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First name: Jonathan
Last name: Haufler
Organization: Southwest Crown Collaborative
Title: Co-chair
Comments: See attached letter for comments

To Whom It May Concern:

This letter provides comments on the Proposed Action document that is part of the Forest Plan Revision for the Lolo National Forest from the Southwest Crown Collaborative (SWCC). The SWCC is a long-standing forest collaborative group comprised of a diverse group of citizens, landowners, entrepreneurs, natural resource professionals, and scientists from a variety of backgrounds and interests who have come together to work with forest land managers to help plan, implement, and monitor restoration of the large landscape in western Montana known as the Southwestern Crown of the Continent. Much of this landscape includes National Forest lands administered by the Lolo National Forest.

As we have noted in the past, we greatly appreciate the efforts of the Lolo National Forest staff and the Revision Team in being accessible and seeking input to the planning process. While receiving critical reviews of hard work conducted by the Team may not be fun, we want the team to know that we appreciate the efforts they are making as we desire to assist the team in providing the best plan revision as possible.

This Plan Revision is being conducted at a critical time. The Lolo National Forest is facing unprecedented challenges. The SWCC recommends that the plan needs to more directly acknowledge and address the wildfire and associated forest health crisis all of our forests in Montana face.

You will note in many of our comments that the SWCC is concerned about the specificity of vegetative characterizations and desired future conditions. The SWCC would prefer to see this Forest Plan Revision support project planning more directly. Forest planning is now typically relegated to regional teams, who bring expertise in the NEPA process for planning, but know very little about the specific area where they are conducting the planning. Instead, they rely on selected databases (specifically FIA), which usually results in generalized statements about desired conditions in Forest Plans. Without a greater effort to incorporate more localized data and information, this does little to convince us or a skeptical public that sound forest vegetation management decisions will result from the Forest Planning process. In other words, the SWCC wants to know as specifically as possible what is being planned in forest vegetation management, so that we and others can fully understand what an area is expected to look like after treatments are completed. We believe that a properly structured Forest Plan Revision along with its supporting information could include much of the information that could help make project review and implementation much less cumbersome, time consuming, and subject to successful challenges.

The SWCC has raised these concerns in the past. We have worked closely with the local Districts and had good

collaborative relationships, yet our input on activities conducted through the Regional and Forest level involvement often seem to be less effective. For example, the SWCC commented on the Lolo NF plan revision Assessment. We indicated that we felt that the Assessment was inadequate in describing historical and existing vegetation conditions on the Forest. While we would have liked to see the Assessment reworked to provide a better description, we understood that this would interfere with timelines for the revision process. We recommended that a way to address this concern would be to be much more specific in setting desired conditions for the Plan, and using these more detailed descriptions in developing the NEPA document. However, in reviewing the Proposed Action document, the desired conditions described related to forest vegetation are even more generic and less detailed than descriptions of conditions provided in the Assessment. This does not provide us with sufficient confidence that the Plan will be adequate to address the concerns we have raised about the need for better descriptions of the outcomes of future forest management activities.

We have numerous comments on the Proposed Action. Some sections in the Proposed Action have ample detail, but others, especially the section on Forest Vegetation, we find inadequate. Our comments on sections of the Proposed Action are described below.

Thank you for your consideration of our comments on the Revised Forest Plan for the Lolo National Forest.

