Assure, through biennial monitoring and responsive management, that Guidelines and Goals with measurable components, will be achieved, if not entirely, then through substantial incremental improvement (eg. 10% improvement over existing condition) toward the Goal/Guideline at each monitoring phase (by providing citizens procedural recourse to affect accomplishment).

**4. Decades of cumulative impacts that have affected cover on the landscape to such a degree that an apparent change in a big game security definition is now being promoted, should have been fully disclosed. Acknowledgement of these circumstances should have been done in the Purpose and Need section for the proposed amendment. Documenting how we got into these circumstances is an important foundation to building a new standard.**

The stated Purpose and Need in the FEIS does not honestly explain that the HNF has altered the landscape through impacts from previous cumulative decisions during which Forest Plan Standard 4a (among other standards) has been ignored to such a degree that the HNF is compelled to now redesign the standard in order to meet a new, lower standard.

The stated Purpose and Need to amend the Divide big game security standard is:

“This programmatic Forest Plan amendment for the Divide Travel Management project area is needed to more closely align current science, local conditions, and other information with the needs of big game, particularly elk, to meet the intent of the Forest Plan. It considers the impacts of open motorized routes on elk security, establishes blocks of secure habitat, and can be measured regardless of changes in hiding cover. While the proposed amendment decouples hiding cover from security during the hunting season, several Forest-wide and Management Area standards remain in place that govern management of hiding cover.” (FEIS 544)

The existing big game security standard has been an inconvenient obstacle to a variety of HNF actions. Rather than abide by the limitations imposed by the standard, the HNF chose to ignore them stating:

“The assumptions built into the existing (1986) standard 4(a) have not proven useful in gauging or guiding management activities under the Forest Plan... and places impractical constraints on Forest management and on the ability of the public to use the Forest.”

This approach has led to decades of cumulative impacts upon security as the landscape was over-harvested and over-roaded.

“Impractical constraints on the ability of the public to use the Forest” does not apply to public hunters, public hikers, public mountain bikers, but rather to motorized users, who have the same access to the Forest that the other public users have.

Cumulative impacts are “the impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” 40 C.F.R. § 1508.7. Cumulative impacts can result from “individually minor but collectively significant actions taking place over a period of time.”

Helena Forest Plan IV/2 states,

“Within this guidance, projects are developed to most efficiently and effectively accomplish the management goals and objectives. All NEPA requirements will be complied with in all projects. This includes appropriate public participation in the development and the results of the analysis done on the projects.” (emphasis added)

Failure to address HNF actions, through honest cumulative effects analysis, has led to the erroneous conclusion that Big Game Standard 4(a) has been ineffective. The real problems are road proliferation and vegetative cover that has systematically been depleted largely through repeated “Finding of No Significant Impact” (FONSI), RODs, DNs and other decisions on Forest lands. Cover-loss impacts have accumulated over the 29-year life of the Helena National Forest Plan – a blind eye has been turned to big game security by the HNF for a long time.

In discussing the proposed big game amendment, the following statement clearly reveals that the HNF has strayed from the original intent of the Forest Plan in that it has not aggressively implemented Standard 4 (“implement an aggressive road management policy”) for the past 29 years (since Forest Plan inception in 1986). It states (FEIS Summary viii):

“Alternative A [Existing Condition] only applies to roads as originally envisioned in the Forest Plan.”

In other words, the “Existing Condition” was allowed to incrementally deteriorate over 29 years, without adjusting management to recognize increasing road density – thus “an aggressive road management policy” was not implemented as security conditions were allowed to decline over the past three decades.

The Divide analysis area is 243 square miles as indicated in the DEIS-62: “The analysis area consists of National Forest System lands in the Divide Travel Management Area. This includes approximately 155,480 acres of public land located in Lewis & Clark and Powell counties. The area encompasses Black Mountain and extends from the Tenmile drainage west to the Little Blackfoot and Bison Mountain area.”

An analysis of the Divide landscape’s biological potential to produce forested cover (not only existing cover) as requested previously is not disclosed in the FEIS, but should have been provided as per big Game Standard #2 requiring a cover analysis for all projects.

The following is nefarious rational to disregard hiding cover in a discussion of security:

“The final analysis for the Forest Plan amendment includes a discussion on the correlation between Standard 4a and elk numbers and concludes that there is not a strong correlation between consistency with Standard 4a for a particular EHU and the actual performance of the elk population within the relative Hunting District. We do not make the case that elk population levels are independent of hiding cover but rather that “[c]ompliance, or lack thereof, with Standard 4a is not a good indicator of elk population performance given the patterns of land ownership and other factors affecting elk security and/or population levels” (FEIS Appx D – 256).

There is contradictory, circular rational in the following statements (FEIS Appx C – 144):

“Thermal and hiding cover are not key elements of this analysis, which focuses on the influence of motorized routes.” And, “Because this Forest Plan amendment is programmatic in nature, it would replace Standard 4a for all future management activities” (FEIS Appx D – 268)

Future management activities will include projects that will affect thermal and hiding cover. Any big game security standard must earnestly address cover.

Our comment on the DEIS noted that several actions that have occurred on the HNF over the years are not presented in the Cumulative Effects Tables, and they still are not addressed in the FEIS, and though their impacts were large they are not acknowledged. We noted previously that the information presented indicates that through timber sales alone, more than 12,000 acres, or at least 18.75 square miles of forest have been removed since 1990. How much of this has regenerated to hide an elk? Also associated with these sales, at least 7 miles of new road have been constructed, 6 miles of existing road have been widened and straightened, and 5 additional miles have been reconstructed. So a significant percentage of forest cover has been removed since 1990. And now the HNF presses for a new big game security amendment because the old one is limiting its legal ability to continue removing hiding cover or increase road density. Code language for this seems to be “the standard 4(a) has not proven useful in gauging or guiding management activities under the Forest Plan” and... “impractical constraints on Forest management and on the ability of the public to use the Forest”.

Collectively, the information in the DEIS and FEIS represent only a portion of activities that have occurred on the Helena Ranger District. Not all of the information relevant to evaluating cumulative effects is present, but acreage of forest removal has been substantial.

Implementation of these and the other projects, as well as Forest Plan amendments that have not been adequately analyzed in the full context of forest cover loss, demonstrates that the HNF simply has chosen not to abide by the forest plan standard for big game security. The Forest Service knew that these projects would severely affect hiding cover and thus compliance with the Forest Plan security Standard 4a. But instead of addressing bull elk vulnerability and antlerless elk displacement to more secure private areas, the HNF erroneously shifts the emphasis to elk populations:

“All of the Forest Plan amendments described above with the exception of the Divide Travel Plan Amendment have been or would be site-specific in time and space. None of the past amendments has resulted in significant impacts to elk; nor should the proposed site-specific amendments significantly impact elk. Cumulatively, effects to elk hiding cover from this and other site-specific Forest Plan amendments should not compromise the Forest's ability to provide habitat potential to meet Forest Plan elk population goals.” (emphasis added – taken from the Blackfoot big game security Amendment FEIS)

In the context of amending the big game security standard, the DEIS lists but does not fully reveal the cumulative loss of hiding cover that is currently impacting security. It is important that the pending ROD be based on relevant analytical factors that affect big game security.

The upshot is, the Forest Service now contends it cannot meet its own security standard: “Hiding cover has declined to levels that cannot be counterbalanced by any degree of road closures.”<sup>5</sup>

**4a. Suggested Remedy:** In the background information that will describe any new Forest Plan Standard, or project amendment, an acknowledgement of the historic disregard for Standard 4a should be documented. Recognition of past mistakes will help to avoid their repetition.

**4b. Suggested Remedy:** Conduct a cover analysis as per Forest Plan Standard 2 with respect to existing security and potential security (See Objection point 6d)

**4c. Suggested Remedy:** If a Standard includes measurable hiding cover, those species for which elk are supposed to be a surrogate, will be better served. The existing Standard 4a does a better job of this than the proposed amendment.

**4d. Suggested Remedy:** Implement Divide Travel Plan Alternative 5.

## **5. Best Available Science is not being used to develop the proposed amendment.**

NEPA and the Service’s planning regulations direct the responsible official to “use the best available scientific information to inform the planning process.” 36 C.F.R. § 219.3. The Service is to determine “what information is the most accurate, reliable, and relevant to the issues being considered” and document how the “best available scientific information was used to inform . . . the plan decision . . .” *Id.*

Pursuant to NEPA, information included in NEPA documents “must be of high quality” and “accurate scientific analysis [is] essential to implementing NEPA.” 40 C.F.R. § 1500.1(b). While an FEIS may not be expected to reference or rely on every study or opinion, the state of scientific knowledge on a particular subject must be fairly represented in a balanced manner. Moreover, an FEIS must contain a reasoned analysis in response to conflicting data or opinions on environmental issues. In this case, the Service is not using (or documenting how it is



using) the best available science. The Forest Service’s decision to replace Standard 4a with an untested, hypothetical method is not based on the best available science regarding big game management.

The term, “Best Available Science,” and its application in the amendment process are being used to avoid the required full NEPA analysis for development of a Forest Plan Standard. The USFS document<sup>6</sup> upon which the proposed amendment is based states,

“This framework does not replace forest plan standards or pre-existing rights, nor does it give further definition to any current direction provided in the Custer, Gallatin, Helena or Lewis and Clark Forest Plans.”

Yet, “this framework” is being used in place of Big Game Security Standard 4a, which is the current standard for all east-side Forests, including the Custer, Gallatin, Helena, Lewis and Clark National Forests. The USFS document (id) recognizes that the east-side Forests struggle with the existing standard when it states,

“The Helena, Lewis and Clark, and Gallatin National Forests have specific cover standards in their respective Forest Plans that may require some other modeling technique to show compliance” (later the document states that the Custer does not have specific cover standards)

What is being done through this amendment is to remove the “specific cover standards” so that compliance the existing Forest Plan Standard is circumvented. This effort to remove cover as a vitally important security component from standards (as documented by vast amounts of scientific literature), is a perversion of “Best Available Science” as used in these USDA documents<sup>7, 8</sup>.

*Hiding cover is a crucial component of elk security, particularly for bull elk.*

The proposed amendment inappropriately removes all cover requirements for hunting season security – cover that is critically important on the open, topographically gentle “east-side” Helena Forest – an action that the scientific literature clearly does not support.<sup>9, 10, 11, 12, 13, 14</sup> While much of the literature focuses on road densities, none of the literature indicates that hiding cover is unimportant for bull elk survival. With respect to the hunting season and the need for hiding cover, abundant literature indicates: “elk that survived decreased movements and showed avoidance of open areas”<sup>15, 16</sup> i.e. they seek hiding cover.

