Scott Armentrout, Forest Supervisor
GMUG National Forest
2250 Highway 50
Delta, CO 81416

Submitted by postal mail and electronically at: scottwilliams@fs.fed.us

August 30, 2013

Dear Mr. Armentrout,

The following are the comments of the parties listed below on the "SBEADMR" (Spruce Beetle Epidemic and Aspen Decline Management Response) Project, as described in the Scoping Letter (SL) dated July 29, 2013, and in the Federal Register Notice of July 31, 2013 (46 Fed Reg 46312 et seq.).

Rocky Smith is a consultant with more than 30 years' experience in reviewing projects, plans, policies, regulations, and laws relating to forestry and national forest management, particularly in Colorado.

Western Colorado Congress is an alliance for community action empowering people to protect and enhance their quality of life in Western Colorado. Western Colorado Congress has been actively engaged in forest health and management issues on the Western Slope for over 30 years.

The **Western Slope Conservation Center** is a 36-year-old grassroots 501(c)3 nonprofit that works to build an active and aware community to protect and enhance the lands, air, water and wildlife of the Lower Gunnison Watershed.

High Country Citizens Alliance (HCCA) was formed in 1977 and has over 740 members. HCCA champions the protection, conservation, and preservation of the natural ecosystems within the Upper Gunnison River Basin and The Gunnison Country. HCCA has a long history of advocacy and successful resolution of complex conservation issues.

The mission of **Rocky Mountain Recreation Initiative** (RMRI) is to advocate for recreation policies that protect wildlife habitat and sensitive plant and animal communities on Colorado public lands. RMRI works with the Forest Service and BLM on travel planning that reduces habitat fragmentation and ensures the integrity of large scale ecosystems. RMRI also works to protect hiking and the Quiet Use experience in Colorado backcountry.

Sheep Mountain Alliance is a grassroots citizen organization dedicated to the preservation of the natural environment, representing over 400 members in the Telluride Region and southwest Colorado. To this end, Sheep Mountain Alliance will provide education for and protection of regional ecosystems, wildlife habitats, and watersheds.

The **Quiet Use Coalition** is a non-profit environmental organization working to preserve and create quiet use areas on public lands and waters, while protecting natural soundscapes and wildlife habitat.

I. **GENERAL COMMENTS**. The undersigned appreciate the potential management issues presented by large-scale mortality in Englemann spruce and aspen stands on the Grand Mesa-Uncompahgre-Gunnison National Forest (GMUG). However, we believe that the proposed response is too large, unrealistic, and undesirable. Cutting up to 6000 acres per year commercially and as much as another 6000 acres non-commercially each year for 10 years (SL at 3) is likely to prove impracticable. It is questionable whether the budget to prepare this amount of timber sale acreage and other projects will become available, but even if it does, it is hard to imagine that there is enough industry infrastructure available to treat anywhere near this amount of land. The demand for wood is tied to housing starts, which are increasing, but still fairly low due to the state of the economy.

There are also many other projects in the pipeline or already approved on most of Colorado's national forests, especially the GMUG and Rio Grande. These will compete with any projects approved under the SBEADMR program for the limited infrastructure available for treatment and processing of the wood so produced.

A possible example of the difficulty of preparing, offering, and actual implementation of commercial timber sales is the Cow Creek sale near Overland Reservoir on the Paonia Ranger District. This sale was initially analyzed in 1985 under the Stevens Gulch Timber Sales EIS. The final sale marking was completed circa 1993. <u>It is just now being implemented</u>. The Forest needs to take a hard look at the viability of an aggressive sales/treatment program on the GMUG before approving it.

The proposed project overlaps some existing projects that have been approved but not yet implemented, such as the La Garita Beetle Response Project near Slumgullion Pass and northeastward. It would also overlap various projects on the Grand Mesa. The EIS for SBEADMR must show how these projects would be affected and disclose the direct, indirect, and cumulative impacts of implementing SBEADMR and any other projects.

Proposing and approving a program that is far in excess of what is practical and appropriate implement sends the wrong message to the public, as it would indicate that much more treatment would be done than would ever actually be implemented.

Treating the very large area proposed could cause numerous adverse impacts to various resources, as discussed in the remainder of the comments below. The proposed action should be changed to a much smaller, more focused program, as is described in section II below.