Respectfully,

Jon Haufler and James Burchfield, Co-chairs, SWCC

Comments on Forest Vegetation

* The SWCC believes that forests on the Lolo National Forest can only be sustained and made more resilient to inevitable disturbances via careful and detailed classification and delineation of ecological conditions at multiple spatial scales, allowing for restoration of a mosaic of forest size classes and species distributions in the right locations that reflect the forest[rsquo]s historical conditions as guides to desired future conditions. We believe that this will only occur through well-designed, targeted interventions that expand management actions, such as stand density reductions and prescribed burning, well beyond the level of treatments identified in the proposed action. In other words, there is a lot of work to be done, and it must be well described during this planning cycle if we want these forests to be healthy, productive, and beautiful into the future. This is especially true given the cumulative effects of past logging practices, fire exclusion policies, and climate change reflected today in the level of uncharacteristic wildfire events and insect and disease impacts to forest ecosystem resiliency.
* Given the big differences in forest conditions between the east and west zones of the Forest, providing desired conditions such as the tree species presence or cover types on a forest-wide basis is relatively meaningless. This provides no clear direction for intended outputs of management, and provides little guidance for future project activities.
* As we have previously commented, stating general trends for desired tree sizes and densities by Northern Region Broad Potential Vegetation Types does not meet the intent of the 2012 Planning Rule in describing desired outcomes for forest ecosystems. Only by combining potential vegetation sites, composition, tree size, and density classes can desired future conditions for a specific ecosystem be properly described, both at the ecosystem scale (specific conditions of each ecosystem that meet the 2012 Planning Rule definition of an ecosystem) and at the landscape scale (amounts and distributions of each specific ecosystem across NF lands).
* The analysis of historical range of variability (Appendix 3) properly identified that each ecosystem should be defined in terms of its potential vegetation type as well as its composition, size class, density, and structure. However, this characterization of forest conditions is not carried through in the Proposed Actions. Very little is presented in desired conditions related to forest vegetation. Primary desired conditions are presented in 3 tables resulting in overly broad categories for the entire forest. They appear to be based on analyses from the HRV modelling. There are significant inaccuracies in these modelling outputs (discussed below). The combination of inaccurate information coupled with the inadequate description of desired conditions for ecosystems means that

the Proposed Action provides little direction and even less guidance for forest vegetation planning and fails to meet the required documentation called for in the 2012 Planning Rule.
* The vegetation desired conditions for large trees identifies this important component of forest vegetation needs. This is one of the few sections on forest vegetation that contains some meaningful guidance. However, even here, there needs to be more specifics of what types of specific forest ecosystems containing large trees need to be provided. For example, what are the specific desired conditions for restoring very large tree larch dominated stands on cool moist potential vegetation sites? What is the desired density of very large and large trees in such stands? What are the desired amounts of small to medium sized trees in these stands? What is the desired canopy coverage- open, moderate, or closed? What species are desired in the understory? The Best Available Scientific Information (BASI) is available to answer these questions, but none of this is discussed relative to desired conditions to assist with better defining Proposed Actions.

Although there is a recognition within the Proposed Action of the benefits of large trees, such as carbon sequestration and wildlife habitat, there is insufficient detail on the risks large trees face on the Lolo NF because of wildfire. This is particularly true in the warm moist and warm dry forest types identified within the Revised Plan[rsquo]s Appendices. The proposed treatments of roughly 20,000 acres per year over 10 years (200,000 acres total) will not be enough to sustain the current stock of large tree assets, since decades of fire suppression have led to ingrowth and ladder fuels below the upper canopy where these large trees occur. A wildfire event that enters these stands will burn too hot to allow these large trees to survive. The only feasible remedy is an aggressive understory thinning program coupled with prescribed fire. Although these operations may be costly and require an expansion of staff capacity to conduct the necessary intermediate treatments, a serious commitment to large tree retention and recruitment must face the hard reality that modest, poorly integrated actions will doom much of the Lolo NF large tree population.

The Proposed Action discusses how there are limitations in the use of VMAP to identify locations of large and very large trees. Other sources of data that can assist with determining locations were not identified in the document. For example, past stand exam information exists for many stands in the forest. Where these data identified a stand composed of large or very large trees in the past, it is highly likely that if such stands have not been treated or occur within a wildfire since the stand was examined, it has a very high probability of still being a large or very large tree stand. A study conducted by the Clearwater Resource Council that mapped locations of expected large tree stands using all available information and was then field checked found 91.5% accuracy in mapping where such stands occurred within the Clearwater Valley.

