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First name: Fred

Last name: Wiley

Organization: Off-Road Business Association

Title: Executive Director

Comments: From: socolor7835@fed.us Sent: Fri, 6 Dec 2019 17:10:50 To: Neelan, Cathleen - FS November 7, 2019 Ashley National Forest Att: Forest Plan Revision 355 North Vernal Ave Vernal, Ut 84078-1703 RE: Forest Plan Revision Dear Sirs: The above Organizations are submitting these comments to provide general information on a wide range of issues including the desire for a simple forest plan and extensive scientific information around the behavior of snow under a variety of conditions. This information has been developed as a result of our involvement in the development of numerous Resource Management Plans ("RMP") throughout the western United States and our more than decade of involvement in the litigation and subsequent settlement efforts around the California OSV grooming program across 5 forests in Region 5. Our desire is to provide high quality information for decision making early in the process in the hope of avoiding many of the pitfalls we have encountered in the California planning efforts. This information is also provided as the Ashley NF has provided exceptional winter recreational opportunities for the public for decades without a large amount of controversy. These opportunities have drawn users from Colorado, Utah, Wyoming and numerous other states and Canadian provinces. Prior to addressing the specific concerns or information on the RMP revision, the Organizations believe a brief summary of each Organization is warranted. The Off-Road Business Association ("ORBA") is a national not-for-profit trade association of motorized off road related businesses formed to promote and preserve off-road recreation in an environmentally responsible manner and appreciates the opportunity to provide comments on this issue. The United Snowmobile Alliance ("USA") is a nationally recognized 501 C3 dedicated to the preservation and promotion of environmentally responsible organized snowmobiling and the creation of safe and sustainable snowmobiling in the United States. One Voice is a non-profit national association committed to promoting the rights of motorized enthusiasts and improving advocacy in keeping public and private lands open for responsible recreation through strong leadership, advocacy, and collaboration. One Voice provides a unified voice for motorized recreation through a national platform that represents the diverse off-highway vehicle (OHV) community. Colorado Snowmobile Association ("CSA") was founded in 1970 to unite winter motorized recreationists the more than 30,000 snowmobilers across Colorado to enjoy their passion. CSA has also become the voice of organized snowmobiling seeking to advance, promote and preserve the sport of snowmobiling through work with Federal and state land management agencies and local, state and federal legislators telling the truth about our sport. For purposes of this correspondence ORBA, USA, CSA and One Voice will be referred to as "The Organizations". The Organizations are submitting these comments to supplement the input of local clubs and to assist the planners in developing a high-quality science-based management plan that continues to provide recreational opportunities in a high-quality manner. The Organizations submit that these opportunities will only become more valuable with the passage of time given the growing population of communities in and around the Ashley NE 1. Simplicity of management will build public support and result in a Plan that remains relevant and guides subsequent planning efforts. The Organizations are supportive of the USFS efforts seeking a significant reduction in the overall size of RMP and reduction in the number of management categories in RMPs generally. This is an important step towards building public support and understanding for both the Plan, its management direction and scope of management efforts in the future. When any site specific has been undertaken under the current RMP, too often the public has simply been overwhelmed by the number of categories that are applied in the current RMP. The large number of planning categories is a barrier to public understanding of any planning efforts as most of the public do not have the time and resources to undertake even a basic review of the categories and how they are related to various aspects of any site-specific plan or concern they may have. If the public is able to understand a plan, they can support it. If an RMP is too large or complex, the public will oppose the plan, regardless of how effective the Plan may be or how the Plan supports or addresses any concern of that member of the public. Often simple projects being undertaken in site specific planning, involve a large number of management categories in the planning area and each of these planning categories must be addressed in any site-specific efforts to ensure that the project conforms to each of these management standards. This is simply time consuming and expensive. A significant reduction in the number of management categories will streamline