II. **FOCUS TREATMENTS ON THE HIGHEST PRIORITY AREAS**. With the widespread mortality and susceptibility, it would be impossible to treat every acre affected or possibly affected in the future by spruce bark beetle (SBB) or sudden aspen decline (SAD). Therefore, treatments must be located where they will do the most good to protect public safety while maintaining favorable ecological conditions and causing the least adverse impacts to various resources.

We are happy to see that no mechanical treatments would be proposed in roadless areas, research natural areas, or "Special Management Areas managed for Wilderness values". SL at 3. We strongly encourage the Forest Service to not allow treatments other than prescribed fire, where appropriate, in these areas.

The most important areas to treat are those where mortality poses a risk to public health and safety. It thus would be appropriate to remove some dead and dying trees along roads that access private land and/or are well used by the public and the Forest Service for access to the GMUG National Forest. Removal of such trees from campgrounds, picnic grounds, trailheads, and other sites used by the public should thus be top priority. Ensuring that dead trees will not hit power lines should also be among the top priority treatments.

Treatments should not be more than is necessary to protect the respective infrastructure. For example, dead and dying tree removal along roads should occur no more in distance from the road than the height of the tallest tree in the stand plus about 10 percent.

At least one alternative in the EIS must propose treatments only, or at least primarily, in the highest priority areas, as described above. The preliminary proposed action described in the SL identifies the above-described areas as priorities for treatment, but appears to go far beyond this, as the high priority areas are said to cover just 20 percent of the acreage that will be considered for treatment. SL at 2.

Treatment at ski areas should be considered, but careful design must ensure that any treatments retain enough trees to define boundaries of runs. Even dead trees perform this function to some

degree. Also, dead trees are unlikely to fall during the time ski areas operate because the soils are frozen, so the public safety issue is less during winter operations, the time when most people visit ski areas.

III. **FORESTS WITH DEAD TREES HAVE VALUE**. In determining how much area with dead and dying trees to cut and where, the Forest Service needs to recognize that stands containing dead trees have considerable ecological value. Englemann spruce trees that are sound (i. e., free of rot) when killed by SBB remain standing for decades, as has occurred on the Flattops in northwest Colorado, after the SBB outbreak there which lasted from 1940 until 1952.[1]

The standing dead trees hold soil, and provide for future coarse woody debris and slow decay into new soil. They provide perches, roosts, and nesting areas for various species of wildlife, especially birds. They provide some cover for deer and elk, and ground vegetation, which will fill in the spaces between the dead trees, provides forage. Standing dead trees are also "other" habitat for lynx. When the trees fall to the ground, they will create piles, which are good for denning for lynx, marten, and small mammals.

Stands with a mixture of dead standing trees and live ones of various sizes may be excellent lynx habitat and should not be cut. The larger standing live and dead trees provide cover, and the smaller trees and some lower branches of the taller live ones provide winter forage for snowshoe hare, lynx' favorite prey. The standing dead provide future denning habitat, as stated above. Some stands with dead spruce may be in linkage areas, where maintaining habitat would be especially important. Cutting such stands, even just removing the dead trees, would destroy this structure, as small trees would be killed during logging operations. (See additional comments on effects on lynx in section VIII below.)

The Forest Service must keep the above in mind in determining how much dead and dying spruce to cut and where.

IV. **TREATMENT IN LIVE SPRUCE STANDS MAY NOT PREVENT SBB ATTACK AND COULD ADVERSELY AFFECT THE AREAS TREATED, INCLUDING EXISTING AND FUTURE REGENERATION**. Under the Proposed Action, trees in live spruce-fir stands would be cut in an attempt to "create multi-storied stand conditions". SL at 3. There are problems with this approach. For one, the huge populations of SBB make it unlikely that treatments would protect stands that have not yet been attacked by beetles. Many areas containing spruce and already attacked by SBB (or that are attacked in the near future) that

[1] Schmid and Frye, 1977, cite a study that found that 84 percent of the SBB-killed spruce trees were still standing after 25 years. Id. at 23.

cannot be treated (due to steep slopes, inaccessibility, wilderness, etc.) will serve as a source for SBB brood that will attack other spruce stands. Thus any stands containing pole- or larger sized spruce would still be likely suffering high mortality if attacked by SBB because of the very high population of the beetle. SBB might go through a thinned stand once, but would likely return to attack such a stand. Indeed, this happened in Utah. See Exhibit 1.