* There is no discussion of the large acreage of former industrial timber lands that have been acquired by the Forest in terms of desired conditions for forest vegetation. These lands should be discussed and what they can contribute to future desired conditions identified as part of the Forest Vegetation section. These lands represent a distinct class of conditions due to the past logging that occurred, and as such need specific attention in terms of what their future desired conditions should be.
* Planting and reforestation are mentioned throughout the document. It would be good to have more detail on when planting is needed and when it is not. For example, the Acquired Lands section discusses restoring 3000 acres over the life of the plan, but what does this mean in terms of desired compositions on specific PVT[rsquo]s? Where and why is the justification for other plantings? In many cases and especially in the WUI, we do not need to plant trees [ndash] objectives have changed since NFMA in the 70[rsquo]s mandated planting. This should be addressed in the plan.
* The discussion of snag management is generally good, although desired conditions for sizes and number of snags needs to be more targeted. Again, there is the need to identify desired conditions for specific ecosystems as this term is define in the Planning Rules- not a general goal for an entire PVT.

Comments on Old Growth

* Desired conditions for old-growth trees emerged as an issue in public comments during scoping. These

conditions and their extent are not sufficiently articulated in the Proposed Action. More specifics are discussed for old growth, without any description of what is specifically being defined as old growth in terms of an ecosystem description- potential vegetation group and a specific composition, tree size, density and structural characteristics. Without a better description, the old growth desired conditions are extremely vague and provide little direction. Old growth should be incorporated in the overall description of forest vegetation desired conditions- with the specific ecosystems as defined by potential vegetation type, composition, size class, and density that qualify as old growth for a site identified.

Comments on Non-forested vegetation

* Table 8 is good. It would be good to have something similar for the forest vegetation descriptions. A conclusive summary that is more illustrative would be beneficial.

Comments on Fire and Fuels

* The information contained in Table 9 does not adequately describe how it was derived. When fire and fuels are discussed, desired conditions only appear relative to low and high severity fires. The historical analysis identified stand replacing fire, mixed severity fire, and low severity fire. A high percentage of the identified fire was in the mixed fire severity category. Why wasn[rsquo]t any consideration of this type of fire regime addressed in the Proposed Action? What is meant by low or high severity fire? Is this measured on a 30X30m basis, per acre, or for a larger area such as 40 acres or a mi2? The NRV for burned acres is greater than the desired conditions. How were the acreage targets in Table 9 for low and high severity fire developed? What are the assumptions or constraints included in this determination?
* Given the recent and future focus on the wildfire crisis, the WUI emphasis should be clearer and more specific. This work should not be compromised by timber target work that is not meeting high priority fuels needs. This is an ongoing problem for the FS and an issue that is not well understood by the public or partners. It is not sufficient to say that all vegetation management work is meeting high priority fuels reduction needs. These need to be better spelled out and desired conditions for these identified.
* For Objective 01 on page 30 it is unclear what [ldquo]modify or maintain natural fire regimes[rdquo] means. Will [ldquo]natural[rdquo] fires be encouraged on 220,000 acres? Will expected types of fire be assigned to stands and allow for mechanically produced stand conditions be substituted for actual fire? It is hard to know without more detail and this is a key issue of this plan. How the role and occurrence of fire at the landscape scale should be addressed.
* The FW-FFW-STD for using a decision support process seems out of place in terms of Standards. In general, this plan has a variety of standards. Some are pretty specific and others are very vague and seem to be put in just as a placeholder. This would be an example of a placeholder.

Comments on Connectivity

* It is good this plan acknowledges the importance of National Forest lands on the Lolo NF in terms of connectivity. However, the Proposed Action does not do a good job of defining how connectivity will be maintained/improved/enhanced, but rather leaves it open by saying to Lolo will coordinate on these efforts. This is too generic given this is such a key issue to the public and partners. Connectivity discussion provides little insight as to what types of considerations are needed. While barriers to aquatic systems are discussed, barriers to movements of terrestrial species are not. Connectivity cannot be assessed without good maps of past, present, and desired future conditions of forest vegetation. A better set of definitions and associated goals is needed for connectivity, answering questions such as: What does connectivity mean? How is it measured? How do we monitor and know we have made a difference? Maybe some numeric objective could be included such as producing 1 large connectivity project per geographic area per decade for Lolo NF lands or under a collaborative effort that develops a cross ownership project. These types of capacity needs should be established in the Plan to create/inform budget/hiring/capacity.