future site-specific planning efforts and allow managers to address issues with what has consistently become a growingly smaller amount of resources.1b. Overly specific plans result in significant additional costs over the life of the RMP and often result in standards that are a barrier to the forest addressing challenges on the ground. The Organizations have also experienced the unintended consequences of an aging and overly specific forest plan when undertaking site specific planning. Any subsequent site-specific planning ends up being very long and complex in order to address the numerous standards in the plan. This challenge is further compounded by the fact that often the basis and understanding for a particular standard are lost with the passage of time. As a result, those undertaking site specific planning with an aging RMP are forced to develop overly specific analysis in their document as they are unable to understand the basis or concerns that a standard was to address. As a result, planners often end up analyzing every possible alternative or theory for a standard rather than being able to address relevant standards and avoid addressing standards that are unrelated to a particular project or issue. In addition to merely requiring more paperwork, any overly specific standards on issues that really are not suitable for inclusion in landscape level planning have placed a significant strain on the budgets of land managers, which have significantly constricted since the 1990's. The Organizations do not anticipate a significant change in this long term funding trend and as a result future manager will be forced to undertake similar levels of management with lower levels of funding that ever before. While this is unfortunate, there is simply no basis to believe this will alter over the life of the next RMP. A streamlined and efficient planning document would ease this burden and allow limited resources to be directed to on the ground issues.1c. Landscape level planning should address landscape level issues to insure the RMP remains relevant over its life. Again, the Organizations are thrilled that the USFS is moving forward with the development of landscape level standards that are related to landscape level challenges in their planning efforts. This will significantly impact both the total number of categories and specificity of each category, and this will have an important long term benefit, mainly the RMP will simply remain more relevant to the management of the forest over the plans life and will result in site specific efforts undertaken in the future that are more streamlined as well. The Organizations have been involved in numerous site-specific efforts with forests throughout the western united states and it has been our experience that the RMP being replaced was more of a barrier to projects towards the end of its life than a document that really provided relevant guidance for site specific efforts. This was problematic at best and resolving these issues in site specific planning was often complicated by the fact that the reasoning for Many of the specific standards in the outgoing RMP were simply unclear or had been entirely forgotten. This simply generated more paperwork and efforts in site specific efforts, as planners felt the need to address every variable that could have contributed to the standard being in the plan in order to make the site-specific plan defensible if it was challenged. With a reduced number of categories, site specific planning should be able to become more streamlined and efficient in the future. The negative impacts of a landscape level plan that is simply too complex and too specific has had significant impacts on management of major challenges in the Forest, such as the forest ability to deal with Mountain Pine beetle and Spruce. Beetle that have decimated most other public lands in the Western United State. For reasons that have been long ago forgotten and are simply no longer relevant, many RMP has numerous provisions that significantly limited manager's ability to respond to the outbreak of these pests. While the impacts from species certainly could not have been stopped, a streamlined and general forest plan would have allowed managers to respond in a more rapid and timely manner to these challenges and mitigate the impacts to forest health from these species' outbreaks. Clearly there will be challenges to forest management being faced later in the Proposals life that managers simply cannot envision at this time. The impacts from these challenges could be minimized with a Proposal that is as simple and streamlined as possible.1d. Recent Dept. of Interior national guidance on significant reductions in the size of EIS is highly timely relative to Ashley NIP efforts. The Bureau of Land Management has been vigorously addressing the unnecessary scope and burden of planning documents on the limited resources of land managers, and this new guidance from the BLM is highly relevant to USFS efforts on the Ashley NF. Under new BLM guidance the Ashley effort has resulted documents that are unacceptably long. On August 31, 2017, Secretarial Order 33551 was issued by the DOI mandating that all EIS are limited to 150 pages and that a variance from this standard would only be granted in exceptional circumstances. While the Ashley NF planners are not bound by this DOI Order, the factual importance and basic relevance simply cannot be overstated, and clearly the current Proposal would have to be reduced even further from its current streamlined form to become compliant with this guidance. A copy of Secretarial Order 3355 has

been included with these comments for your reference. Three Challenges should be identified in the Proposal and then any standards in the Proposal reviewed to insure they are not impeding management of these issues. An important component of landscape level planning is the fact that the RMP should provide general guidance on goals for the forest and challenges in achieving these goals in order to streamline subsequent site-specific planning on the forest in the most efficient manner possible. The Organizations submit that DOI Secretarial Order 3355 provides a good basis to review the current Proposal in order to obtain further clarity and streamlining in RMP provisions, as the document clearly identifies that the DOI seeks to have any EIS limited to 150 pages in length. The Organizations would note that some forests revising their Resource Management Plans have taken the step of identifying three major challenges for the forest moving forward, which is exemplified by the Rio Grande Efforts in Colorado. The organizations believe identifying three major goals for the forest moving forward is an important step 2, and that these general goals must be clearly identified in the RMP. The organizations are concerned that if the goals and objectives of the forest plan are not clearly identified, these concerns will be lost over time which could lead to planning that may seek to address other goals in the future. As these are landscape level goals for the Forest, the Organizations do not see this landscape level guidance as a barrier to future planning but rather as providing an important tool for the guidance of these plans. The Organizations would encourage planners to insert these goals into the RMP with some specificity in order to provide some context and understanding of these goals for future managers on any forest. See, <https://www.fs.usda.gov/kletailfriagrandedilandmanagementproject/Ocicrfseprd560334> - ?EIS public meetings slide show accessed December 19, 2017. The Organizations would encourage planners to take an additional step and identify three major challenges the forest sees in obtaining these goals and then reviewing any specific standards or guidance in the RMP to ensure that the particular standard is working towards minimizing the challenges. The Organizations submit that identifying a limited number of landscape level challenges facing the Forest will serve as an important guide for the development of the RMP and any subsequent localized projects. Identifying these challenges will provide clear and easily reviewable guidance for subsequent projects on the Forest and avoid creation of site-specific projects that would contradict the forest level guidance on issues. This will also ensure that all actions being undertaken in site specific planning are working towards these forest level objectives and avoids the artificial elevation of issues in local planning. By ensuring these challenges are addressed in all planning efforts subsequently, the limited resources that are available to land managers will be directed in the most effective manner in addressing these challenges and actually achieving the goals of the plan. The Organizations believe that the following challenges reflect the major challenges the forest is facing, and are already reflecting in the supporting documents that have been provided to the public: 1. Poor forest health/large number of dead trees on the Ashley NF overall; 2. Declining federal budgets will continue to decline and result in the need for stronger partners; and 3. Increasing recreational demands being placed on forest resources due to a rapidly increasing State populations. 2. Flexibility moving forward should be provided for winter recreation management. The Organizations are aware that there are numerous hybrid vehicles and uses being developed, such as fat tire bicycles that were simply unheard of in winter recreational management circles, even several years ago. The Organizations believe that continued development of these types of vehicles will result in the merger of even more non-traditional winter usages of the backcountry, such as fat tire E-Bikes or tracked bicycles. It has been the Organizations experience that while often these conversions are marketed as being able to easily convert from summer to winter usage, these conversions are often difficult and expensive and as a result once converted; vehicles often remain in their winter converted form. The organizations do not see these conversions/hybrids as replacing the more traditional snowmobiles, rather the Organizations believe these units do have a place in the spectrum of winter motorized recreation. For purposes, the Organizations will divide these new users into two general categories: 1. those who are adopting their vehicles to use a track or tracks to traverse snow; and 2. those that are seeking to traverse snow by merely relying on larger wheels and tires. These two user groups pose different management challenges for OSV and recreational management. While the Organizations welcomes new uses, winter recreational management decisions must remain science based. The Organizations have ongoing concerns with impacts to trails and other resources that arise from use of wheeled vehicles on winter trails, however the Organizations' experiences with tracked conversion summer vehicles has been significantly different and welcomes these conversion vehicles, after they have complied with State OHV registration regulations for use of motor vehicles on groomed winter trails. Our initial research indicates that.