Where suppression treatments were successful against SBB in Utah, it was because of: "the isolated nature of the spruce stands [and] early detection of beetle populations". Bentz and Munson, 2000. These conditions do not apply to the GMUG, as SBB populations are very high, and many stands have already been attacked. Also, the treatments in the stands in this study consisted of cutting and removing trees already infested with beetles and setting traps to attract beetles. The proposed action here is mainly changing stand structure. (See SL at 2.)

Another problem is that opening stands via cutting exposes them to windthrow. The general rule of thumb is that removing 30 percent of more of the overstory invites windthrow. To get any regeneration of spruce and/or fir, stands would have to be opened at least this much. In some stands in areas that are especially wind-prone, removal of well under 30 percent of the overstory could cause significant windthrow.

See Alexander, 1972 and 1987, for details on which types of areas are likely to have a low, moderate, or high windthrow risk. Areas with any of the following have increased windthrow risk: "poor drainage, shallow soils, defective roots and boles, and overly dense stands". Alexander, 1972 at 3.

Any significant windthrow would of course be counter to the goal of making stands more resilient, as it would destroy at least some of the mature component of affected stands. Even worse, it would provide breeding ground for more SBB, which could then attack any remaining live trees in the respective stands and in adjacent stands containing spruce.

Spruce-fir and mixed conifer stands often have various age groups within them. There is no need to treat these stands because they already have the desired condition – age class and structural diversity. Stands with a substantial portion of other species, such as lodgepole pine, bristlecone pine, limber pine, and/or Douglas-fir, should especially not be treated because they already provide good tree species diversity.

Treatments, e. g., felling some of the live or dead pole-sized and mature overstory trees, are likely to kill a considerable portion of the understory. Felling and skidding will crush, break, and uproot many of these young trees, destroying existing regeneration. Older trees may be damaged

by having bark chipped away, providing pathways for fungal infections, leading to reduced life expectancy. This is especially true for subalpine fir, which are quite susceptible to fungi.[2]

In stands that have a high percentage of spruce, regeneration would be difficult if most of the overstory is removed, even if it is already dead. The use of heavy equipment would compact soils, which would hinder the sprouting of seeds into seedlings. The cut area would be exposed to the sun and would dry out. It would lack needed shade, making it difficult for spruce seedlings, whether planted or naturally occurring, to survive. Some standing trees, even if dead, should be retained in these areas. Some down logs would also need to be retained to provide shade for regeneration. However, any spruce cull logs or others that are retained would need to be stripped of bark or solarized (subjected to summer heat) to ensure that no new breeding areas for SBB are created.

Commercial timber sales should not be relied on to provide funding for reforestation, i. e., planting, as proposed. (See SL at 3.) As discussed in section I above, the demand for wood may not be very high over the life of the program, thus it is uncertain how well offered timber would sell. By the time the trees that are already dead or are dying are cut, they may have lost all value for commercial products, due to checking and action by insects. If the sales don't sell, no money becomes available for reforestation.

The EIS should analyze the economics of proposed commercial timber sales. For several decades the FS has been unable to generate positive cash flow to the US Treasury due to "below-cost timber sales." Does the agency still utilize TSPIRS (Timber Sale Program Information Reporting System)? Of course, the economic analysis should include legitimate non-monetary benefits that may be derived from timber sales.

Any reforestation through timber sales would be via the Knutson-Vandenburg (K-V) fund. But note that the Forest Service will take $170 million from this fund to finance firefighting. See Fire Transfer Strategy, Exhibit 2, which was attached to the Chief's letter of August 16, 2013 entitled "2013 Fire Transfer Activity; Deferring Other Financial Obligations". With a warming climate and very high federal budget deficits, expensive firefighting and the need to transfer other funds to pay for it are likely to occur in many future years. Thus K-V cannot be depended upon to fund reforestation.

The FS must carefully consider whether tree planting is a viable means of maintaining stands if natural regeneration fails. The history of attempted tree planting on the GMUG is not encouraging. Following failed multiple multi-year attempts after logging spruce/fir on the Alpine Plateau and Black Mesa, the only trees the agency could get to grow were a few lodgepole pines

[2] See Alexander, 1987, at 5.

that were not in the original stand mix. The risk of conversion of a spruce-fir site from trees to shrub/grass/forbs is high if sales are not designed, administered, and implemented properly.