The “security area” approach replaces the “road density/hiding cover index” as the Forest Plan standard for gauging the vulnerability of elk to hunting. The amendment derives from the Hillis methodology (1991) and adopts specific guidelines for its application from Recommendations for Big Game Habitat Management on the Custer, Gallatin, Helena, and Lewis and Clark National Forests (MDFWP and USDA Working Group 2013). However, this working group does not base its decisions regarding hiding cover on public lands, on best available science.

The Draft ROD selects Alternative 5 for the Divide Travel Plan and would be a major step forward in improving security for big game, in and of itself. However, making this decision

*contingent* on implementation of Alternative B is inappropriate because the proposed programmatic plan amendment not only inadequately addresses big game security, but also relegates security on the Forest to specified polygons where cover is not required. Forest direction that encourages declining hiding cover would lead to irretrievable consequences for big game and therefore big game hunting, and the tools required by MFWP to manage wildlife populations; as well as forgo revenue production that would occur with diminished big game hunting seasons. This proposed amendment would not be based on best available science.

The proposed standard language not only eliminates cover, but it does not require that those elk herd units (EHUs) above 50% be maintained at that level, yet those EHUs below the proposed standard of 50% security will not be managed to improve to the minimum 50% security level:

FEIS pg 421: “In order to comply with the new standard, herd units with more than 50 percent elk security are allowed to lower percent security only if they remain above 50 percent; those with less than 50 percent security are allowed no further decrease”

The 50% security aspiration is stated as a goal, not a standard requirement. Such goals have rarely if ever been achieved in the existing 30 year old Forest Plan.

The Environmental Law Institute<sup>17</sup> notes that “There is a fear that such goals will not be achieved if they are stated as discretionary planning objectives or desired future conditions.”

As defined in the 2012 NFMA regulations:

“A standard is a mandatory constraint on project and activity decision making established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects or to meet applicable legal requirements.”<sup>20</sup> A guideline, on the other hand, is “a constraint on project and activity decision making that allows for departure from its terms, so long as the purpose of the guideline is met.”<sup>21</sup>

We are concerned that the latter is the case, as has been demonstrated over the past three decades on the Helena National Forest.

Weber’s<sup>18</sup> thesis was designed to identify landscape characteristics that land managers can control, alter, or manipulate to improve elk security (52). He quantified that big game require cover:

“Elk selected particular elements of the landscape which ... contained forested cover in large patches which had not sustained a timber harvest treatment within the past 10 years, and provided substantial hiding cover. “

Weber (50) goes on to reference the literature regarding the use of cover by elk:

“The lodgepole pine vegetation class had the highest hiding cover estimate and potentially the highest canopy cover. The open *Douglas-fir vegetation class* had a comparatively low hiding cover estimate and a canopy cover of <31%. This may be one of the simplest and most plausible reasons that elk selected the lodgepole pine

vegetation class. Other studies have arrived at similar conclusions and found that elk select sites with high canopy closure and/or dense cover (Marcum 1975, Edge et al. 1988, Hillis et al. 1991). Irwin and Peek (1983) found that elk preferred pole-timber sites with >75% canopy closure and that there was little use of clearcuts, grass-shrub, or brushfield sites. Hurley (1994), and Hurley and Sargeant (1991) reported that elk in roaded or partially roaded areas increased their use of dense coniferous cover and subsequently decreased their use of more open sites during the hunting season.”

Specific to roads, the Montana Cooperative Elk-Logging Study Recommendations (Appendix C in the Forest Plan) specifies: “Maintain frequent dense cover areas adjacent to roads.”

**The proposed amendment arbitrarily applies MFWP Elk Plan elk population information to justify diminished hiding cover.**

The amendment states: “The assumption is that security is adequate as long as MFWP population objectives for elk are being met in local hunting districts.”

The FEIS (544) states that “the proposed amendment decouples hiding cover from security during the hunting season” indicating that elk population levels are independent of hiding cover because in some areas elk populations are strong even though cover has declined as a result of insect infestations. An inverse relationship is likely present between elk populations and hiding cover, wherein a lack of hiding cover leads to displacement of elk to more secure private lands where elk numbers cannot be managed. Concluding that hiding cover is not an issue for elk populations is an erroneous interpretation of security. The Montana Elk Plan<sup>19</sup> notes that in some areas across the state, increased logging and roading were coincident with decreased security for bull elk.

The Elk Plan (15) also notes that “As hunting pressure increased in areas with low habitat security, numbers and ages of bulls surviving the hunting season declined substantially under the antlered bull regulation” so that more restrictive seasons had to be implemented.

The FEIS continues to use 1981 elk population estimates even though current data (2004 Elk Management Plan) is using actual survey numbers for elk. The FEIS (544) states, “There were an estimated 4900 elk on the Forest in 1981” while within the Divide landscape alone (Deerlodge and Granite Butte EMUs) the Elk Plan notes that the population objective is at or near 4,100. For the Helena National Forest as a whole, the population objective is much higher. Therefore the proposed amendment is using outdated elk population figures to justify that cover is unimportant for security.

Bull elk have traditionally provided the majority of elk hunting opportunity in Montana. Cow elk generally are hunted to adjust population levels. When security is inadequate on public lands, acceptable bull:cow ratios (bull populations) cannot be maintained, especially when female elk are feeling insecure and move to private lands. The Montana Elk Plan (2004) defines minimum bull:cow ratios for each Elk Management Unit. The desired ratios are not being

regularly achieved within the Hunting Districts that constitute the six Elk Herd Units within the Divide Travel Area. The FEIS correctly indicates that excessive roads are the leading cause of low bull ratios, but it inappropriately concludes that forest cover no longer need be included in the standard and can be relegated to non-specific guidelines that do not specify the amount or distribution of cover.

The MFWP Elk Plan explains that in hunting districts that have public lands, elk populations can be controlled with antlerless elk permits only if elk security is adequate on public lands. The Plan recognizes vegetative cover as important for security. In other words, public lands must be able to “hold” elk via adequate security so they will not be displaced to private, unhuntable private lands. When elk are displaced to private lands, population levels cannot be controlled with hunting seasons. The FEIS wrongly concludes that the current elk numbers which are, at times, above elk population objectives, are evidence that present big game security is sufficient. In certain circumstances, MFWP has documented movement of elk to private lands within the Divide planning area where hunting of elk is limited or not allowed.

The Elk Plan specifically directs that MFWP will “Provide technical assistance to the HNF, BDNF, and BLM with planning and design of timber sale cutting units and road management systems with emphasis on maintaining elk security areas and secure travel corridors throughout the Little Blackfoot, Tenmile, Prickly Pear, and Boulder River drainages.” (192) This directive clearly indicates that MFWP has determined that cover is an important component of elk security.

Due to lack of hiding cover, security and excessive road density, displacement of elk from HNF public lands has occurred on all portions of the HNF, resulting in elk displacement to private lands and game damage complaints from private landowners. So, when:

- 1) security is not adequate on public lands,
- 2) elk are displaced to private lands,
- 3) public hunting opportunity is diminished, and then
- 4) wildlife numbers become unmanageable.

Of the four MFWP hunting districts that make up the six EHUs on the Divide landscape, half are below or just barely meeting the minimum bull:cow objectives. The other half are just barely above the minimum objective. This is not a strong testament to security for bull elk. And, it does not justify the arbitrary amendment statement that says:

*“The goal is for 50% of each herd unit to be maintained as elk security areas. Herd units below 50% security are considered to be in compliance with the Forest Plan security standard as long as % security does not decline (as a result of management activity). The assumption is that security is adequate as long as MFWP population objectives for elk are being met in local hunting districts.” (emphasis added)*

So the FEIS does not focus on survival of bull elk or the problem that lack of cover causes in displacing elk herds to private lands, but rather it asserts that because some elk populations are meeting population objectives, the lack of cover is irrelevant. Of course a lack of cover on

public lands is very likely the reason elk numbers are increasing, as large numbers of elk move from insecure habitat to non-hunted private lands.

In addition to hiding cover, bull elk survival is correlated with road density. Unsworth et al. (2001) notes that the probability of mortality for a bull elk is 50 percent greater in an area with one mile of road per section than in an unroaded area. Two miles of road/section doubles the mortality probability, and at higher road densities bulls usually do not survive the hunting season.

Abundantly clear is the fact that the Divide landscape has too many roads:

“Total road density in the Divide landscape averages 2.07 mi/mi<sup>2</sup>; open road density is 1.69 mi/mi<sup>2</sup>; weighted open road density (calculating arterial and collector routes at 100% of length; local roads at 25% of length) is 0.90 mi/mi<sup>2</sup>.” (DEIS 250)

Implementation of the Draft ROD to implement Alternative 5 for the Divide Travel Plan would be a very strong positive step in the direction of improving big game security. Potential complications with the proposed amendment should not prevent implementation of the Draft ROD for the Travel Plan.

Management implications for forested cover would be relaxed with the proposed amendment that would allow more forest cover removal and thus an amended standard could lead to more cover removal or greater road density, to not “place impractical constraints on Forest management and on the ability of the public to use the Forest.” The possibility and even likelihood of reducing cover even further if the proposed amendment is implemented would not be in the best interest of bull:cow ratios or bringing up bull numbers.

**5a. Suggested Remedy:** Utilize the published literature to acknowledge in the standard itself, that hiding cover is a crucial component of big game security.

**5b. Suggested Remedy:** Retain hiding cover as a functional and measurable component of the landscape, which is not simply relegated to designated security areas.

**5c. Suggested Remedy:** Maintain frequent dense cover areas adjacent to roads.

**5d. Suggested Remedy:** Recognize that bull elk vulnerability on public lands is an important measure in defining elk security on public lands.

**5e. Suggested Remedy:** Until the forthcoming revised Forest Plan is issued (estimated in 2020), work toward improving the hiding cover component of existing Forest Plan standard 4a during the entire hunting season, 9/1 – 12/1. Alternative 5 of the Travel Plan will positively address the road density issue.

**5f. Suggested Remedy:** Ultimately assure, through biennial monitoring and responsive management, that measurable Guidelines and Goals will be achieved, if not entirely, then

through substantial incremental improvement (e.g. , 10% improvement over existing condition) toward the Goal/Guideline at each monitoring phase (by providing citizens procedural recourse to affect accomplishment).