these tracked conversion vehicles exert similar pressures on the snow as traditional snowmobiles, making any risks of resource damage from usage of these conversions similar to that of snowmobiles.³ These impacts have already been well documented as minimal to entirely non-existent. These tracked conversion vehicles also allow entirely new classes of public users into the winter backcountry to experience the exceptional opportunities these areas provide, either by accessing their local lake for winter ice fishing opportunities or by making the more traditional winter backcountry motorized experience available.³ A copy of this study has been enclosed with these comments for your reference and complete review as Exhibit 1. These track conversion vehicles include motorcycles where the front tire has been removed, in favor of a snowmobile-like skis and the rear wheel is exchanged in favor of a large track. The Organizations are aware of discussions around trying to manage these conversion vehicles based on the intent of the designers of the vehicles, and this position is problematic with the Organizations. These summer-based conversions provide the winter backcountry experience at reduced cost to users as multiple vehicles are less needed or lower cost units can be converted. Under certain conditions, these conversions provide a more durable recreational experience than a traditional snowmobile on warmer days, or days when the snow has become very firm, as these conversions do not rely on loose snow contacting any portion of the vehicle for the reduction of operating temperatures. These vehicles are designed to cool without any external assistance from snow contacting the vehicle. Photos of some of these types of motorcycle track type conversion vehicles are below: [See attachment for photo of a motorcycle track type conversion vehicle]⁴ Picture credit to timbersled industries and more information is available regarding these products here <http://www.timbersled.com/snowbike.htm>. The Organizations are aware that there have been similar vehicles, designed specifically for over the snow travel, to these motorcycle conversions in production for a long time under the Snow Hawk brand. The following picture represents the Snow Hawk vehicle: [See attachment for photo of a Snow Hawk vehicle]⁵ More information on these vehicles is available here: <http://www.motosportshibeault.com>. It has been the Organizations' experience that while the Snowhawk may have struggled in the marketplace for reasons that are unclear, the conversion motorcycles have rapidly developed a strong customer base and are frequently seen in the backcountry. Permitting a Snowhawk to be managed under winter travel management guidelines, while prohibiting the motorcycle conversions as they are not designed for winter travel could easily appear arbitrary and lead to difficulties for local managers and partners. Similar track conversion is not just limited to motorized vehicles and are now available for bicycles. The Organizations are not aware of the background or viability of bicycle-based conversions for winter use, such as that pictured below, but the Organizations are aware these vehicles are growing in popularity and will probably be seen in increasing numbers in the winter backcountry areas in the near future. [See attachment for photo of a bicycle-based conversion]⁶ More information on this conversion is available here: <http://www.ktrak.esiindexeng.htm>. The Organizations are not taking a position as to the management of these vehicles, as we have never seen one or are aware of any research on pressure the vehicle applies to snow. The Organizations are providing this portion of our comments as an example of the rapidly changing nature of this class of vehicles. Given the expected life of the RMP, the usage of these human powered types of vehicles would become an issue for travel management as these types of designs would anticipate to be perfected within the lifespan of the RMP. The Organizations are also aware that many traditional ATVs and side by side vehicles exchange tires for track assemblies that allow these vehicles to easily travel over snow. The following photos represent an ATV that has undergone this track conversion: [See attachment for photo of an ATV conversion] <http://www.atvtracks.net/>. Clarity in management of these ATV conversions is further made necessary by recent industry actions regarding the sales and support of tracked conversions. Both Polaris Industries and BRP are now selling track kits for delivery on ATVs and Side by Side vehicles with full warranties and OEM parts availability for both the tracks and vehicle being provided from Polaris or BRP.⁸ In addition, the Organizations understand that several models include provisions for the operator to choose if the vehicle is using tracks or wheels in the vehicle's operation system. This provision allows accurate information on data, such as vehicle speed to be automatically compensated for the use of tracks or wheels. With these provisions, data on vehicle speed could be off by as much as 30%. The Organizations believe that these industry actions provide a credible argument that these traditional OHVs are also designed to be OSVs.⁸ <http://www.polaris.com/en-us/rzr-side-by-side/shop/accessories/tracks> or http://liststore.can-am.brp.com/products/683518/APACHE_TRACK_SYSTEM. Enforcement of travel restrictions based on the source