The Forest Service must seriously consider no treatment of live spruce stands unaffected by SBB. It is doubtful that such treatment would significantly reduce SBB attacks, the risk of increasing SBB spread is simply too great, and the damage to desirable forest structure would be irreparable. If any such stands are treated, there must first be a thorough evaluation of the possibility of windthrow prior to approval of treatment in any unit. Also, any logging must be designed to disturb as little of the advance regeneration as possible. At least one EIS alternative must have no treatment of live spruce stands that have not been attacked by SBB.

V. **CAUTION ON OTHER POSSIBLE TREATMENTS FOR SBB**. The proposed action described in the SL seems heavily oriented toward vegetation manipulation on a large scale to address the SBB epidemic. However, the SL does state that "[p]heromone spray treatments may be used in high values areas". Id. at 2. The Forest Service needs to explain what this means. Generally, spraying to prevent beetle attacks involves covering the boles of susceptible trees with carbaryl (Sevin), permethrin, or similar insecticides. These are not pheromones, though those chemicals can be used to draw in SBB and kill them by other means. (See below.)

These insecticides have moderate toxicity to various organisms and high toxicity to aquatic organisms. Furthermore, toxicity in water and wet areas lasts longer than in dry areas. Therefore, any use of chemical insecticides must occur only under the following conditions:

--wind is no more than 5 MPH, to avoid drift into non-target areas;
--the areas to be sprayed must not be wet (e.g., after rain or during and just after snowmelt), and precipitation is not expected for at least a few days during and after the spraying;
--no spraying near water bodies or wetlands;
--spraying by trained and certified applicators only; and
--placement of appropriate warning signs and/or closure after spraying in public-use areas.

Other possible methods of treating spruce stands affected by SBB that involve pheromone use include:

Pheromone-baited traps. The standard funnel trap can be hung from a tree. The pheromone bait will attract SBB, which then fall into the trap and die.

Standing trap trees. Pheromone can be placed on trees in areas susceptible to bark beetles. After SBB attack the tree, it is then killed and treated so that SBB are not able to complete the breeding cycle.

Felled trap trees. Under this method, green spruce trees are felled to draw in SBB, who prefer felled trees to standing ones. Once beetles attack the down trees, the trees are treated to kill beetles. However, if trees are placed in the open, they will attract *ips* beetles instead of SBB. To be effective in trapping SBB (*Dendroctonus rufipennis*), felled trees must be in the shade. See Nagel et al, 1957.

All three methods are risky, as they may draw in too many beetles. The traps would quickly fill up, triggering the SBB anti-aggradation pheromone, repelling the SBB, which would then attack live trees or any recent blowdown or cull logs in adjacent areas. All of the attacked trees and logs would then have to be treated or removed. Therefore, these methods should be used only in areas with low beetle populations. And comprehensive monitoring must be done to see that all trees attacked trees as a result of the use of traps are treated.

VI. **USE OF PRESCRIBED FIRE**. The SL states (p. 3) that "[o]pportunities to use prescribed fire to meet treatment objectives will [] be explored". We encourage the use of fire for aspen stands but not for spruce-fir stands, as explained below.

Most of the existing aspen stands on the GMUG likely resulted from fire. Fire is known to stimulate a response form the aspen's root system, stimulating growth in the form of shoots, which become aspen trees. Therefore, it makes sense to use fire to regenerate stands, where such regeneration is both desirable and feasible, and where it can be done safely. (But see further discussion in section VI on Aspen Management.) However, aspen stands are difficult to burn. Aspen trees have bark that is live and moist, unlike conifer trees. Understory vegetation is often lush and moist. Thus ignition is difficult. The easiest stands to burn might be the ones with a moderate conifer component.

Fire in spruce-fire stands is not appropriate because such stands did not evolve with fire. The fire return interval in these stands is very long, Alexander, 1987, observed that dominant spruce trees are often 250-450 years old, and trees "500 to 600 years old are not uncommon". Id. at 4. Also, such areas are generally wet, so fires may not be easy to ignite. If they were ignited, they might not be easy to control under dry conditions, as spruce have very thin bark. Ibid.

VII. **MANAGING ASPEN STANDS IN THE FACE OF SUDDEN ASPEN DECLINE**. As of 2010, it was estimated that sudden aspen decline (SAD) has affected approximately 17 percent of Colorado's aspen cover type. Worrall et al, 2010. Unlike other damaging agents, SAD results in the death of the root system, not just individual trees, and thus the entire clone dies. The

greatest mortality tends to occur in stands on south and southwest aspects that contain larger trees and are more open (i. e., less dense). Worrall et al, 2007.