**6. The programmatic amendment attempts to adapt the Hillis security model without applying required criteria, and meld it with an untested scheme to draw polygons of security that at the same time can be increasingly roaded, harvested, and under administrative authority, sustain motorized use – even during security periods. Such an amendment is not in the best interest of big game, nor does it reflect Best Available Science.**

“The amendment derives from the Hillis methodology (1991) and adopts specific guidelines for its application from Recommendations for Big Game Habitat Management on the Custer, Gallatin, Helena, and Lewis and Clark National Forests (MFWP/FS Big Game Working Group, 2012).” (FEIS viii)

The referenced “specific guidelines from Recommendations for Big Game Habitat Management” are not described or further referenced, yet the entire amendment is said to be based upon them. Lacking specifics regarding the guidelines of a working group document, it must be assumed that the Hillis Model as described in peer-reviewed literature is being applied.

The Hillis Model<sup>20</sup> defines three criteria that are required to make the model function for west-side forests, with a caveat that all three must be increased in areas having more open cover and less topographic relief -- such as east-side forests. These criteria include:

- size of forest cover blocks: larger is better; *minimum* size of 250 acres; cover blocks are enhanced with least edge/more topography/important natural features
- distance from roads: *minimum* of ½ mile; road location; less cover and terrain = more distance; the presence of closed roads inside a security area reduces its effectiveness
- proportion of Herd Unit needed to provide security: “habitat analysis unit” is defined by the elk; analysis units should not be adjusted for land ownership; instead they should reflect the cumulative habitat conditions perceived by elk; minimum percentage of an analysis area that must function as security is 30% - *more* when bull survival objectives must be met; reduce fragmentation
- Finally, the authors recommend that all criteria should be enlarged for more open landscapes – such as those east of the Continental Divide.

Actual language from The Hillis Model (1991), with regard to the **size of cover blocks**, states: “...managers should strive to retain, perpetuate, or replace the largest security areas possible.” In the Clark Fork area where the Hillis Model was developed, “cover is dense, terrain is steep, and forest communities are largely unfragmented... under less favorable conditions, the minimum [cover patch size] must be *greater than 250 acres.*” Conditions on the Helena National Forest can be described as less than favorable since dense cover is not characteristic of the Helena, the terrain is relatively gentle, and the forest

communities are overly endowed with motorized routes (there are approximately 2000 miles of road on the HNF according to the 2004 HNF Roads Analysis).

The **shape of the cover patch** is important. A cover patch with the least amount of edge and the greatest width generally will be the most effective; i.e. shape of secure cover patch should be round or condensed; long irregularly shaped cover patches need greater buffers or they will not provide adequate security.

*However, no actual cover is required in the proposed standard, and roads may occur in these areas and even be used for administrative purposes during the hunting season. This approach is not in the best interest of big game or other wildlife.*

Actual language from Hillis et al. (1991) with regard to **distance from roads** states:

“Generally, security areas become more effective the farther they are from an open road. ... the minimum distance between a security area and an open road should be one half mile. Failure to accomplish this function will reduce the effective size of the security area and may render it ineffective.” (Ibid.)

Analysis of existing cover patches within the Divide Travel area indicate that unlike the Blackfoot Travel Plan where “security areas” are 5,000 acres in size (areas where roads can be seasonally closed), there are only a few locations in the Divide Travel Plan that provide areas of 1,000 acres of closed roads. Again, these areas are not required to have hiding cover.

**Open road location** plays a large role in defining whether cover patches will actually provide security, particularly where they funnel people to the edge of security areas or when they occur above and below security patches.

“When cover is poor and terrain is gentle, it may require a distance of more than one half mile from open roads before security is effective.” (Ibid.)

One-half mile is accepted as the standard without discussion, even though circumstances may require a greater distance.

As Hillis notes, even closed roads compromise security areas:

“as closed road densities increase both within the security area and buffer...the minimum distance between open roads and security areas must increase.” (Ibid.)

In open country this caveat is even more important because areas that might be considered “secure” are not when they are compromised by miles of closed roads that serve as easy travel conduits for hunters. This fact is not discussed in the FEIS.

Actual language from Hillis et al. (ibid.) with regard to **analysis units** states:

“First, a standardized ‘habitat analysis unit’ (Lyon and Christensen 1990) must be described. To be biologically meaningful, analysis unit boundaries should be defined by the elk herd home-range (Edge et al. 1986), and more specifically by the local herd home range during hunting season. Typically, the hunting season home-range includes the local herd transitional-range and at least the upper edge of winter range. These boundaries *should be verified in advance by radio telemetry*, particularly where elk vulnerability is at issue. Without telemetry data, biologists should *test their home-range predictions against the experience of reliable local hunters and outfitters*. Analysis units *should not be adjusted for land ownership*; instead, they should reflect the cumulative habitat conditions perceived by elk.” (Emphasis added)

In fact, the proposed amendment seeks to modify the Hillis Model by not applying it to the Elk Herd Unit, but rather the HNF *Administrative Boundary* – this is specifically what Hillis et al. say not to do. The proposed programmatic amendment language is as follows (FEIS 26):

“**Security** is defined as a proportion of an elk herd unit *within the administrative boundary of the Helena Ranger District* that consists of an area of at least 1,000 acres in size that is at least ½ mile from a motorized route open to the public between 9/1 and 12/1. Security blocks are adjusted for constrictions less than or equal to ½ mile in width. Security is calculated across all ownerships *within the administrative boundary*. “

No longer would the standard require a measurable percentage of the EHU to be in security, in fact, the guidelines do not even mention a measurable percentage. The last statements in the Goal indicate that the HNF will try to attain a certain percentage of security – this is not a measurable Standard. In fact, the Amendment would allow reduction of security even though much of the area needs security greater than 30% of the entire EHU as noted by Hillis et al. due to bull elk vulnerability.

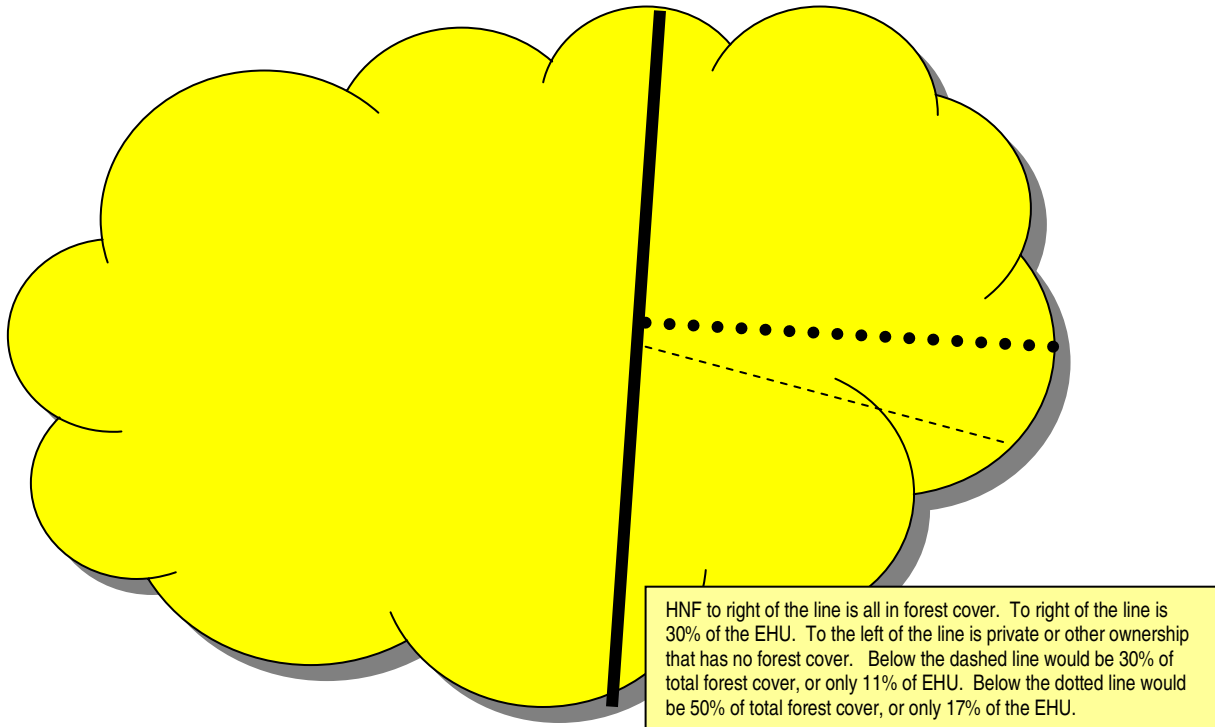
“Elk vulnerability increases when less than 30% of an analysis unit is comprised of security areas. (Canfield 1991)<sup>21</sup> Where bull survival objectives are high, it may be necessary to retain greater than 30% of the analysis unit in security... Minimum percentage of an analysis area that must function as security is 30%-- more when bull survival objectives must be met.”<sup>22</sup>

The Hillis Model clearly indicates that a **minimum** of 30% of the EHU or larger area is necessary for security. However, the proposed amendment makes no provision for more than 30% security even though the Helena National Forest is lacking in rugged, broken topography, lacks continuous conifer cover and is highly fragmented with roads. Neither does the proposed amendment describe, for this particular landscape, what the ideal security percentage should be. However, Hillis et al. (1991) is clear that provisions of the Model would have to be expanded for open, gentle forests such as on the Helena Forest. Again, the proposed amended standard specifically thwarts this most important provision by not acknowledging cover or allowing for even 30% elk security within the EHU. Limiting application of (coverless) security to



within the Administrative Boundary only, would artificially shrink big game security even further.

The schematic below demonstrates shrinkage of security when the administrative boundary of the HNF only – is considered in the 30% requirement for an entire EHU. The Draft ROD allows for 50% of the EHU *within the administrative boundary only* to be secure, but that “security” does not involve hiding cover, and may allow administrative use of roads within the “secure” area during the hunting season. This logic is antithetical to big game security and violates all the criteria of the Hillis Security Model.



Elk Herd Unit (EHU) is depicted above as seasonal elk distribution (yellow area). In the above example – to the right of the line is forested cover (entirely and exclusively on HNF and making up roughly 30% of the total EHU, but 100% of the security cover). Left of the line is private and state land with little or no forest cover. In this example, the entire EHU falls within the current Forest Plan Standard 4a for security for an Elk Herd Unit and requires retention of all forest cover because it constitutes 30% of the EHU.