* The SWCC believes that the restoration of vegetation patterns (including the size and distribution of patches of various age classes) must strive to reflect historical and likely future patterns of disturbance. Attempting to create this mosaic on the landscape scale will need to recognize the utility of natural managed fire, which in these cooler, wetter environments (cool moist and cold dry potential vegetation types), will be far more likely to create these desired vegetative conditions than human management interventions. Where investments in aggressive treatments can be most useful are in those places where the extent of high fire severity wildfires might be mitigated by both changes in the fuel profile and the increase in effectiveness of fire suppression operations to combat or redirect wildfires. This is why a systematized, careful classification and mapping of current and desired conditions across a broad landscape are essential to restoring forest vegetative patterns and increasing the probability that large trees can be saved.

There needs to be more focus on smaller trees and small-scale heterogeneity. This is important for several reasons and especially with Planning Rule focus on ecological integrity and species diversity/biodiversity. Small scale heterogeneity is an important piece to this and given the current fuels focus, many FS treatments are overly similar, and this could lead to a homogenous landscape with limited understory, down woody debris and lacking variable density tree retention aka patchiness. Recommendations for leaving specified amounts of coarse woody debris included in the soils section is good, but could be pulled into the forest vegetation section and fully described relative to specifically desired stand conditions integrating PVT, tree size, and composition categories.

Comments on Watersheds

* One of the most vital roles played by the Lolo National Forest is the regulation of water. Climate change is altering prior patterns of the amount and distribution of precipitation while also excessively warming water temperatures throughout the summer months. Sustaining cold water in streams will be a significant challenge during this era of climate change that the SWCC believes is a priority.
* The contributions of forest canopies in the maintenance of the water cycle cannot be overstated. However, the SWCC believes that the strict standards for operations in riparian areas that the Proposed Action continues to embrace ignores the very significant role of fire in riparian areas. Insisting on a [ldquo]hands-off[rdquo] approach in riparian areas can be counterproductive to the goal of protecting them. Many of these riparian areas would benefit from direct treatment of tree densities, and for encouragement of hardwood species like aspen. The SWCC encourages more flexibility for managers to implement restoration treatments in identified riparian areas.
* Protecting watersheds implies serious consideration on the design, maintenance, and extent of a road systems. Water quality may be impacted by sedimentation based on input from roads or road prism failures. In general, the SWCC encourages the reduction of unneeded roads especially where these are in high densities, such as on Acquired Lands. We also encourage the use of temporary roads in harvest operations, reclaiming or decommissioning of unneeded roads, and the minimizing of new permanent roads. Roads are the primary vectors for the introduction of invasive weed species, a continuing threat to native plant species, and present impacts to wildlife populations.
* Recent successes in restoring beaver ponds need to be monitoring and replicated. Beaver ponds offer a low-cost, highly effective means for water conservation while providing key habitats for naturally occurring wildlife populations. Actions that would allow for expansions of beaver in watersheds within the Forest are needed. Specifically, the high levels of beaver trapping occurring in some watersheds where the presence of beavers would enhance watershed functions have kept beaver populations from reaching desired levels from a watershed perspective. How can management of beaver populations be integrated with the goal of increasing beaver presence in many watersheds?
* Special use permits that allow water from National Forest Lands to be applied to mining operations should be tightly controlled to reduce the inevitable negative impacts from mining operations on water quality. Further, restoration of high-risk abandoned mining sites should be a continuing area of investment.

Comments on Acquired Lands

* It is great to see this in the plan. Given the scale of the issue and how little has been done with these lands since the large acquisitions began in the mid 2000s, it would be good to see more effort put in here. As an example, a goal of 10 miles per decade of road addressed on these lands is miniscule.
* For FW-ALT GDL #2 we suggest removing signage as a road closure deterrent. This is not in line with how the USFWS wants the Forest Service to address road closures. Roads only closed by a sign will be treated as open under grizzly bear analyses as per the 2022 Re-consultation on the Lolo Plan for this species. Frankly, signs are an ineffective tool at keeping motorized use off of roads that need to be closed.
* For FW-INF desired conditions it would be great to see something that addresses effective road closures. The FS needs a road system that aligns with Forest Travel Management (MVUM) and with the roads data base of record (INFRA). A goal under this area should be focused on implementation and monitoring for effective road closures in order to successfully implement the Forest[rsquo]s travel management plan.