It is not clear if the area affected by SAD in Colorado, and on the GMUG specifically, is increasing, decreasing, or not changing. The EIS should discuss the future prospects for areas being affected by SAD. It should be assumed that the weather will remain warmer than long-term normal, due to climate change. Drought is considered an "inciting" factor in SAD. Worrall et al, 2007. A recent report states that "the recent widespread mortality of aspen is strongly associated with recent climatic conditions" (Hanna and Kulakowski, 2012), indicating that SAD will likely increase over time. On the other hand, increased carbon dioxide and more frequent fire may allow maintenance or even an increase in aspen coverage if the species can adapt to a warming climate[3]. Morelli and Carr, 2011.

Many of the stands in the project area affected by SAD are likely too far gone to save via any kind of treatment. If there is high mortality in the overstory and no recent (last few years) regeneration, the clone probably cannot be saved. Worrall et al, 2010. We also wonder if it is worthwhile to treat any stand affected by SAD, even if there is believed to be enough of the root system remaining alive to allow regeneration after some kind of treatment. If the root system is dying out, won't any stems regenerated soon die as the remainder of the root system completely dies?

Any treatment must be carefully designed to avoid damaging any older regeneration, e. g., that which may have come into existence several years ago, perhaps before the onset of SAD or just as SAD began to affect the clone. Any treatment would adversely affect this regeneration by killing the trees during operations such as felling and skidding. With the root system dead or dying, there would be no new regeneration. Thus with poor implementation, treatment might hasten the death of the aspen trees in a dying clone.

Seral aspen stands with considerable spruce-fir invasion should probably not be cut. Depending on the soil type, clearcutting such stands may hasten the spruce-fir intrusion. Cryer and Murray, 1992. Stable aspen stands not affected by SAD do not need treatment; they should fare just fine on their own.

Aspen stands should not be cut just because the trees have decadence. This decay is very valuable for wildlife habitat, especially cavity-nesting species. Some "decadent" stands will regenerate on their own, as they have for many millennia.

[3] Such adaptation would presumably include less regeneration at lower elevations and on steeper south- and west-facing aspects at mid-elevations, and increased regeneration at higher elevations.

It is well established that ungulates, like deer and elk, love to eat young aspen shoots, and that such action can adversely affect aspen regeneration. Sheep and even cattle will also eat aspen shoots, and cattle will trample them. According to Shepperd, 2004, protection may be needed until aspen are 4 cm in diameter at breast height. This appears to be the largest size that elk can break. The EIS must discuss what would be done to protect any young aspen shoots regenerated by the proposed project.

It is important to avoid treating aspen in areas with high water table, very moist areas (as indicated by presence of false hellebore (Veratrum californicum), and any areas with high potential for soil compaction. Forest Service researcher Barry Johnston, 2001, found that areas with inadequate aspen regeneration after logging had two or more of the following: high water table, heavy browsing by elk or cattle, soils with a thin Mollic layer, and compacted soil form logging operations.

VIII. **MAINTAIN WILDLIFE HABITAT AND HABITAT EFFECTIVENESS**. No treatments should be done in lynx linkage areas, other than to protect public safety. There are four linkage areas on the GMUG National Forest: Cottonwood Pass, Poncha, Cochetopa Hills/North Pass, and Slumgullion. See descriptions of these areas at USDA Forest Service, 2008, Appendix D at 4.

The east-west connection over Cottonwood Pass is made possible by "a narrow forested corridor". Ibid. The north-south connection provided by the Poncha linkage includes Monarch and Marshall Passes and is considered "very important". Ibid. The Cochetopa Hills/North Pass linkage "is a well-used movement corridor by lynx". Ibid.

See section III above for additional discussion on possible effects to lynx.

Treatments must not create large openings. Such openings would be bad for many of the wildlife species found on the GMUG National Forest, including, but not limited to: lynx, marten, almost all tree-nesting birds, deer, and elk. Openings, if any are created, must be no larger than 40 acres.

Standing and down dead trees are good for lynx habitat, as is discussed above in section III. Providing for lynx would also retain habitat for marten, for whom the down dead component is very important for winter foraging, and to some extent for denning. Marten also den in tree cavities.