of these pieces of equipment would be problematic and could lead to management being based on if the manufacture of the track system was by the vehicle manufacturer or if the tracks came from a third party. Clearly, precluding a Kawasaki ATV with a Camoplast track kit while allowing a Polaris AN with Polaris tracks would lead to nothing but conflict with users and arbitrary standards that had no relationship to mitigation of damages to resources. This should be avoided and a broad OW definition would resolve this issue. The Organizations are concerned that the overly narrow definition of an OW could impact permitted grooming activities at some time in the future, as this type of vehicle certainly could become more suited for use in the western United States. Farm tractor conversions are now frequently used for trail grooming activities in certain parts of the country, as the track conversion kits allow for use of the grooming equipment throughout the year by adding or removing tracks depending on the season. [See attachment for photo of a grooming conversion] <http://www.soucy-track.com/en-ca/products/grooming/groomersist-600wt/photos> While these grooming conversions are not heavily used in the western United States due to exceptionally steep terrain and deep snow conditions, it is our understanding that clubs or state agencies in other areas of the Country that are utilizing these conversions can significantly reduce overall costs incurred in grooming activities. While most questions regarding the use of a conversion farm tractor for grooming could be resolved in the permitting process, the inability of a grooming organization to use a tracked farm tractor based groomer on federal lands could be a major barrier to a club or organizations that grooms large tracts of non-federal lands, where the farm tractor on tracks would be a cost efficient and acceptable alternative to dedicated grooming equipment. These types of conflicts or questions should be avoided. The second major category of winter vehicle conversions, mainly those users attempting to traverse the winter back country by merely adding larger tires to their chosen means of travel is more problematic. This is an issue where motorized management has clearly been established for a long time and this should not be altered at the landscape level. At this time the most prominent of users of larger wheels and tires for winter travel is the bicycle community as the usage of motorized vehicles with the mere addition of larger wheels and tires has been declined. The Organizations have already experienced fat tire bicycle usage on winter trails, such as that pictured below: [See attachment for photo of a fat tire bicycle on a winter trail] Further information on this usage is available here: <http://thedailynews.cc/2014/01/27/fat-tire-biking-is-a-growing-trend-in-winter-months/> While larger tires are asserted to be a valid use of winter trails from the bicycle community, the idea of merely accepting larger wheels for traversing snow has already been declined for Motorized usage. While this usage is asserted to be valid by the manufacturer, the Organizations are concerned about the basis for this position. The Organizations must question the basis for such a distinction as the only research on pressures from fat tire bicycles yields the following results: 11 See, American Council of Snowmobile Associations; Fat Tire Bicycle Use on Snowmobile Trails; Background Information and Management Considerations; July 2016 pg. 7. This research is Exhibit 2 to these comments. [See attachment for Table 1: Ground Pressure Comparisons] The Organizations concerns are far from abstract on this issue as the Stanislaus NF in California is closing significant areas to OSV usage due to possible contact with Yellow legged Frog and Yosemite Toad from grooming until questions regarding pressures on the hibernating toad from grooming can be resolved. Higher pressure of fat tire is major concern in these areas as the higher-pressure bicycle tire would be more likely to strike and kill a toad than low pressure track assemblies on grooming equipment. This list of issues is far from comprehensive but the Organizations believe it is important to recognize these issues and questions already exist and will probably not simply fade away over the life of the RMP. These questions will simply expand with every new hybrid usage accepted into the winter backcountry. Given this research and that all relevant travel determinations have excluded both wheeled ATV and UTV from winter trails due to the pressure that these vehicles exert on the ground, any attempt to permit fat tire bicycles due to a lack of pressure or impacts would be problematic at best. The basic lack of scientific evidence to support the position would be a major concern for the snowmobile community as this is the community that has directed hundreds of millions of dollars and people's entire lives to establishing the scientific basis of snow buffer. The Organizations believe that laying the ground work for management of these wheel conversion vehicles in the RMP is sound policy and good management. The Organizations have significant experience in partnering with USF5 to educate users of these conversions. Often this educational partnership has been made more difficult as confusion in classifying these conversion vehicles makes it difficult to educate winter recreational users of these conversions as to when they can and when they cannot use particular vehicles and if they are legal at all, which leads to frustration to users. The Organizations have struggled with assisting the public in

identifying if a particular vehicle is allowed in a particular Ranger District at a particular time of the year. The Organizations are aware that in some areas of the country groomed routes and other facilities such as bridges may not be of sufficient size to accommodate some of the conversion vehicles. While these situations exist, they certainly are not the norm. The Organizations believe local managers are able to easily address any site-specific issues either with weight or width restrictions for vehicles using trails in these areas. Summer motor vehicle management has proven these types of local decisions addressing width or weight restrictions highly effective. The public awareness of these types of standards will allow weight or width restrictions to translate easily to winter travel management process and decisions in areas where they might be necessary.