Comments on Recreation and Transportation

* The recent post-COVID explosion of outdoor recreation on the Lolo National Forest as well as population growth in western Montana have made recreation management a key area for additional field staff and infrastructure investment. Visitor use on the Lolo NF can cause significant impacts to the forest environment, and the SWCC would like to see the Revised Forest Plan anticipate and provide adequate protections to resource integrity in the face of this expanded use.
* With data already available to the Forest Service, the Proposed Action should identify those areas where increases of visitor use will most likely stay at high levels or increase (areas like the Clearwater Basin on the Seeley Lake District offer a good example). In these areas the SWCC recommends the Revised Plan incorporate objectives, standards, and guidelines that meet a desired future condition of sufficient recreation opportunities in both Backcountry and General Forest Management Areas. More specifically, there needs to be greater emphasis on Guidance surrounding the creation and maintenance of additional dispersed recreation sites to handle growing recreation pressure and locate visitors in places that are not sensitive to human disturbance (such as specialized wildlife habitat or sensitive stream banks and lakeshores). These new dispersed sites could be hardened and placed along existing maintained roads with enforceable rules about appropriate lengths of stay, disposal of wastes, and behavior of pets. However, the ROS (Recreation Opportunity Spectrum) description needs to also discuss setting limits on use [ndash] when do uses become too much, and how can this be controlled?
* The proper assessment of amounts and locations of permanent roads, especially in Backcountry locations, is critical to protect ecological integrity (temporary roads for necessary forest treatments serve as a superior option). However, the SWCC recognizes that people wish to enjoy their public lands, so emphasis on recurrent Transportation Planning must be further acknowledged as a method to adapt to ever-changing technologies by which people access the forest (for example, the explosion of e-bike use). Guidelines in the Proposed Action for features like loop trails, segregated trails for different types of users (backcountry horses or mountain bikes), and rustic shelters to focus use away from sensitive areas such as wetlands, riparian areas, or alpine meadows. Finally, the Revised Plan should encourage ongoing partnerships with user groups whose knowledge and experience can be helpful in the design of future recreation infrastructure. There are terms under the ROS section tied to roads that the public will have no clue on, e.g., operational maintenance level. Same with the terms trail class and development class.

Comments on Hunting, Fishing, Trapping and Wildlife Viewing

* This section is a very limited and inadequate. More detail is required, as the present version lacks meaningful direction.
* This section only discusses the role of the NF in providing conditions that will support habitat for fish and wildlife for public use, when the Proposed Action should be much clearer on agency responsibilities in reducing threats to wildlife populations that offer significant contributions to ecosystem function. The Revised Plan must articulate the necessary constraints on public use of wildlife populations, especially but not exclusively T&E species. While it is commonly assumed that MT FW&P is overseeing hunting, fishing and trapping such that populations of species are being appropriately managed on FS lands, and that potential impacts to T&E species have been considered, this is not always the case. Trapping, in particular, presents negative consequences that must be addressed more explicitly. For example, coyote trapping and snaring can occur anywhere on FS lands (even along numbered roads, trails, and trailheads) throughout the year using any type of trap or snare. What are the risks of this unregulated trapping to Canada lynx, wolverines, and grizzly bears, let alone many other species of wildlife? The FS has a responsibility to incorporate regulations relating to this unrestricted use of its lands that may undermine its lynx, grizzly bear, or wolverine protection strategies, as well as risks to other users of NF lands including hikers or skiers whose pets may be injured or killed while accompanying their owners on number roads and trails.