Snags (standing dead trees) must be maintained in clumps, preferably with live trees. This will allow the greatest use by dependent wildlife and reduce the chances that the snags will blow down. The Forest Plan minimum of 95-225 snags per one hundred acres at least 10 inches in

diameter (Plan at III-9b), should be exceeded to ensure adequate snags and allow for some loss via blowdown. The largest snags available should be retained, as should ones showing signs of internal rot, e. g., those with cavities, broken tops, forked tops, etc.

To avoid impacts to habitat effectiveness for deer and elk, and to other species sensitive to human disturbance, existing roads should be used to access treatment areas to the maximum extent possible, and new construction should be kept to a minimum.[4] Any new roads constructed must be obliterated after project completion.[5] Note that the Forest Plan requires a minimum habitat effectiveness level of 40 percent. Plan at III-29.

No activities can be allowed within a quarter mile of raptor nests during the nesting season, per Forest Plan at III-26. Any logging-related activity would likely cause nest abandonment, especially for northern goshawk. Furthermore, an area of 30 acres around any goshawk nest, including currently inactive but historically used ones, and replacements nests, must be maintained as nesting areas, per Reynolds et al, 1992 at 22. Cutting must be limited to thinning of the understory, and human presence between March 1 and September 30 must be minimal. Ibid. Also, any cutting in the 420-acre post-fledging family area surrounding active nests must maintain an older age class structure. Id. at 23.

Habitat capability for vertebrate species must be maintained to a level that is at least 40 percent of potential. Forest Plan at III-26. In some management prescriptions, this is higher for selected species. For example, for aspen dependent species and big game, habitat capability must be 70 percent of potential in management prescription 4D. Id. at III-122. In prescriptions 5A and 5B, big game habitat capability must be at least 80 percent of potential. Id. at III-127 and III-135, respectively.

Elk, marten, and goshawk are management indicator species. Plan at II-43 (via May, 2005 amendment). The minimum habitat capability is 80 percent for these species in areas under management prescription 4B (id. at III-117), and 70 percent in prescriptions 6A and 6B (id. at III-143 and III-148, respectively).

IX. **PROTECT SOILS AND WATERSHEDS**. The large amount of treatment proposed could have deleterious effects on soils, as discussed throughout this comment letter. It could also adversely affect watersheds. Particularly concerning is the construction and use of roads for

[4] Considerable maintenance of the existing road system would likely to be needed before, during and after the project is done. The EIS must describe what sections of which roads might need such maintenance, especially prior to operations, and what the cost is likely to be.

[5] Obliteration means removing the road surface as much as possible. This includes, but may not be limited to: ripping and reseeding or replanting the road surface; restoration of cut and fills, to the extent possible without causing damage to soils and water quality; blocking the entrance to the road and any intersections with roads still open, and regular law enforcement patrols for a few years to discourage use.

access to treatment areas. New roads would likely increase the connected disturbed area (CDA), leading to increased sedimentation of streams.

As stated above, road construction should be minimized, and any new roads should be obliterated as soon as possible after work is done. The requirements of the Watershed Conservation Practices Handbook (FSH 2509.25) and the Soils Management Handbook (FSH 2509.18, including the R-2 supplement) must be followed.

We note the GMUG already has a large backlog of roads needing decommissioning from past timber sales and other activities. These roads become transmission vectors for the introduction of: noxious weeds, non-native species, sediment into water bodies, unauthorized motorized travel, and increased danger of fire due to continued human use. This proposal calls for treating large swaths of the GMUG, meaning additional roads would be needed, adding to an already unmanageable road system. The agency should acknowledge the current large backlog of roads needing maintenance or decommissioning on the GMUG, and specify how it would find the funds and manpower to deal with a potentially substantial increase in this backlog that this proposal would bring.

The EIS should analyze the impacts of logging truck traffic from the aggressive level of treatments and sales in the proposed action, as well as potential costs to local and state governments from road damage.

X. **FIGHT NOXIOUS WEEDS AND PROTECT RARE PLANTS**. The proposed treatments, i. e., up to 12,000 acres per year for 10 years, would cause a great deal of ground disturbance. Felling, skidding, and burning would disturb soil over many acres each year, creating an ideal environment for the introduction and spread of noxious weeds. To counteract this, all areas to be treated by any method must be surveyed just prior to the commencement of operations. Any noxious weed populations found must be eradicated to the greatest extent possible. Survey and eradication should continue for at least two full growing seasons after the completion of operations.