An Elk Herd Unit might extend across various land ownerships (as described in the Hillis Model) but only that portion within the HNF Administrative Boundary would be considered when management activities are planned. If the EHU consisted of 30% forested cover, but most or all of that cover occurred on the HNF (a very real example), the amendment would then potentially allow removal of 2/3 of the forest cover within the Administrative Boundary. This would meet the proposed standard by allowing 30% cover to remain within the administrative boundary. But actually, across the entire EHU, cover would be depleted down to 11% over the

Elk Herd Unit. In short, the new proposed standard's criteria of 30% security within the *Administrative Boundary* of the HNF completely circumvents the intent of the Hillis Model which states:

“Analysis units should not be adjusted for land ownership; instead, they should reflect the cumulative habitat conditions perceived by elk.” (Hillis et al. 1991, pg. 39)

Our example is quite realistic in that the Helena National Forest, by definition, is where the trees are and thus big game security cover occurs largely on National Forest lands. In other documents (Blackfoot Travel Plan DEIS-494) the HNF notes the following, but then neither the Divide nor the Blackfoot amendment is modified to take into account the need for security across the entire Elk Herd Unit (NOT just within the HNF Administrative Boundary):

“Hillis et al. have recommended at least 30 percent of the fall range in each analysis area, such as a herd unit or larger management area, be maintained as elk security areas if elk vulnerability is to be effectively tempered during the hunting season. Herd units with security above the 30 percent threshold allow for considerably more flexibility in the management of forest vegetation and the road/motor trail network than those that remain below the 30 percent security level.”

Montana Backcountry Hunters & Anglers contacted two principle authors of the 1991 Hillis Paradigm paper, and requested their response to the Helena's proposal to apply the model to the Helena forest conditions. Below is their response:

April 12, 2013

Greg Munther  
1295 Lena Lane  
Missoula, MT 59804

Dear Greg,

In response to your request to review the Helena NF's use of the "Hillis Paradigm" (Hillis et al. 1991) for establishing elk road standards, we offer the following information.

In the 1980's researchers and biologists from Montana Department of Fish, Wildlife, and Parks were becoming increasingly concerned about accelerated bull elk harvest due to a lack of security (Conner and Cade 1982). Problems associated with accelerated harvest included a lack of bull carryover (i.e. harvestable bulls were limited to yearlings) and hunters encountered few if any harvestable bulls after opening weekend and eventually quit hunting due to a lack of encounters. Conner and Cade (ibid.) described such outcomes as losses in hunter opportunity.

At the time, portions of western Montana, including the lower Clark Fork and SL Regis drainages, still had substantial bull carryover and a high level of satisfaction among elk hunters. The paradigm was an attempt to characterize those variables in the lower Clark Fork and other areas with acceptable bull carryover that would provide a minimum level of security for timber and road management planning. The variables selected by the authors included: 1) hiding cover (a minimum of 250 acres in non-linear patches); 2) distance from open roads (a minimum of 1/4 mile); and 3) a threshold suggesting that no less than 30% of each herd unit should have this combination of cover and open roads. This combination of variables was selected arbitrarily (i.e. no statistical analyses were done to compare those variables to elk harvest rates), but did involve substantial consideration of on-the-ground conditions for cover, road access and bull elk carryover.

Examples of application of the paradigm are limited to the Lolo NF in western Montana. No attempt was made by the authors to consider eastside conditions. Thus we can't say whether or not the paradigm would be applicable to Helena NF conditions. We do suggest, however, that applying the paradigm to eastside forests with typical open forest cover types and gentle topography would be imprudent without first doing some formal review with local biologists and researchers familiar with the unique elk harvest situations on the eastside.

A recent paper published by The Wildlife Society (Proffitt et al. 2013) tested GPS collared elk habitat selection during the hunting season against the Hillis paradigm and other attributes and concluded that "female elk selection for areas restricting public hunting access was stronger than selection for security habitat in both study areas, and that the density of roads open to motorized use was the strongest predictor of elk distribution." This suggests that compared to the paradigm there is more up to date science available that the Helena NF should consider.

Respectfully,

  
Greg Lynn J. Michael Hillis

Amendment Alternative B circumvents the original intent of the Hillis Model by limiting its application to the Administrative Boundary of the Helena National Forest and eliminating cover, and it therefore should not be applied.

FEIS (422) indicates that the new standard would exceed the 30% security standard used by Hillis et al. , but this comparison is astonishingly disingenuous since Hillis et al. clearly requires forested cover and requires evaluation across the entire EHU. The proposed standard amendment only measures areas of closed roads within the administrative boundary during the hunting season. The FEIS goes on to state that the 50% standard is being proposed whether it is attainable or not; and Table 3 and 110 indicates that none of the EHUs would meet the new amended standard for fifty percent security. So it would be prudent to utilize the existing

standard that preserves cover as a measure of security, and where at least 4 of the 6 EHUs would meet the existing standard under Alternative 5.

Table 3: Elk Security by Elk Herd Unit Percentage of Elk Security within that Portion of an Elk Herd Unit within the Helena Ranger District Administrative Boundary by Travel Plan Alternative

Herd Unit	Alt 1 Security %	Alt 2 Security %	Alt 3 Security %	Alt 4 Security %	Alt 5 Security %
Black Mountain– Brooklyn Bridge	16	16	16	16	16
Greenhorn	7	10	23	25	30
Jericho	12	12	16	16	17
Spotted Dog - Little Blackfoot	30	29	39	34	44
Little Prickly	23	25	26	25	28
Pear—Ophir Quartz	0	0	0	0	0

FEIS (420) Big Game Security in the Hunting Season, makes a good case to leave the existing security standard in place since 4 of the 6 EHUs are in compliance with the standard under Travel Plan Alternative 5 (up from 3 EHUs in the existing condition). In contrast, none of the EHUs meet the 50% proposed standard (Table 109), but if it ever did, the amended standard allows for depletion of security down to 50% and does not require that security be brought up to the minimum level of 50% in any of the EHUs .

There is no analysis of cover for the proposed amendment in the FEIS as called for by Forest Plan Big Game Standard 2. If all cover that were allowed to be removed, were removed through management actions then no actual cover would be **required** other than what the non-binding guidelines within the proposed amendment state:

- 2. Subject to Guideline #1, provide cover, *if available*, between elk security areas ...
- 4. Subject to Guideline #1, provide cover, *if available*, in elk security areas ...
- 5. Frequent, continuous dense cover, *if available*, should be provided adjacent to system roads within and between elk security areas ... (*emphasis added*)

**6a. Suggested Remedy:** Adopt the 9/1-12/1 security period and Alternative 5 of the Travel Plan, but leave in place the existing security standard features for hiding cover and road densities. OR

**6b. Suggested Remedy:** Accept the basic tenants of the Hillis model:

- v) keep at least 30% of the entire EHU in security (more when bull elk vulnerability is problematic),
- vi) security areas must be at least ½ mile from an open road, and farther when closed roads occur within the security area,
- vii) areas of biological potential for forested cover blocks should be identified and managed to encourage regeneration across the landscape in regularly distributed blocks so that wildlife movement and security habitat can be measured, improved,

and ultimately maintained at or above the needs of all ungulates and rare carnivores,  
viii) limit road densities.

**6c. Suggested Remedy:** Smaller acreage of forested cover can provide important visual screening, travel corridors, and connectivity between actual security blocks. This suggestion has been addressed by acknowledging and defining *Screening Cover and Concealment Cover* in the proposed standard. Even so, Screening and Concealment cover were not quantified in the amendment; and *Intermittent Refuge Areas* do not require cover and only provide 0-6% of this type of security areas ½ mile from a road in the Divide EHUs (FEIS Table 4). This recognition of cover and smaller refuge areas is a positive step. However the existing standard does a better job of recognizing all important aspects of security.

**6d. Suggested Remedy:** Display a cover analysis for Alternative B.

**7. A broad range of reasonable alternatives was not offered. In fact, only one action alternative, Alternative B, was developed. Another alternative was previously suggested and could have analyzed the open, topographically gentle “east-side” Helena Forest – to address the biological potential of various landscapes of the HNF to provide cover, as has been requested in previous comment. We believe that such an effort could produce a realistic, achievable, science-based, security standard.**

NEPA “mandates that agencies ‘study, develop, and describe appropriate alternatives to recommended course of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.’” *Pit River Tribe v. U.S. Forest Service*, 469 F. 3d 768, 785 (9th Cir. 2006) (quoting 42 U.S.C. § 4332 (E)); see also 42 U.S.C. § 4332 (2)(C)(iii) (must consider “alternatives to the proposed action”).

The alternatives analysis as “the heart” of the environmental analysis because it presents “impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options.” 40 C.F.R. § 1502.14. The alternatives analysis guarantees that “agency decisionmakers ‘[have] before [them] and take into proper account all possible approaches to a particular project (including total abandonment of the project) which would alter the environmental impact and the cost-benefit balance.’” *Bob Marshall Alliance v. Hodel*, 852 F. 2d 1223, 1228 (9th Cir. 1988) (citations omitted). “Informed and meaningful consideration of alternatives . . . is thus an integral part of the statutory scheme” and critical to the goals” of NEPA. *Id.* at 1228-29.

In this case, the Service fails to adequately describe, let alone consider and analyze a reasonable range of alternatives to the proposed amendment. No alternatives to the proposed amendment, other than the “no action” alternative, are mentioned or analyzed in the DEIS. This is a blatant violation of NEPA. The Service must (but has failed) to analyze a reasonable range of alternatives to the proposed amendment. 4

At the very least, this would include a more thorough analysis of the no action alternative (keep standard #4a) and then evaluating and comparing a wide range of new standards/approaches for managing big game habitat in the Helena National Forest based on the best available science. Such alternatives might include: (1) applying the Hillis model as described in Hillis et al. (1991) without any changes; (2) increasing block sizes, threshold values, and/or distances from roads or making other modifications to the Hillis method's criteria to account for difference between the eastside and westside forests; (3) the Service's current proposed amendment; (4) keeping parts of Standard #4a and combining it with other approaches, including the Hillis method; (5) keep the existing standard work towards compliance by increasing hiding cover and reducing road density ; or (6) develop an entirely new approach based on current habitat conditions and harvest numbers for the analysis area and after consulting local researchers and biologists.

FEIS (viii) states:

Under the Forest Plan amendment proposed for the Divide Travel Plan and applicable to future projects in the Travel Plan Area, the "security area" approach would replace the "road density/hiding cover index" as the Forest Plan standard for gauging the vulnerability of elk to hunting. The amendment derives from the Hillis methodology (1991) and adopts specific guidelines for its application from Recommendations for Big Game Habitat Management on the Custer, Gallatin, Helena and Lewis and Clark National Forests (MDFWP and USDA Working Group 2013).

However, the document, Recommendations for Big Game Habitat Management on the Custer, Gallatin, Helena and Lewis and Clark National Forests<sup>23</sup> (p.14), states that "MDFWP biologists felt that security areas are not meaningful to elk" if elk are unable to use them; particularly if they become targeted islands that hunters learn to converge upon. "To be most effective, security areas should be well-distributed cross the breadth (geographic and elevations) of elk habitat within the EAU."