Comments on Timber

* The Proposed Actions state [ldquo]Lands suitable for timber production are resistant to natural disturbances, thereby minimizing the economic loss of the timber resource compared to lands designated as unsuitable for timber production.[rdquo] This statement is indefensible. Natural disturbances should be managed to be within natural ranges of variability, adjusted as needed for effects of climate change, and should be allowed to have their effects on forest ecosystems in that context whether an area is deemed suitable for timber production or not. This desired condition should be deleted from the Proposed Action.
* The Proposed Action states: [ldquo]Exceptions to the 40-acre maximum opening size may occur when determined necessary to achieve desired ecological conditions for the plan area, such as those associated with forest patterns, patch sizes, and forest resilience in the short and long term.[rdquo] As the plan provides basically no information on desired ecological conditions relating to forest patterns, patch sizes and the even more nebulous term [ldquo]forest resilience,[rdquo] this statement is an open door to propose larger openings with questionable justifications.

* The above recommendations imply another attribute of forest management to which the Proposed Action directs insufficient attention: the utilization of wood products generated through harvest operations. The SWCC would prefer that the all-too-common practice of piling and burning harvested biomass be the last option considered instead of the default option in post-harvest treatments. We believe that serious investments must be directed toward more sophisticated biomass utilization, either utilizing wood for human benefit or treating harvested biomass so it can stay on the site as future nutrient capital. Although small-wood utilization has been a challenging problem for forest managers for decades, new technologies that can utilize smaller wood products are already available. In addition, more effective methods to leave biomass on site, including better mastication and biochar equipment, can improve the long-term availability of nutrient capital for future forest stands.

* The Proposed Action states [ldquo]On lands not classified as suitable for timber production, regularly scheduled timber harvest should not occur and timber harvest should only be used as a tool to assist in achieving or maintaining one or more applicable desired conditions or objectives of the plan. Examples of using timber harvest to protect other multiple use values may include salvage of dead or dying trees, improving habitat, reducing hazardous fuels and fire risk, maintaining rights-of-way, moving towards desired vegetation conditions,

addressing public safety and health needs, improving scenery or scenic vistas, and restoring ecosystems.[rdquo] Some of these reasons do not make sense. For example, salvage of dead or dying trees is simply that- salvage for producing economic return from the harvest of these trees. So, an area unsuitable for timber harvest basically can become suitable for scheduled timber harvest once it burns, or has trees dying. What level of tree mortality should allow for timber harvest in these areas? Any timber harvest is likely to produce an improvement of wildlife habitat for some species, while decreasing the quality of habitat for other species. Better guidelines are needed to help describe when timber harvest is acceptable in unsuitable areas based on appropriate desired conditions.
* In areas burned by wildfire, what constitutes a patch of unburned that should be left- 0.1 ac, 1 ac, 5 ac, 40 ac? More specifics are needed here.

Comments on Geographic Areas

* The Geographic Areas provide an opportunity for the Plan to present existing and desired future conditions with a spatial context. Currently the Plan does not do this well. Given the importance of vegetative conditions in regard to fuels, wildlife habitat and timber opportunities, there should be a narrative and associated tables and maps that address and illustrate the distribution of age classes (VMap based data) across each geographic area. Recently burned unburned (green v black) could also be included in this discussion and depicted in maps. From this discussion of existing veg/fuels/habitat conditions, it is relatively easy to transition to a similar discussion of desired conditions within the respective Geographic Area. This approach provides the Forest Service a framework to plan and implement projects which tier to the Plan. And such an approach provides clarity and transparency to the public. This is similar to the way the NFMA/NEPA process worked in the past. Issues like road storage and decommissioning priorities and associated goals of fish and wildlife habitat improvement are tied to vegetation management so this process would help clarify where these activities are likely to occur [ndash] or not occur [ndash] over the life of the Plan.

Comments on Wilderness

* The SWCC has supported the proposed additions to Wilderness designations contained in the Blackfoot Clearwater Stewardship Act. As such, we recommend that the Forest Plan follow these collaborative recommendations, which will designate nearly 80,000 acres of headwaters and prime wildlife habitat as Wilderness in the Upper Blackfoot/Clearwater. That means recommending Wilderness in the West Fork of the Clearwater, Morrell Creek, Dunham Creek, Monture Creek, and the North Fork of the Blackfoot. These areas provide quality habitat for bull and westslope cutthroat trout, Canada lynx, and wolverines.