Areas where it is not practicable to eradicate weeds, such as areas thoroughly infested with thistles, should be avoided altogether.

The pre-treatment surveys should be done by a qualified botanist who can identify any populations of rare plants. Such populations must be protected by marking the area containing the plants and a buffer of at least 100 feet and designating them as areas not to be disturbed. This would allow plant populations to expand.

XI. **SLASH MUST BE TREATED APPROPRIATELY**. The proposed cutting would generate a large amount of logging waste, or slash. To keep fuel levels low and prevent additional SBB breeding, some of this slash would have to be treated. Spruce logs (and even branches) larger than about 4 inches in diameter must be treated to eliminate SBB breeding material. This can be done via burning (but see below); stripping the bark; or solarizing (placing the logs in the summer sun and rotating them so the heat kills any SBB all around the log).

Slash should not be machine piled; especially not with bulldozers. This requires numerous passes of heavy equipment, leading to compaction and/or displacement of soils, and the scraping of organic matter into the piles. If piling is done, it should be done by hand.

Burning very large piles will cause damage to the underlying soils. An experiment in the Manitou Experimental Forest near Colorado Springs found that burning a hand-piled slash pile approximately 20 feet tall and 20-25 feet in diameter in November created soil temperatures of 400 degrees C at a depth of 20 cm and over 100 degrees C at a depth of one-half meter (personal communication with Dr. Wayne Shepperd, then with the Rocky Mountain Research Station, 2003). These temperatures are highly likely to sterilize soil by killing all organisms, volatilizing most of the soil nutrients, and creating a water-repellent soil layer. DeBano et al, 1998, also found severe soil heating when large piles were burned.

Whole-tree skidding (WTS) should not be allowed, as it results in creation of huge piles at landings. It also may bring conifer seeds to the landing, meaning the treated areas other than the landing will not be able to naturally regenerate. If WTS is allowed, the operator must be required to redistribute some material back into each treatment unit and over skid trails.

Any piles to be burned should be no more than about six feet high, and contain material less than three inches or so in diameter. Burned areas should be monitored to ensure that noxious weeds do not propagate, and to determine soil condition. The areas under piles may need to be tilled to break up the hydrophobic condition caused by a long, hot fire. Some piles can be retained for small mammal habitat.

In any case, sufficient coarse woody debris must be retained for all of its ecological functions: retaining moisture, reducing soil erosion, wildlife use, and shade for shade-tolerant conifer regeneration. The Forest Plan standard requires: a) 10-20 tons per acre “of logs and other down woody material”, and b) 50 linear feet per acre of spruce-fir logs at least 12 inches in diameter and aspen logs at least 10 inches in diameter. Plan at III-10.

Brown et al, 2003 stated that the optimum coarse woody debris (CWD) for “lower subalpine fir [timber] types” is 10 to 30 tons per acre, but less if the CWD is predominantly composed of material 3 to 6 inches in diameter.

Whatever the level of CWD retained, it must be properly distributed. It should be relatively evenly distributed, but with some breaks to retard a large ground fire. CWD must not be placed near any residual trees, nor be piled high enough to allow ignition of lower tree branches.

XII. **MONITORING MUST BE REQUIRED**. Should the agency elect to proceed with a large proposed action, it will be extremely important to monitor the results of treatments throughout implementation of the program. Specific items that will need to be monitored include, but are not limited to:

--the response of SAD-affected aspen stands to treatment, compared to similar stands not treated;
--spruce regeneration, how much of it occurs naturally, and how well it and planted seedlings survive;
--comprehensive monitoring of any SBB traps and the areas surrounding the traps for overflow;
--SBB populations in any treated stands, if applicable, and untreated stands;
--watersheds, including connected disturbed area and stream sediment;
--effectiveness of road closure and decommissioning;
--effectiveness of mitigation measures;
--noxious weed infestation and spread, including areas where prescribed fire or slash pile burning occurs;
--lynx habitat; and
--soils, particularly compaction in areas where heavy equipment is used or burning occurs.

The undersigned stress that this monitoring is extremely important and must be funded as part of the project. Prior to the start of operations, some monitoring would need to be done to get the "before" picture, to compare with the same areas after treatment. Some control areas would need to be established, i. e., areas that would not be treated for comparison with ones that are treated.

XIII. **ADDRESS THE EFFECTS ON LIVESTOCK GRAZING**. The proposed project would likely affect livestock grazing, as it would remove some barriers to livestock movement, making it more difficult for permittees to keep track of their animals and to round them up at the end of the grazing season.