The designated Security Areas approach has several drawbacks from the start.

The Working Group did conclude (MDFWP and USDA Working Group 2013, pg 8) that, "When the goal is to keep elk on public land, we would encourage consideration of conditions on all ownerships within the EAU, whether good or poor, when making decisions at the project level."

Therefore the proposed amendment to address security within the administrative boundary is in conflict with group recommendation to address the entire EHU.

Distressingly, the amendment has no intention of meeting even the minimum goal to provide big game security because it states:

*"Where security areas comprise 50% or less of that portion of an elk herd unit within the HNF administrative boundary during the general rifle season, management activities shall not result in a further reduction."*

The HNF confuses the discussion when it introduces a 50% security metric within the HNF administrative boundary because it does not meet minimum scientific criteria to be applied across an Elk Herd Unit. The amendment introduces this new security percentage that is not based on anything, but appears to be an improvement because it changes the minimum “security area” to 50% when in fact that 50% is actually substantially less than the accepted measure of 30% hiding cover in an *entire* EHU, rather than 50% of the much smaller administrative boundary (that would not require cover and could allow administrative use of closed roads within a specific security polygon on the forest).

It goes on to state that those EHUs that do not meet the 50% criteria would not be allowed to decline further. But, the amendment accepts a level of security below the minimum threshold if an EHU is currently below 50%. There is no requirement (only a guideline) to bring it up to minimum levels. In addition, the amendment does not prevent EHUs that are above the minimum of 50% from being reduced to the minimum 50% threshold through “actions” by the HNF. Neither of these security scenarios (1. no hiding cover; and 2. security areas provided within the HNF administrative boundary only) is acceptable as a starting point for big game security on the Divide landscape.

Hillis et al. (1991) clearly indicate that for forests east of the Continental Divide having more open and gentle terrain, security patch sizes should be enlarged, roadless buffers around cover should be enlarged, and the percentage of the area serving as security should be enlarged. These provisions have not been adequately addressed in the proposed amendment.

An analysis of the Hillis Model was conducted for the Bighorn National Forest of northeastern Wyoming<sup>24</sup>. The Bighorn National Forest lies east of the Continental Divide, and like the Helena National Forest, the terrain is more open with less topographical relief than west-side forests. The Wyoming study clearly indicates that *cover* is essential to elk survival on the Bighorn National Forest and its findings run counter to the unvalidated amendment being proposed for the Helena National Forest:

“Research indicates the importance of various aspects of cover to elk survival through hunting seasons. Providing adequate security areas for elk make them harder for hunters to find, therefore, allowing liberal hunting opportunities that are less costly in terms of elk vulnerability. For instance, starting in the mid-1960s, accelerated timber harvesting on the Big Horn Mountains sent former elk hiding cover to the sawmills as logging roads permeated previously secluded areas. With better access and a booming economy, the Bighorn National Forest became deluged with hunters by the mid 1970’s. Responding to public concerns about the quality of the hunt, and fewer mature bulls (a symptom of rising elk vulnerability), the WGFD cut elk hunting seasons and switched to limited-quota permits. This resulted in a long-term decrease in elk hunting recreational opportunities. Today, approximately one-third the number of hunters and recreation days found in the 1960’s, 70’s and 80’s remain. The loss of hunting opportunity not only affects hunters; it also means a loss of hunting license revenues for wildlife management programs and loss of income to the state’s economy.”

Wyoming researcher B. Jellison<sup>25</sup>, in evaluating application of the Hillis Model to the Bighorn National Forest which has open landscapes typical of east-side Montana forests, states:

“Rather than imposing more restrictions on hunters (shorter hunting seasons, antler restrictions, limited licenses and technology limitations), one alternative is to maintain habitat security levels that allow desired numbers of bull elk to escape harvest...”

“It should be noted that the above guidelines [Hillis Model] were developed for steep, heavily forested habitats of Western Montana. The Big Horn Mountains, with large natural openings and gentle high elevation slopes, provide less security from hunting pressure and other stress-induced human activities. Large openings make elk more detectable and gentle slopes provide easier hunter access (Burcham and Jellison 1993). For this reason, we contacted authors of the Hillis paper to get their ideas on security area guidelines for the BNF. Mike Hillis (pers. comm. 1992) recommended applying the model by increasing minimum parameters. He suggested that security area might approximate one mile from open roads and 500 acres in size. Jack Lyon (pers. comm. 1992), Mike Hillis (pers. comm. 1992), and Les Marcum (pers. comm. 1992) all agreed that security guidelines would be most effective if applied to the portions of the Big Horn Mountains where relatively continuous cover exists. Although we initially applied these more restricted parameters suggested by Hillis, the computer model found that few areas met these requirements. Consequently, only the original parameters were mapped and analyzed in this report.”

The Bighorn National Forest analysis found that forested cover had been reduced to 24% of its biological potential since pre-forest plan levels of the 1960s. The Bighorn National Forest could not meet the required 30% security for an analysis unit (Wyoming Game and Fish Department, Sheridan Region 2004). Although they did not analyze how hiding cover might be restored, they did note that hunter opportunity on the Bighorn National Forest has plummeted as a result of “accelerated timber harvesting... [that] sent former elk hiding cover to the sawmills and logging roads permeating previously secluded areas.”

The Wyoming researcher B. Jellison<sup>26</sup> determined:

“approximately one-third the number of hunters were found as in the 1970s and 1980s. The loss of hunting opportunity not only affects hunters; it also means a loss of hunting license revenues for Wyoming’s wildlife management programs and a loss of income to the state’s economy.”

Hillis et al. (1991) noted in their concluding statements for their research in western Montana:

“Two disturbing trends were discovered. First, most herd units already had less than the minimum 30% security due to past timber harvest; in many of these cases, there were strong indications that bull survival was declining or at risk. Second, even in situations where security was substantially less than 30%, all remaining security stands were targeted for timber harvest. This indicates that timber harvest decisions made over the next few years will potentially severely impact remaining security, and,



ultimately, hunter opportunity. Additional research is needed to test and refine these guidelines... Planning must not only address the quality and spatial arrangement of existing security areas, but also must provide for the regeneration of replacement security areas where a sustained timber harvest is desired.”

We are concerned that the HNF has not addressed the presence/absence of its forests and that omission is camouflaging years and years of serious decline in big game security as a result of timber sales and road construction. The contemporary complaint puts all the blame for declining cover on the bark beetle. The fact is, roading and timber harvest has taken a dreadful toll on security. The current approach is to try to remove all dead and dying timber, whether it is in the wildland urban interface or not. A more considered ecological approach to dead and dying trees that are part of the natural process is needed on behalf of all wildlife and other natural resources.

**7a. Suggested Remedy:** Develop a Forest Plan standard that recognizes forest cover as an important component of security and requires retention of existing cover and steady restoration of hiding cover where biological potential allows.

**7b. Suggested Remedy:** HNF should undertake a well defined process to quantify the biological/vegetative potential of the Travel Planning Area (and on the rest of the Forest), as well as the proportion of the landscape that is not meeting that potential. This information is likely already available on the HNF.

**7c. Suggested Remedy:** HNF vegetative cover types should be classified as to whether they are capable of providing elk hiding cover at a 40% canopy closure. This metric must be clearly described.

- Does the 40% canopy closure involve trees that are of at least of a certain height?
- Does 40% mean that 40% of the ground is covered at a height of at least 8 feet (the height of a bull elk and his antlers)?
- Does the 40% closure account for steep terrain where security is reduced such as a situation in which a person on a road on a side hill can look across the drainage and see down through the canopy cover?
- Is there an option for hiding cover on relatively flat ground that could use the Forest Service definition of hiding cover where 90% of an elk at 200 feet is obscured? This might occur in dead timber stands, regenerating clearcuts, or even dense tall sagebrush.

**7d. Suggested Remedy:** Conduct an analysis similar to that conducted on the Big Horn National Forest in Wyoming.<sup>27</sup> Such an analysis would put to rest the question, “What is the capability of the Helena National Forest to provide big game hiding cover (potential and actual hiding cover in acres)?” The Wyoming report addresses big game security in Strategy 3:

“Strategy 3: Detect natural and anthropogenic temporal changes to elk habitats using Landsat TM or similar sensor data every five years. These techniques are proven to be an efficient and cost effective means of gauging federal agency progress towards

managing and preserving their elk habitats. The data also facilitates landscape analysis and allows biologists to determine issues and formulate solutions, irrespective of land ownership and accessibility of habitats.”

***As a starting point, fill in the blanks on this table.***

MFWP Hunting Districts OR Elk Herd Units	Forested Cover		
	Potential Forested Cover (Acres)	Actual Forested Cover (Acres)	Percent of Potential
Blk Mtn/Brooklyn Bridge			
Greenhorn			
Jericho			
L Prickly Pear/Ophir			
Quartz Cr			
Spotted Dog/LBlkft			
Blk Mtn/Brooklyn Bridge			
Greenhorn			

**7e. Suggested Remedy:** A combination of principles regarding security from Hillis et al.<sup>28</sup>, along with an evaluation of existing and potential forest cover as per Jellison<sup>29</sup> should be explored to design and implement a revised Forest Plan Standard that reflects security for bull elk on public lands.

**8. Ensure the viability of MIS.**

Under NFMA, the implementing regulations, and the Helena Forest Plan, the Service is required to manage wildlife habitat on the Helena National Forest to ensure viable populations of existing native species are maintained.

To do so, the Service identified management indicator species (MIS) for various species groups within the Helena National Forest whose habitat is most likely to be changed by forest management activities, that would be released from hiding cover requirements and road density standards in the case of the proposed big game security amendment.

The MIS for the mature tree dependent group, for instance, is the marten. The old growth dependent group is represented by the piliated woodpecker and the goshawks; the snag dependent groups is represented by the hairy woodpecker; the threatened and endangered group includes the grizzly bear (and other species); and the commonly hunted MIS are elk, mule deer, and bighorn sheep.

These MIS represent a proxy or surrogate for the health and viability of many other species. While the Service retains some flexibility with respect to the appropriate methodology used to monitor population numbers (actual and trend) of MIS, i.e., using population data on MIS and/or habitat data as a proxy for MIS population data (commonly referred to as the “proxy-on-proxy” approach) the mandate to maintain viable populations of MIS like elk, mule deer, moose, marten, grizzlies and woodpeckers, cannot be ignored. And the methodology employed

must be reasonably reliable and accurate. *Native Ecosystems Council v. Tidwell*, 599 F. 3d 926, 933 (9th Cir. 2010).