3a. Best available science must be relied on in the development of the RMP for all species. Often identifying best available science can be difficult as this is an issue that is now rapidly evolving for many species, such as the Gunnison Sage Grouse, Wolverine and Canadian Lynx. The rapid evolution of best available science in comparison to RMPs has resulted in conflict between these two issues, and as recently exemplified by the Pike & San Isabel National Forest Plan Challenge can result in lawsuits being brought against land managers when forest plans conflict with best available science. Overreliance on outdated management principals and standards should be avoided in the development of the Ashley NF RMP as this will be an area which will be ripe for legal challenge in the future. The Organizations submit that the new adaptive management and monitoring standards further support the requirement that best available science be relied on both in the development of forest plans and over the life of the forest plan. The Organizations would also note that the on-going requirement to manage to best available science and avoid application of outdated management standards in the development of new forest or resource plans was specifically addressed in the new Lynx Conservation Assessment and Strategy ("LCAS"). While the LCAS is highlighted here similar provisions are found in almost all species-specific management documents that have been created, The LCAS specifically provides as follows: "This edition of the LCAS provides a full revision, incorporating all prior amendments and clarifications, substantial new scientific information that has emerged since 2000..... Guidance provided in the revised LCAS is no longer written in the framework of objectives, standards, and guide-lines as used in land management planning, but rather as conservation measures. This change was made to more clearly distinguish between the management direction that has been established through the public planning and decision-making process, versus conservation measures that are meant to synthesize and interpret evolving scientific information." 1212 See, Interagency Lynx Biology Team. 2013, Canada lynx conservation assessment and strategy. 3rd edition. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication R1-13-19, Missoula, MT. 128 pp, at pg. 2. (Hereinafter referred to as "2013 LCAS"). 2013 LCAS continues by addressing the relationship of best available science, the Southern Rockies Lynx Amendments and existing forest plans as follows: "Forest plans are prepared and implemented in accordance with the National Forest Management Act of 1976.... The updated information and understandings in the revised LCAS may be useful for project planning and implementation, as well as helping to inform future amendments or revisions of forest plans." 1313 See, 2013 LCAS at pg. 4 Many wildlife or quiet use advocates are uncomfortable in reducing the strictness of management standards when best available science moves away from one low risk threat to a species to address newly discovered or understood threats. Given the clarity of these various positions and the legal exposure that could result from failing to implement these requirements the Organizations vigorously assert that best available science must be applied in the Ashley National Forest RMP moving forward. The Organizations wanted to highlight some of the more significant changes in lynx management in the 2013 LCAS including:

- Recreational usage of lynx habitat is a second level threat and not likely to have substantial effects on the lynx or its habitat. Previous theory and management analysis had placed a much higher level of concern on recreational usage of lynx habitat;
- 14-Lynx have been known to incorporate smaller ski resorts within their home ranges, but may not utilize the large resorts, dispersed motorized recreational usage certainly does not create impacts that can be equated to even a small ski area;
- 15-Road and trail density does not impact the quality of an area as lynx habitat;
- 16-There is no information to suggest that trails have a negative impact on lynx;
- Snow compaction from winter recreational activity is not likely to change the competitive advantage of the lynx and other predators;
- 18-Snow compaction in the Southern Rocky Mountain region is frequently a result of natural process and not recreational usage;
- 19-Winter recreational usage of lynx habitat should only be "considered" in planning and should not be precluded given the minimal threat this usage poses to the lynx; and
- 20:-Failing to

manage habitat areas to mitigate impacts of poor forest health issues, such as the spruce and mtn pine beetle, is a major concern in lynx habitat for a long duration.²¹ See, 2013 LCAS at pg. 94.¹⁵ See, 2013 LCAS at pg. 83.¹⁶ See, 2013 LCAS at pg. 95.¹⁷ See, 2013 LCAS at pg. 84.¹⁸ See, 2013 LCAS at pg. 83.¹⁹ See, 2013 LCAS at pg. 26.²⁰ See, 2013 LCAS at pg. 94.²¹ See, 2013 LCAS at pg. 91. In addition to the 2013 LCAS, Colorado Parks and Wildlife has clearly stated their management position as a result of the more than successful reintroduction of the Canada Lynx, which provides as follows: "Lynx have successfully been re-established in Colorado and a self-sustaining population is believed to persist in the region. The management actions taken to re-establish the population to Colorado were done considering the landscape of the time [mdash] there is no intention of attempting to change, alter or remove historic and current land uses from the landscape. Many of these industries can and have developed practices that have the potential to allow the long-term persistence of the lynx within the context of existing land use."²² See, 2015 CPW State Wildlife Action Plan at pg. 173. Given these clear statements from both Federal and State species management experts that OSV/OHV usage is not impacting the Canadian Lynx and that there should not be any changes in land use as a result of lynx activity and position that closing any area to OSV/OHV would benefit the Canadian Lynx would be inaccurate and conflicting with best available science. This position should be included in management direction for the Ashley NF moving forward to avoid any confusion on standards for the forest moving forward.^{4a}