Comments on the HRV modelling

* The analysis of historical range of variability (Appendix 3) properly identified that each ecosystem should be defined in terms of its potential vegetation type as well as its composition, size class, density, and structure. The variables and categories it used were appropriate for defining characteristics of specific forest ecosystems.

* The model was developed from data collected from plots in the FIA program. This program samples plots on forest land with one plot sampled for every 6000 ac. The Plan reported that there are 363 FIA plots within the Lolo NF. The modelers [ldquo]extended the sample domain beyond the Lolo National Forest to all Forest Inventory and Analysis plots from national forest lands that were contiguous to the Bitterroot and Lolo model area and occurred in the same ecosystems (potential vegetation types). This resulted in a total of 7,007 Forest Inventory and Analysis plots for analysis.[rdquo] This is a significant concern. The 363 plots on the Lolo NF represent only 5% of the data used in the modelling. This would extend the area of the data collection from the Lolo National Forest to a huge area covering much of western Montana and Idaho. What this means is that the data used to describe conditions and drive the model are from a large and diverse area, resulting in the ranges of conditions reported from these data having greatly expanded variability in describing and quantifying forest conditions. Instead of providing more specific information about conditions on the Lolo NF, it produces estimated targets for desired conditions that have a much wider range than would have occurred historically.
* The model used in the analysis was run for a landscape including both the Lolo and Bitterroot National Forests. Even across this area, there is considerable difference in the historical variability in forest types and disturbance processes. The model should have sought out BASI and not relied only on FIA data. It should then have been run only for the Lolo NF, and broken the forest into two zones, east and west, as there are major differences in the forest conditions and disturbance processes between these two areas. Use of the National Hierarchy of Ecological Units would have helped stratify areas with greater similarity of factors driving forest ecosystems and their disturbance processes.
* Questions can be raised about the output of this modeling, and its appropriateness for application to the Forest Plan. For example, it appears that the modeling starts with the current condition of each FIA plot. We know that current conditions reflect a century of past timber harvest and attempts at fire exclusion. When you start a model with such altered conditions, efforts should be made to correct for the changes produced by human activities over the past 100 years. It is well documented that tree size classes have been significantly reduced by past logging and that tree densities and compositions have been altered by both past logging and fire exclusion. Without corrections to these changes as a starting point, the estimated HRV for forest conditions is likely to be inaccurate.
* For the Upper Clearwater Blackfoot GA, only three potential vegetation classes occur- cold moist, cool moist, and moderately warm moist. When modelled for fire, these potential vegetation groupings applied from 51-73% of the moderately warm moist and 100% of the cool moist and cold moist to having either stand replacing or mixed severity fire. With a percentage of each burned area then going to a grass-forb state, it would not be surprising to see that many of the large and very large tree stands were converted to grass forb successional stages. These results misrepresent what other analyses of more local historical conditions reported. For example, Ayers (1900) and others reported that low severity fire influenced dryer areas with a significant influence of Native Americans using fire to maintain open forest conditions containing large acreages of large to very large trees, much more than the model results indicated.
* The model used basal area weighed averaging of stand tree size classes. This means that a plot that was in an open stand comprised of large and very large trees would qualify as a very large tree stand. However, as this plot is modeled for successional growth it could add a large number of smaller trees to the stand unless the model included sufficient low severity fire to keep this from occurring through succession. The result is that average reported tree size for the stand may go down because of the presence of all of the smaller trees while still having the same number of large or very large trees. Plots that decreased in tree size were reported to have been dropped from the results of the model, potentially biasing the results away from large and especially very large tree stands.
* The model description also identified that the fire multipliers used in the model were based on recent fire history. How has climate change potentially changed these multipliers especially given the altered forest conditions present today compared to historical conditions?
* Because most of the desired conditions for forest vegetation are based on estimates of historical ranges of variability, it is very important that this analysis be as accurate as possible. The modelling work that the Plan Assessment and Proposed Action is using started out with some good categorizations, but made major errors in its use of only FIA data and from some of the other concerns identified above. These results need to be reevaluated in setting desired conditions to include in the Lolo NF Plan Revision.