If, for example, the Service decides to use habitat as a proxy for population numbers for MIS, then the proxy results must mirror reality. Maintaining the acreage of habitat necessary to maintain viable populations of big game species (elk, deer, and moose) on the Helena National Forest must in fact ensure viable populations are maintained. At the very least, the Service must describe the quantity and quality of habitat that is necessary to sustain the viability of big game species and explain its methodology for measuring this habitat. *Native Ecosystems Council v. Weldon*, 848 F. Supp.2d 1207, 1213 (D. Mont. 2012).

In the Helena National Forest, the Service uses the big game standards, including Standard #4a, as a means of ensuring compliance with NFMA's viability requirement. Compliance with Standard #4a's hiding cover and road-density standard, for instance, is used as a proxy for population numbers and composition of elk and, as such, other big game species.

**8a. Suggested Remedy:** Do not use elk (MIS) population numbers as proxy for deer and moose population health.

The proposed amendment, however, eliminates standard #4a and replaces it with an untested standard based solely on size and distance from an open route during the hunting season. Hiding cover for big game and other forest dependent species was eliminated from the big game standard. And, under the new standard, "security" is allowed to remain at 0% of an EHU (Quartz Creek EHU). Because it is untested and eliminates the standard for hiding cover and road-density, there are no assurances that the new standard will work. There are no assurances, let alone reasonable assurances, that the new standard is reliable and accurate and will ensure that viable populations of elk and other big game species will be maintained. See *Weldon*, 848 F. Supp.2d at 1214-1215. Indeed, under the proposed amendment, a 1,000 clear cut would qualify as "big game security" so long as it is a half mile from a motorized route open during the hunting season.

Use of the new standard as a proxy for monitoring populations (actual and trend) of MIS like elk and deer, therefore, is a violation of NFMA, the implementing regulations, and the Forest Plan.

Elk are supposed to be the surrogate for other big game species when a standard is defined. By not including cover, the security standard amendment arbitrarily discards species that are not as road-averse as elk, including deer and moose that do not display the human intolerance that elk do, and thus heavily rely upon cover for security. The FEIS (266) disregards the impacts to moose and deer in providing only an alternative that disregards cover when it notes:

- "Parameters not carried forward in the report are those for which there are either no anticipated impacts associated with alternatives or for which the impacts are addressed via analysis of a surrogate species [the elk analysis, for example, provides a basis for inferring primary impacts on white-tailed deer and moose]."
- "Current status and needs of moose are discussed in the Specialist Report but effects are not reported." FEIS (267)

- “We assume that the effects of human actions on elk more or less pertain to other big game species as well, although there will be species-specific differences that are not reflected in the elk analyses that follow. Some of these differences are described in sections on individual species below (*Mule Deer, Moose*) and the rest in the Wildlife Analysis Approach Table (*appendix A of the wildlife specialist report*).” FEIS (295)
- FEIS (332) acknowledges that the moose population is declining but deflect attention away from the lack of cover.

**8b. Suggested Remedy:** Develop a security standard for big game that represents the habitat cover needs of deer and moose as well as elk.

In the FEIS, the HNF concludes that loss of hiding cover (and eliminating Standard 4a) will have no negative effect on big game security but no analysis is provided. And, the assumption that cover is not important for big game species like elk, deer, and moose is belied by the best available science (See #3).

The FEIS (332) clearly but inappropriately using the travel plan to justify why deer and moose are not evaluated with respect to a lack of cover allowed in the proposed amendment when it states:

“As with mule deer, because moose are unlikely to be affected by changes in the road and trail system proposed in the Divide Travel Plan differently than elk, they will not be analyzed separately in the “*Environmental Consequences*” section of this report.”

**9. The direct and indirect impacts of the proposed amendment upon the species for which elk are a surrogate, have not been adequately evaluated. Additionally, the cascading consequences upon other wildlife species such as goshawks, lynx, and grizzly bear as a result of the proposed amendment were not disclosed.**

A direct consequence of the proposed amendment would be to grandfather-in as acceptable, the depletion of forested cover due to past management. A new cover-less baseline would be set with the proposed amendment.

Pursuant to NEPA, the Service is required to assess how the proposed amendment may directly impact the environment. Direct impacts are caused by the action and occur at the same time and place. See 40 C.F.R. §1508.8. The direct impacts of an action must be analyzed based on the affected interests, the affected region, and the locality in which they will occur. 40 C.F.R. § 1508.27 (a).

Here, the HNF failed to take a hard look at the direct impacts of the proposed amendment which – by eliminating the hiding cover – will result in less hiding cover on National Forest lands in the EHU (and more timber harvest), increased road-densities, and potentially less real security in big game habitat. Nowhere in the FEIS, however, does the HNF analyze what the direct impacts of these changes will be on survival of male big game animals (elk, deer, and moose) and habitat, or on other MIS, sensitive, and listed species (lynx and grizzlies) or proposed to be listed species (wolverine) inhabiting the area. Most of these species depend on

(and need) dense forests with high levels of horizontal cover, secure areas, and less roads for long-term survival and recovery. Nor does the HNF analyze how the proposed amendment will impact lynx critical habitat or the importance and use of the area as a linkage zone or travel corridor for wildlife.

Collectively, the information in the FEIS represents only a portion of activities that have occurred on the Helena Ranger District. Not all of the information relevant to evaluating cumulative effects is present, but acreage of forest removal (hiding cover) has been substantial. Implementation of these and the other projects, as well as Forest Plan amendments that have not been adequately analyzed in the full context of forest cover loss, demonstrates that the HNF simply has chosen not to abide by the Forest Plan Standard for big game security. The Forest Service knew that these projects would severely affect hiding cover and thus compliance with the Forest Plan security Standard 4a. But instead of addressing bull elk vulnerability and antlerless elk displacement to more secure private areas, the FEIS (593) erroneously shifts the emphasis to elk populations:

“effects to elk hiding cover from this and other site-specific Forest Plan amendments should not compromise the Forest's ability to provide habitat potential to meet Forest Plan elk population goals.”

In the context of amending the big game security standard, the FEIS lists but does not fully reveal the cumulative loss of hiding cover that has impacted security. It is important that the pending ROD be based on relevant analytical factors that affect big game security and the potential of the forested cover to recover.

Where is the analysis for security across the Divide landscape that describes what proportion of the forest is currently denuded? A discussion of the Divide's habitat potential is not addressed. It is relevant to know whether the HNF compares to the Big Horn National Forest “where it was found that forested cover had been reduced to 24% of its biological potential since pre-forest plan levels of the 1960s.”<sup>30</sup>

The FEIS failed to address or dismissed the following relevant issues raised in our DEIS comment regarding direct and indirect impacts of past management projects on Forest Standard 4a:

In addition to timber sales, fragmentation of critically important Inventoried Roadless Areas (IRA) is a concern (Jericho/Black Mountain, Bison Mountain). The HFRA Hazard Tree Project had the following effects:

- 136.2 miles of road and 66 different road segments within the Divide landscape were “treated” and routes in two IRAs were improved
- IRAs constitute extremely important big game security areas – but the functionality of these areas for security was reduced as a result of the Hazard Tree decision, even though HHAA submitted comments<sup>31</sup> and filed an Objection<sup>32</sup> requesting that this action not proceed until HNF Forest Travel

Planning for Blackfoot and Divide was completed. The HHAA Objection was denied.

- The Hazard Tree decision was supposed to be based on Wildland Urban Interface (WUI) maps, and roads within those areas were to have received “treatment”. However only 110.2 miles of road occurred in the WUI, and 380.8 miles of road did not. Nevertheless, all 491 miles of road were rubber stamped for “treatment” which involved tree removal along the road extending out 125’-150’, and grading and gravelling the surface in many cases. Many dead-end spur roads and road that were closing themselves due to lack of use and vegetation encroachment, were allowed to be reopened – all affecting, or potentially affecting, Forest Plan Big Game Standards 1, 3, 4 (a, b, c, g, h), and 5.
- That action allowed treatment (removal of dead and live timber and possible surface improvement) of more than 491 miles of road and created 9,415 acres of disturbance (Hazard Tree EA pg 23) across the HNF – substantially impacting big game summer range hiding cover, fall security, winter thermal cover, and other wildlife requirements.
- Compliance with Forest Plan standards for summer hiding cover and big game security were exempted from the Hazard Tree project.
- Forest Plan Amendments  
Cumulative effects of previous Forest Plan Amendments upon big game security should be fully analyzed to describe the total net reduction in cover across the landscape today compared to hiding cover potential. Examples include the Hazard Tree project and incremental losses that are dismissed as irrelevant even though the EHUs are already below standard.

The FEIS does not address declining habitat connectivity, hiding cover, or fragmentation as a result of cumulative management actions. The FEIS (277) does acknowledge that management activities can have an effect on these components of wildlife habitat:

“Fragmentation is the converse of connectivity. Fragmentation occurs when a habitat, be it riparian, forest, or grassland, becomes partitioned into smaller patches either by natural means (such as conifer colonization in grasslands or fire in forests) or by human enterprises (such as logging, settlement or road building). Corridors are particularly susceptible to fragmentation because of their relatively narrow, linear configurations. “

The HNF in the past has violated its own Forest Plan Standards and will continue to do so unless non-discretionary Forest Plan Standards and mitigation measures designed to bring the site back into compliance with each standard, are implemented and enforced.

Indirect effects of the proposed Amendment on wildlife that are supposed to be represented by elk as a Management Indicator Species, were not adequately evaluated.

Pursuant to NEPA, the Service must take a hard look at the indirect effects of the proposed action. Indirect effects of a proposed action are effects that are caused by the action but occur later in time or are further removed in distance. 40 C.F.R. § 1508(b). Indirect effects “may include growth inducing effects or other effects related to induced changes in pattern of land use; population density or growth rate; and related effects on air, water, and other natural resources.” Id.

Here, the proposed amendment will likely result in less hiding cover on National Forest lands. This may push elk off of public lands and onto private lands (where hunting is not allowed). And the loss of hiding cover, most likely from timber projects, will come with additional logging roads and skid trails thereby resulting in even less security.

Eliminating Standard 4a’s road density standards paves the way for more roads and motorized trails on National Forest lands which, in turn, means more public access both to remote areas and between those areas. The proposed standard does not address road density anywhere, and does allow for new administrative roads. These roads – which make it easier and faster for walking, biking, and horseback riding – will funnel more hunters, trappers, and recreationists into otherwise secure habitat. No analysis of these and other indirect effects are provided in the FEIS.