Research regarding manmade groomed snow behavior from decades of Army Corp of Engineers. As previously noted, the Organizations have been active participants in a wide range of winter travel planning efforts throughout the Western United States and are aware that the current RMP revision is not a winter travel plan. The Organizations are also aware that the current RMP revision will guide any subsequent OSV planning efforts on the Ashley and as a result would like to ensure that best available science is available to guide landscape level planning. It has been the Organizations experience that while USFS planners have effectively managed OSV recreation for decades without resource impacts, they are also hesitant to rely on this successful management history as the basis for future planning. We hope the information below supplements this generally accepted knowledge with a high level of scientific certainty and encourages managers to avoid large scale changes to OSV management in the hope of avoiding possible impacts to resources or a lack of scientific certainty around the commonly understood conclusions that managers have relied on for decades in OSV management. The organizations have also included extensive additional research around the behavior of various types of snow under a range of forces that was not available to us at earlier stages of this effort and we have consolidated this research into four general categories. These four categories are snow compacted by man; 2. Snow compacted by natural forces; 3, Uncompacted snow subjected to high pressure vehicles; and 4. Uncompacted snow subjected to low pressure vehicles. We hope this new information is helpful. The organizations have investigated the wide-ranging scientific analysis that has been previously conducted regarding the application of force to snow in both an uncompacted and compacted nature, While this process has been long and costly to undertake, this research has also been highly fruitful as it yielded a large body of work from the Army Corp of Engineers regarding activities they have been conducting in the Antarctic continent since the 1940's ²³. It is significant to note that while the research methodology and management standards have dramatically evolved over the life of this research, the basic conclusions have remained highly consistent over time, mainly that snow is a highly effective buffer of force. Unfortunately, snowmobiles were found early in research process to not meet the purpose and need of the project due to their inability to carry large amounts of cargo, inability to start in exceptionally low temperatures, and that sleds were generally unstable. ²⁴ As a result, this research can provide a lot of general information of varying relevance but cannot directly answer the questions around winter travel of OSVs,²³ For a complete summary of the more than 75 years of research that has been performed by the Army Corps of Engineers please see Shaprio et al; Snow Mechanics; A Review of the State of Knowledge and applications; US Army Corps of Engineers CRREL Report 97-3 August 1997.²⁴ See, Blaisdell et al; First International Conference on Winter Vehicle Mobility; US Army Corps of Engineers; Special Report 93-17 (July 1993) at pg. 91 The value and credibility of much of the Army Corp work and information to the US Government cannot be overstated as much of the information was deemed to be "CLASSIFIED" when it was developed in the 1940s and 1950's ²⁵ and the classification of this research continued into the 1980's. Clearly if there were concerns about the basic accuracy or integrity of the information such a determination would not be warranted. Much of the research and activity on the Antarctic Continent has been the subject of similar or higher levels of conflict and scrutiny as USFS OSV planning efforts have been,

again speaking to the veracity of any of the conclusions reached. It is also important to note that while this research has been occurring for more than 75 years, there has been little question or controversy around the scientific method used to reach the conclusions regarding groomed snow or the conclusions regarding the ability of groomed snow to absorb force. After being declassified, much of this information has been subjected to additional rounds of publication and review.²⁵ A partial copy of foundational research from 1948 and 1952 are attached as Exhibit "3". Complete copies of these works are available but have not been included with these comments as the conclusions are addressed in subsequent works identified with far greater detail. A complete copy of this treaty has been enclosed for your reference as Exhibit "4". Prior to addressing the conclusions of this research, the Organizations believe it is critically important for USFS managers to understand the strict management guidelines in place for any activity on the Antarctica Continent and to recognize that any actions in Antarctica are managed to a "zero impacts" standard for activity. This is far stricter when compared to the multiple use management requirements that are the management goals and objectives of the USFS. Pursuant to paragraph 1 of Article 3 of the 1959 Antarctic Treaty as amended ²⁶ (Hereinafter referred to as "The Treaty") all actions on the Antarctic Continent are subject to the following management standard: "The protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, in particular research essential to understanding the global environment, shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area." The remainder of Article 3 of the Treaty provides a detailed process to apply the zero-impact standard to the wide range of actions occurring on the Antarctic Continent. It is also significant to note that pursuant to Article 8 of the Treaty, all actions on the continent are fully subject to NEPA planning requirements to insure there are zero resource impacts to the Antarctic Continent. As a result, any actions that are taken on the Antarctic Continent are fully subject to NEPA requirements and are managed to a much stricter zero impacts standard than USFS efforts multiple use requirements for OSV. In the following portions of these comments, the Organizations are not attempting to provide a complete review of the Army Corp of Engineers research, as such documentation would necessitate the use of a large capacity jump drive. Rather the Organizations are attempting to summarize the most up to date information in particular areas or subjects. Much of the Army Corp of Engineers research efforts centered around the operation of high-pressure vehicles on snow, such as large military transport planes and transport vans as the cost-effective movement of supplies and other resources needed for Antarctic research has been a significant hurdle for researchers. Army Corps research on the ability of compacted snow to provide a suitable landing surface for a wheeled O141 transport plane provided the following conclusions: "Present studies indicate that this type of processing is needed for only the top 25 cm of a cold, dry processed base course in order to land wheeled C141 and other similar large whether or not an additive such as sawdust is really needed for the base course. Depth processing the snow with a snow miller, in combination with water or heat injection (or dynamic compaction of the top layer), may be adequate."²⁷ See, Lee et al; Improving snow roads and airstrips in Antarctica; US Army Corps of Engineers Special Report 89-22 (July 1989) at pg. 17. A copy of this research is enclosed as Exhibit 5 to these comments. Subsequent research performed by the Army Corp concluded that snow compacted with the utilization of snow grooming equipment, which is almost identical to the equipment currently used on the Stanislaus and throughout the country for preparation of snowmobile trails, was the most cost-effective manner to prepare compacted snow. The subsequent research by the Army Corps provided significantly greater detail regarding the levels of force being applied to the snow as part of the landing of wheeled C-130 and C-141 aircraft on the prepared snow, which are as follows: "For a snow road or a snow runway to be feasible, a method of snow processing is needed such that the resulting snow pavement attains a strength that can support tire pressures in the range of 690kPa. Most cargo-carrying vehicles can easily be equipped to operate with tire pressures at or below 690 kPa and the C130 Hercules tire pressures normally ranges from 550 kPa to 690 kPa. Ideally, a snow strength that could support 1380 kPa would be desirable since that would allow the operation of essentially any conventional surface vehicle or cargo plane."²⁸ See, Lang et al; Processing snow for high strength roads and runways; Journal of Cold Regions Science and Technology 25 (1997) at pg. 18. A copy of this research is included as Exhibit "7" to these comments. The conclusions of this Army Corp research regarding the effectiveness of 25 cm of groomed snow to absorb the forces of landing a wheeled C130 or O141 were as follows: "This snow maintained a strength between 3000 and 7000 kPa throughout the course of our 12-week