By removing tree overstories and thus exposing more of the ground to sunlight, the project would also create more potentially palatable forage for livestock. But where regeneration is desired, which would include most treated areas, any livestock use would be detrimental, as aspen shoots and conifer seedlings are likely to be trampled and/or eaten, causing potentially great damage to regeneration.

The Forest Service must: 1) inform grazing permittees about potential impacts to their operations from proposed treatments before any treatments commence in any given area; 2) keep stock off of regenerating areas for as long as necessary to ensure successful regeneration; and 3) make alternative arrangements as needed for permittees to graze their stock.

CONCLUSION. For the reasons discussed above, we believe that the GMUG National Forest must propose a much smaller and more feasible project than the proposed action described in the SL. Any proposed action must concentrate on the most important areas needing, or that at least would benefit, from some action to protect public safety, and have minimal adverse impact. At least one alternative in the EIS must reflect this, and it should be the preferred alternative. All alternatives must protect lynx habitat, especially linkages.

The option of not treating live spruce stands should be explored. Prescribed fire may be acceptable to regenerate aspen, but not for use in spruce-fir stands. Treatments in aspen stands affected by SAD should be scheduled only if it is likely that one or more aspen clones would be perpetuated. All treatments must conserve wildlife habitat and meet Forest Plan standards and guidelines.

Monitoring of the results of treatments must be done throughout the program and afterward. Funding must be arranged for monitoring in advance of treatment.

Thank you for your careful review of these comments. Please be sure we are informed when the DEIS is published.

Sincerely,

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EXHIBIT 1

The Salt Lake Tribune
Date: 08/15/1999 Edition: Final Section: Utah Page: C7

Beetles Rout Forest Service in Battle of Dixie Forest

THE ASSOCIATED PRESS

CEDAR CITY -- The U.S. Forest Service has conceded defeat in its battle against the spruce beetle in the Dixie National Forest, and is instead focusing on regenerating trees there.

"There's nothing we can do," said David Downer of the forest service. He said the beetles will be left to their own devices and will hopefully be "eating themselves out of house and home" within the next two to five years.

There is no estimate yet of how many trees have been damaged or destroyed, but the areas hardest hit are near the town of Brian Head, Sidney Valley and in the Cedar Breaks National Monument.

The infestation that began in 1992 reached epidemic proportions this year, Downer said, as evidenced by a few changes in the beetles' normal patterns.

While Dendroctonus rufipennis normally only move to new trees every other year, the destructive bugs spread both this year and last. In addition, they surprised foresters by moving into areas of the forest where they have already been, and by infesting trees less than 12 inches in diameter.

The spruce trees' natural defense mechanism -- drowning the beetle in sap -- has failed for most, and some have been further weakened by droughtlike summer conditions.

The Forest Service's normal methods of fighting the beetles, like thinning stands of trees, haven't worked either, Downer said.

Other methods, such as chemically spraying trees, can be used for high-priority areas near roadsides and campgrounds but are too expensive for the entire forest.

EXHIBIT 2

Fire Transfer Strategy:

The fire transfer strategy is developed with the following criteria in mind:

- Availability of funds to transfer,
- Minimal disruption of services provided to the public, and the
- Effect of transfer on programs providing economic benefit.

The Fire Transfer Strategy is developed similar to prior years, targeting a mix of discretionary and permanent/trust funds in $200 million increments to be processed if needed.

($ millions)	Increment 1	Increment 2	Increment 3	Total
Capital Improvement and Maintenance				

(CMCM)	$20	$10		**$30**
Research & Development (FRFR)	$5			**$5**
National Forest Fund (NFNF)	$20	$20	$5	**$45**
State &Private Forestry (SPSP)	$5	$5	$2	**$12**
Land Acquisition (LALW)		$12		**$12**
Knutsen-Vandenberg (CWKV)	$75	$70	$25	**$170**
Brush Disposal (BDBD)	$10	$20	$5	**$35**
Recreation Fees (FDFD)			$30	**$30**
Purchaser Elect (PEPE)	$20			**$20**
Restoration of Improvements (RIRI)	$45	$58	$97	**$200**
Timber Salvage (SFSF)		$5	$30	**$35**
Timber Pipeline (TPTP)			$6	**$6**
Total	**$200**	**$200**	**$200**	**$600**