Outside of proposed designated security areas, there are no constraints on road density, so wildlife use outside of designated areas would be severely hampered. It appears as though adopting the proposed amendment, where security is contained to specific areas, would encourage more roading between those areas. This would lead to cumulative impacts to a variety of wildlife.

By focusing on a cover-less standard for elk alone, other big game species such as mule deer, white-tailed deer, moose, and bear – are being ignored. Unique behavioral traits, habitat niche selection, and hiding cover needs for deer and moose must be accommodated by any standard designed for elk.

**9a Suggested Remedy:** If a standard includes measurable hiding cover and road densities both within and between potential security areas, big game species for which elk are supposed to be a surrogate will be better served. The existing Standard 4a does a better job of this than the proposed amendment.

While Screening Cover and Concealment Cover outside of proposed designated security areas are a step toward acknowledging the importance of hiding cover, there are no measurable requirements for retention of at least minimum forest cover, so wildlife movement between “security areas,” “refuge areas,” or movements to and from different elevation seasonal ranges would be difficult. With hiding cover removed from the standard, wildlife movement between seasonal habitats would be encumbered. And, the real potential for more roads on the landscape both within security areas and between them would further reduce security.

**9b. Suggested Remedy:** Conduct an analysis of both existing and potential cover within and between proposed security areas. Such an analysis should reflect how elk, and species that are supposed to be represented by elk (deer and moose), would fare with vegetative cover recruitment or removal.

**10. Inadequate and unfunded maintenance, monitoring, and enforcement of roads/trails and motorized travel as allowed under the Divide Travel Plan, virtually assures that any standard for big game security will not function properly.**

Forest Plan Standards or standard amendments must be measurable in order to gauge whether they are being met through monitoring. This amendment in itself is proof that Forest Plan security Standard 4a was not monitored and therefore not maintained. Now, in order to circumvent that inconvenience, the Standard and its Guidelines have been purposefully designed not to be specific and therefore not measurable.

Inadequate and unfunded maintenance, monitoring, and enforcement of roads/trails and motorized travel as allowed under the Divide Travel Plan, virtually assures that any standard for big game security will not function properly. Commentary from line officers and staff (Lincoln District Ranger Amber Kamps at public meeting 12/3/13, Law Enforcement Officer Tony Fidele in telephone conversation 5/27/15) and official reports<sup>33</sup> document lack of funding for maintenance, monitoring, and enforcement of travel plans.

36 CFR 219.1(g): The responsible official shall ensure that the planning process, plan components, and other plan content are within Forest Service authority, the inherent capability of the plan area, and the fiscal capability of the unit.

A Forest Plan amendment should not be implemented simply because the HNF continues to develop roads and forest projects beyond their capacity to meet budgets, meet Forest Plan objectives, maintain infrastructure, or ensure healthy landscape function. Particularly when National Visitor Use Monitoring figures indicate (FEIS 666):

“During fiscal year 2003, 9.0% of Helena National Forest visitors participated in off highway vehicle (OHV) recreation, 27.3% participated in driving for pleasure, and 2.6% participated in snowmobiling. These percentages are all smaller than the following activities with the highest participation rates, viewing natural features (48%), viewing wildlife (47.5%), hiking walking/hiking (39.5%), relaxing (36.0%), and hunting (30.1%). When visitors were asked to claim a primary activity, 2.4% claimed OHV use, 1.1% claimed driving for pleasure and 0.9% claimed snowmobiling. In general, spending by all HNF visitors was below the average for visitors to all national forests.”

HNF Forest Plan IV/3:

“Monitoring and evaluation comprises the management control system for the Forest Plan. It will provide the decision maker and the public, information on the progress and results of implementing the Forest Plan.”



In that chapter of the Forest Plan, there is no meaningful reference explaining how big game security Amendment Alternative B would be monitored.

Not at all clear is the Helena National Forest's ability or willingness to conduct monitoring and evaluation of big game security.

FEIS (Appx D, 269) states:

"The Forest Plan amendment, in response to this comment, includes a monitoring section. See the Forest Plan amendment, Monitoring section."

While the FEIS (599) states that the following monitoring items will remain in place, these items have not been monitored consistently over the past 28 years of the Helena Forest Plan's existence, thus there is little hope that monitoring for Divide will occur in the future:

"Forest plan monitoring items will remain in place that will serve as the basis for determining if the proposed amendment is meeting the Forest's goals and objectives for big game. These monitoring items include:

- C1 - Monitoring of seasonal distribution, movement patterns and density of elk as determined by ground and aerial observations (USDA 1986, p. IV/7);
- C2 - Habitat evaluation to determine habitat preferences by elk (and other big game species (Ibid, p. IV/7);
- C3 - Habitat evaluation to determine effects of land use activities on ungulates (Ibid, p. IV/7);
- C4 – Habitat evaluation to determine impacts of open road densities, livestock grazing and effects to cover on elk habitat potential (Ibid, p. IV/8)

**10a. Suggested Remedy:** Display a monitoring plan that will quantify whether big game are benefiting from any standard or amendment relative to big game security. Then provide methods to correct deficiencies.

**10b. Suggested Remedy:** Reduce actions on the Helena National Forest to fit within its budget for Forest Plan monitoring and compliance.

**10c. Suggested Remedy:** Tailor the HNF Divide landscape road system to fit within its road budget.

**10d. Suggested Remedy:** To meet the objectives of the security amendment Alternative B, select Travel Plan Alternative 5.

**11. The proposed amendment for big game security for the Divide Travel Plan area encroaches on Elk Herd Units in an area that has already gone through an EIS process and ROD (2003) that included travel planning and vegetation manipulation using Forest Plan Standard 4a. [[FIND CITATION IN CU]] That standard should remain for those EHUs.**

The Divide Travel Plan area does not seem unique with respect to big game security on the Helena National Forest. The same issue with proliferation of motorized routes, thinner forests, past management that has compromised big game security – is found Forest-wide. It is inappropriate to propose such an amendment only to a portion of the Forest when similar conditions are present throughout. The Helena Forest Plan was developed for the entire Forest. While there are reasons for geographically specific direction such as unique soil conditions or special designations, we find proposing an Amendment specific to a Travel Plan area unjustified.

We are concerned that conflicting procedure and policy decisions emanating from the Divide Travel Planning area will have conflicting consequences upon the Clancy-Unionville portion of the Divide Travel Plan. The proposed amendment would be at variance with the decision that was rendered in 2003 for the Clancy-Unionville<sup>34</sup> area that stated (125):

“Most effective security areas are amply forested. Effective forest cover involves any combination of old-growth, mature timber, pole stands, regenerating samplings, and shrubs that can block long sightlines, screen movement, and provide environments in which elk feel secure.”

However the Divide Travel Plan FEIS (Appx D, 268) completely alters that direction when it broadly incorporates Elk Herd Units from the Clancy-Unionville area:

“The Forest Plan amendment applies to those portions of all the elk herd units within the administrative boundary that overlap with the Divide Travel Plan area and includes the herd units within which the Clancy Unionville project occurred (See Forest Plan amendment Alternative Description/Alternative B section). Because this Forest Plan amendment is programmatic in nature, it would replace Standard 4a for all future management activities.”

The FEIS (Appx D, 406) goes on to state:

“Although that analysis indicates that it’s possible for the Forest to close enough roads in the Quartz Creek EHU to achieve compliance with Standard 4a, several of those road miles over which the Forest has discretion are located outside of the Travel Plan project area and have already been subject to a travel plan decision (i.e. Clancy Unionville Vegetation Manipulation and Travel Management Project). The few miles of open roads in Quartz Creek EHU that could be closed as part of the Divide Travel Plan decision access private land.”

So the Forest would arbitrarily applies new security criteria to EHUs within the Clancy-Unionville area but yet would not close roads in that area to improve security under the proposed amendment and Divide Travel Plan. So, even though that area has gone through a recent decision process that used the existing Forest Plan Standard 4a for security, it now wants to remove that more stringent standard.

**11a. Suggested Remedy:** All EHUs that occur within the Clancy-Unionville Vegetation Manipulation Project, and for which ROD was issued in 2003, should remain under Standard 4a.

**11b. Suggested Remedy:** Other east-side Forests have similar big game security issues. Therefore we recommend that this big game amendment process be put on hold while an

eastside Forest process that is more comprehensive and applies proper scientific method and peer-reviewed scientific literature is conducted. We suggest a process such as defined in Objection Item #6 above.

**12. Non-compliance with other Forest Plan Standards. Pursuant to NFMA, the Forest Service must ensure that the proposed amendment is consistent with the Helena Forest Plan.** 16 U.S.C. § 1604 (i). If not, then the responsible official must either change the proposed amendment to bring into compliance with the other standards in the Forest Plan or amend to the other Forest Plan standards.

Here, the Forest Service has failed to ensure the proposed amendment - which eliminates the existing hiding cover and road density standards for big game security – is consistent with the following existing standards in the Helena Forest Plan. There is no analysis of compliance with other forest plan standards in the FEIS with respect to the proposed amendment (FEIS 543-599).

- Big game Standard #1 requiring that important summer and winter range for big game species include adequate hiding and thermal cover to support habitat potential. The HNF must (but has failed) to explain how the proposed amendment – which does away with the hiding cover standard – will ensure compliance with this important standard. In fact, FEIS 412 states just the opposite: “The Divide Travel Plan would have no effect on the status of Forest Plan hiding cover and any ongoing and future changes in hiding cover generated by other factors.”
- Big game Standard #2 requiring that an environmental analysis for all project work include a cover analysis at the drainage or EHU level. As noted previously in Objection 3 and 5, this has not been done.
- Big game Standard #3 directing that elk summer range be maintained at 35% or greater hiding cover and areas of winter range maintained at 25% or greater thermal cover in drainages or EHUs. This standard incorporates all land (private, state, and federal) in the EHU.

“In this analysis, we use the MFWP definition of hiding cover (in which greater than or equal to 40 percent canopy closure is used as a surrogate for actual hiding cover as measured on the ground) and we thus aim for greater than or equal to 50 percent canopy closure on elk summer range.” (FEIS 412) But this would not apply within the entire EHU, only within the administrative boundary, which is not in the best interest of big game within the EHU.

- Big game Standard #4 directing the Service to implement an aggressive road management program to maintain or improve big game security. The HNF must explain how the proposed amendment – which removes standards for maximum road density in the EHUs, exempts private and state lands from the big game standards, ignores the caveats in the Hillis model, and allows for the reduction in elk security to the threshold, and does not plan to bring EHUS below the minimum, up to the threshold – qualifies as an “aggressive” program to maintain and improve big game security.