study. This strength is more than suitable for the support of heavy wheeled vehicles and aircraft that typically do not require more than 1000 kPa strength." 2929 Supra note 28 at pg. 29 There appears to have been no criticism of the Army Corps 1997 research and this unanimity of research community around these conclusions was exemplified by the fact the conclusions of this research were again the basis of further analysis and review in 2017. It is significant to note that the conclusions of the earlier works were not questioned in any manner and there was no discussion of concerns around the original conclusions after more than 10 years of landing of high-pressure aircraft and use of high pressure wheeled vehicles on the groomed: snow surface. 30 It was accepted that 25 cm of snow provided that level of resource protection.³⁰ See, White et al; Review of ice and snow runway pavements; International Journal of Pavement Research and Technology 11 (2018) 311-320. It is uncontested that OSV usage averages 5 kPa of force on the snow, even under worst case scenarios. Given the clear conclusions decades of Army Corps of Engineers research concluding that 25 cm of groomed snow can support 300 to 1,400 times the amount of force applied by a snowmobile for prolonged periods of time, the Organizations are opposed to any increase in depth requirements for commencement of grooming operations of snow on the basis of resource protection.^{4b} Snow compaction via natural forces occurs throughout the world and results in material density similar to asphalt. The Organizations are also aware that developing a complete understanding, of snow compaction, both from natural processes and recreational activity, has been a significant factor in allowing OSV travel on roads and trails with lower amounts of snow. For reasons that are never identified, these conclusions and research simply are not addressed on the Stanislaw., which provides a blanket 12-inch standard for all usage and requires 24 inches for access to some areas. Usage of summer routes and roads allows for use earlier in the year, when snow is naturally compacted and resource risks are minimal due to the fact the usage is only allowed on designated roads and trails. These types of opportunities are important to the OSV community due to the fact riders may be new to the sport, breaking in new equipment or simply ensuring that their existing equipment is performing properly and can be used safely in deeper snow situations. There is an exceptionally well-developed body of research regarding snow compaction from natural processes, a process which is commonly identified as snow sintering or snow metamorphosis. This large body of research is most directly targeting avalanche safety but also is directly involved with issues such as large construction projects on snow such as roads or mines, the monitoring of polar ice cap activity with satellites ³¹, flooding in high alpine communities and the advancements in the construction of ice breaking vessels. The Organizations assert that snow compaction is the same regardless of what natural force is compacted and the conclusions of research should be the same regardless of what continent the research is performed on.³¹ See, Arthern et al; In situ measurements of Antarctic snow compaction compared with predictions of models; JOURNAL OF GEOPHYSICAL RESEARCH, VOL, 115, F03011, doi:10.1029/2009JF001306, 2010 In this portion of our comments, the Organizations are not seeking to provide a complete outline of this rapidly developing snow science body of research that has resulted from the avalanche research community generally. In order to provide a complete review of this evolving body of global knowledge the Organizations have enclosed a complete copy of the 2016 textbook entitled "Snow and Ice Related Hazards, Risks and Disasters edited by Wilfried Haeberli as an Exhibit"6" to the comments, collectively referred to as the "Haeberli Text" in these comments. Generally, Chapters 2 through 4 of the text provide an introduction to the compelling body of work that now supports snow sintering and metamorphosis and significant data that clearly can be relied on in defense of the varying snowfall totals based on surfaces under the snow and explaining why current management has been so successful. While this text has only become publicly available recently, this text appears to be the most complete peer reviewed body of work on this issue and represents a consolidation of an enormous number of articles from globally recognized leaders in snow science. This global summary of snow science research starts with the recognition that: "Once deposited on the Earth's surface, snow and fin density increases through metamorphism, eventually approaching the density of ice. Metamorphism is a combination of both physical and thermal properties of snow." ³²³² See, Haeberli at pg. 38. Snow scientists recognize that sintering alters snow significantly, which is summarized as follows: "New snow generally has the lowest densities with about 100 kg/m⁻³ and densities increase with aging snowpack due to metamorphism to about 350-400 kg/m⁻³ for dry old snow and up to 500 kg/m⁻³ for wet old snow." ³³³³ See, Haeberli et al at pg. 101. The researchers investigating snow compaction in relation to developed ski areas have also addressed this issue and found that fallen/existing snow is subjected to additional snow load on top of the compacted snow densities continue to increase. Why is the ongoing sintering

or metamorphosis process an issue for the downhill ski community? The industry is trying to resolve the problem of skiers catching an edge on a ski run, which at best provides for a lower quality skiing experience for users and can also result in serious injury or death to skiers if an edge is caught at the wrong time or locations or occurs under competition conditions. The conclusions of this long-term snow compaction research for developed ski areas are outlined as follows: "Fresh fallen snow has a low density, <math> < 100 \text{ kg/m}^3 </math>. The snow is a mixture of solid snow crystals, liquid water and gaseous air. Over time it is compacted by wind. Snow crystals are sintered by daily temperature variations. The snow loses most of its gaseous and liquid content and, because of this, snow densities rise to 100-500 kg/m³. After a long time, snow converts to firn (500-800 kg/m³) and, under the load of newer snow, it even transforms to ice (917 kg/m³)."^{34,35} See, Mossner et al; Measurement of mechanical Properties of snow for the simulation of skiing; Journal of Glaciology, Vol 59, No 218 2013 at pg. 2013. See Also, Favre et al; Optimal Preparation of Alpine Ski Runs; Proceedings of the 2004 International Snow Science Workshop, Jackson Hole, Wyoming; University of Montana; 2004