With implementation of Alternative 5 and an enforceable Motor Vehicle Use Man (MVUM), an “aggressive road management” will have begun.

- Big game Standard #4b stating that elk calving grounds and nursery areas will be closed to motorized vehicles during peak use by elk. Travel Plan Alternative 5 would largely address needs for non-disturbance.
- Big game Standard #4c directing that all winter range areas be closed to vehicles between December 1 and May 15. Travel Plan Alternative 5 would largely address needs for non-disturbance.
- Big game Standard #5 dictating the minimum size areas for hiding and thermal cover.
- Big game Standard #6 stating that the Service will follow the Montana Cooperative Elk-Logging Study Recommendations (Appendix C in the Forest Plan).
- Big game Standard #10 stating that moose habitat will be managed to provide adequate browse species diversity and quantity to support current moose populations. Notably, Standard #4a is a big game standard designed to protect habitat for elk, deer, and moose. Mule deer and moose numbers are in decline in western Montana and eliminating standards for habitat cover may make a bad situation worse for these big game species.
- The standards, guidelines, and objectives included in the Northern Rockies Lynx Management Direction (“NRLMD”).
- The grizzly bear standards included in the Helena Forest Plan, including but not limited to the requirement, in occupied grizzly habitat, to minimize man-caused mortality by limiting the open road density to the 1980 density of 0.55 miles per square mile and the IGBC’s open road, total road, and core area standards for grizzly bear habitat.
- All standards and monitoring requirements of MIS, including but not limited to all forest (mature, old growth, snag) dependent species and sensitive, threatened and endangered species.

**12a. Suggested Remedy:** All Forest Plan Wildlife Standards that rely on timber, hiding cover, or certain minimum road densities should be evaluated with respect to the proposed amendment for big game security that would replace Standard 4a and thus delete measurable hiding cover requirements.

**12b. Suggested Remedy:** Address revision of this standard, and how it influences other Standards, in the Forest Plan revision process that is currently underway.

**Our suggested over-arching remedy is:**

- **to default to the existing Forest Plan Standard 4a for big game security that actually is met in 67% of the EHUs with application of Travel Plan Alternative 5 (while 0% are met with the proposed standard),**
  - **implement hunting season dates inclusive of the archery season, 9/1 to 12/1**
  - **implement Alternative 5 of the Travel Plan**
- **at the same time, for the pending Forest Plan revision, initiate an effort to evaluate the Helena National Forest's various landscapes' abilities to meet their respective biological potential to produce vegetation capable of providing hiding cover;**
- **then based on this information, establish a minimum percentage of each landscape's biological potential to produce hiding cover that would be important in meeting the security needs of big game;**
- **ultimately, greater than some minimum percentage of each landscape's biological potential to produce hiding cover would be applied in conjunction with a prudently monitored and responsively managed transportation system.**

- <sup>1</sup> **Wyoming Game and Fish Department** 2004. A ROCKY MOUNTAIN ELK HABITAT CONSERVATION PLAN FOR THE WGFD SHERIDAN REGION (And Portions of the Cody Region) Wyoming Game and Fish Department Sheridan Region Updated May 2004. 62pp.
- <sup>2</sup> **Hillis, J.M., M.J. Thompson, J.E. Canfield, L.J. Lyon, C.L. Marcum, P.M. Dolan, D.W. Cleery.** 1991. Defining elk security: The Hillis Paradigm. in *Elk Vulnerability - A Symposium*. Montana State Univ., Bozeman, April 10-12, 1991.
- <sup>3</sup> **Jellison, B.A.** 1998. Rocky Mountain Elk vulnerability within the Bighorn National Forest. Rocky Mountain Elk Foundation (WY96107), Bow Hunters of Wyoming and Wyoming Game and Fish Department. In *A ROCKY MOUNTAIN ELK HABITAT CONSERVATION PLAN FOR THE WGFD SHERIDAN REGION (And Portions of the Cody Region) Wyoming Game and Fish Department Sheridan Region Updated May 2004.* 62pp.
- <sup>4</sup> **Nie, Martin and Emily Schembra.** 2014. The important role of standards in National Forest planning, law, and management. Environmental Law Institute. News and Analysis - Environmental Law Reporter. 44: 1010281-10298
- <sup>5</sup> **Moser, Janet S., Denise Pengeroth, Pat Shanley.** March 4, 2014. Wildlife Specialist Report/Biological Evaluation for the Blackfoot Non-winter Travel Plan. Helena National Forest, Lincoln Ranger District, Lincoln, MT. 207 pp.
- <sup>6</sup> **USDA.** 2013. Custer, Gallatin, Helena, and Lewis and Clark National Forests. Framework for Project-Level Effects Analysis on Elk. 22 pp.
- <sup>7</sup> **USDA.** Ibid
- <sup>8</sup> **MDFWP and USDA Forest Service.** September 2013. U.S Forest Service and Montana Department of Fish Wildlife and Parks Collaborative Overview and Recommendations for Elk Habitat Management on the Custer, Gallatin, Helena, and Lewis and Clark National Forests. Unpublished paper on file at: U.S. Department of Agriculture, Forest Service, Gallatin National Forest Supervisor's Office, Bozeman, MT, 36 pp.
- <sup>9</sup> **Lyon, L. J., T. N. Lonner, J. P. Weigand, C. L. Marcum, W. D. Edge, J. D. Jones, D. W. McCleery, and L. L. Hicks.** 1985. Coordinating elk and timber management: Final report of the Montana cooperative elk-logging study, 1970-1985. Montana Fish, Wildlife, and Parks. Bozeman, MT. 53 pp.
- <sup>10</sup> **Lyon, L. J., and J. E. Canfield.** 1991. Habitat selection by Rocky Mountain elk under hunting season stress. Pages 99–105 in A. G. Christensen, L. J. Lyon, and T. N. Lonner, editors. *Proceedings of the Elk Vulnerability Symposium*. Montana State University, Bozeman, Montana, USA.
- <sup>11</sup> **Unsworth, J. W., L. Kuck, M. D. Scott, and E. O. Garton.** 1993. Elk mortality in the Clearwater drainage of northcentral Idaho. *Journal of Wildlife Management* 57:495–502.
- <sup>12</sup> **Rowland, M. M., M. J. Wisdom, B. K. Johnson, and M. A. Penninger.** 2005. Effects of Roads on Elk: Implications for Management in Forested Ecosystems. Pages 42-52 in Wisdom, M. J., technical editor, *The Starkey Project: a synthesis of long-term studies of elk and mule deer*. Reprinted from the 2004 Transactions of the North American Wildlife and Natural Resources Conference, Alliance Communications Group, Lawrence, Kansas, USA.
- <sup>13</sup> **Christensen, A. G., L. J. Lyon, and J. W. Unsworth.** 1993. Elk management in the northern region: considerations in forest plan updates or revisions. US Forest Service General Technical Report INT-303. 10 pp
- <sup>14</sup> **Weber, Keith T.** 1996. Identifying landscape elements in relation to elk kill sites in Western Montana. Master's Thesis, University of Montana.
- <sup>15</sup> **Ciuti, Simone, Tyler B. Muhly, Dale G. Paton, Allan D. McDevitt, Marco Musiani and Mark S. Boyce.** 2012. Human selection of elk behavioural traits in a landscape of fear. *Proc. R. Soc. B* (2012)279, 4407–4416
- <sup>16</sup> **Weber, K.T.,** 1996. Ibid.
- <sup>17</sup> **Nie, Martin and Emily Schembra.** 2014. The important role of standards in National Forest planning, law, and management. Environmental Law Institute. News and Analysis - Environmental Law Reporter. 44: 1010281-10298
- <sup>18</sup> **Weber, K.T.** 1996. Ibid.
- <sup>19</sup> **Montana Fish, Wildlife and Parks.** 2004. Montana Statewide Elk Management Plan. Montana Department of Fish, Wildlife and Parks, Wildlife Division. 397 pp.
- <sup>20</sup> **Hillis, J.M., M.J. Thompson, J.E. Canfield, L.J. Lyon, C.L. Marcum, P.M. Dolan, D.W. Cleery.** 1991. Defining elk security: The Hillis Paradigm. in *Elk Vulnerability - A Symposium*. Montana State Univ., Bozeman, April 10-12, 1991.
- <sup>21</sup> **Canfield, J.E.** 1991. Applying radio telemetry data to timber sale effects analysis in the Harvey Eightmile drainages in west-central Montana. Pages 44-54 in A.G. Christensen, L.J. Lyon, and T.N. Lonner, comps., *Proceedings of Elk Vulnerability – A Symposium*, Montana State University, Bozeman. 330 pp.
- <sup>22</sup> **Hillis et al.** Ibid
- <sup>23</sup> **MDFWP and USDA Forest Service.** Ibid
- <sup>24</sup> **Wyoming Game and Fish Department** Sheridan Region Updated May 2004. A ROCKY MOUNTAIN ELK HABITAT CONSERVATION PLAN FOR THE WGFD SHERIDAN REGION (And Portions of the Cody Region) 62 pp.
- <sup>25</sup> **Jellison, B.A.** 1998. Rocky Mountain Elk vulnerability within the Bighorn National Forest. Rocky Mountain Elk Foundation (WY96107), Bow Hunters of Wyoming and Wyoming Game and Fish Department. In *A ROCKY MOUNTAIN ELK HABITAT CONSERVATION PLAN FOR THE WGFD SHERIDAN REGION (And Portions of the Cody Region) Wyoming Game and Fish Department Sheridan Region Updated May 2004.* 62pp.
- <sup>26</sup> **Jellison, B.A.** 1998. Ibid.
- <sup>27</sup> **Wyoming Game and Fish Department** 2004. Ibid.
- <sup>28</sup> **Hillis et al.** Ibid.
- <sup>29</sup> **Jellison, B.A.** Ibid.
- <sup>30</sup> **Jellison, B.A.** 1998. Ibid.
- <sup>31</sup> **Helena Hunters and Anglers Association.** September 24, 2010. Hazardous Tree Project Summary of Roads to be Treated.
- <sup>32</sup> **Helena Hunters and Anglers Association.** April 23, 2010. Objection to Forest-Wide Hazardous Tree Removal and Fuels Reduction Project on the Helena National Forest (Includes Helena Forest Plan Amendment to Forest Plan Standards 3 and 4)
- <sup>33</sup> **Helena National Forest.** 2004. Roads Analysis Report. 110 pp.
- <sup>34</sup> **USDA Forest Service.** February 2003. Helena National Forest, Helena Ranger District. Record of Decision, Clancy-Unionville Vegetation Manipulation and Travel Management Project. 55 pp.