Given that best available science clearly concludes that the impacts of natural processes, such as wind, sun and gravity, can compact snow to a density of 5 to 9 times what the density of uncompacted snow, the Organizations submit that such a factor MUST be addressed in any scientific research that might be identified as the basis for management changes. The Organizations would also note that these natural factors of compaction have been accurately addressed in current snow depth requirements as there is no allegation of resource impacts being made in the Proposal despite OSV travel occurring on the Stanislaus NF for almost 50 years. While there may not have been a complete understanding of the scientific basis for these conclusions when OSV management standards were originally developed, clearly the managers understood the issue and achieved proper management standards. The scientific conclusions that the natural compaction of fallen snow results in snow density levels of 500-917 kg/m³ is significant for other reasons as well. These conclusions become more compelling when this density is compared to many other common road and construction materials as many land managers are far more familiar with the highly rigid behavior of these materials when forces are applied to them. By comparison, the average weight and density of common building materials for roads and skyscrapers hundreds of stories tall is as follows: [See attachment for weight and density table of common building materials] The relationship of the density of compacted snow and asphalt cannot be overlooked as this comparison adds good context to the levels of protection from possible OSV impacts to resources that is provided by compacting snow. This information also provides scientific context and defensibility to explain why current management is effective in protecting resources. While land managers are very familiar with the performance of asphalt roads in avoiding contact with resources that might be under that roadway often their experiences with snow are very limited. Given that the average road appears to receive 2-3 inches of asphalt with 4-6 inches of base under it to support motor vehicle traffic that commonly approaches 80,000 lbs. for a commercial motor vehicle on the asphalt for decades, even a minimal amount of compacted snow is sufficient to provide resource protection at levels very similar to asphalt when forces of an OSV are applied. The relationship between the weight of compacted snow and asphalt cannot be overlooked in determining what is sufficient snow and what levels of resource protection are provided by snow from the time it falls to the times when it is fully compacted. Given that a snowmobile only applies .5 lbs per inch on the snow or 5 kPa, while natural processes result in pressure's many hundreds of times that of an OSV clearly the significant factors identified above must be addressed in any research addressing additional impacts to compacted snow from OSV travel. Additionally, the similarity in weight of snow and asphalt gives rise to another question, mainly if resources can survive the hundreds of Kg of pressure on them that can result from a meter of snow being on them, why would the .5psi of pressure from an OSV be a concern? Often these resources are buried under several meters of compacted snow for extended periods of time and emerge from the burial in the spring without issue: Several meters of compacted snow can easily result in sustained pressures on any resource of tons of force for many months drawing concerns about snow compaction into further question. While not as developed to the research and analysis levels referenced above, the Organizations believe the position of the downhill ski industry regarding the impacts of snow sintering or metamorphosis is also very important to this discussion as the downhill ski industry has developed extensive technologies to improve mechanical grooming of downhill ski runs to address the continued impacts of sintering after the initial grooming of ski runs.³⁷ These technologies are relevant to this discussion as downhill ski grooming and snowmobile trail grooming occur with the same pieces of equipment and there is no question that the sintering process continues after the grooming

has completed. Asserting that sintering does not continue after grooming simply is not an option in the skiing or avalanche community, and the Organizations believe this compaction is equally relevant in the OSV world as a result of natural processes snow compacts into stronger and stronger layers and into layers that are far more compacted that could ever result from OW traveling over the snow, The Organizations believe this compaction provides continued protection for resources even after the depth of snow from a storm has ended and has been compacted.³⁷ For a representation of this technology please see https://www.prioth.cornifileadmin/user_uploadpdfiprioth_snowdepthmeasurement_EN_NA_Otpdf4c. Snow sintering/natural snow compaction has already been recognized as a natural process in best available science by the USFS. As discussed above, there is a huge body of work now available that clearly identifies the impacts of natural processes such as gravitational, thermal and physical forces on snow over time and conclude that these factors can significantly improve the ability of the snow buffer between recreation and any resource to function. This type of protection is significant in allowing OSV usage on roads and trails with lower amounts of snow that is often the result of compaction. The Organizations would also note that the failure to address the natural forces resulting in snow compaction directly conflicts with best available science identified by land managers. The USFS, USFWS and BLM experts have concluded this by clearly stating as follows: "Snow compaction in the Southern Rocky Mountain region is frequently a result of natural process and not recreational usage;"³⁸ See, Interagency Lynx Biology Team. 2013. Canada lynx conservation assessment and strategy, 3rd edition. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication R1-13-19, Missoula, MT. at pg. 26. Given that the natural process causing the compaction of snow has already been recognized as best available science on what is a natural process occurring throughout the world, the Organizations must question how research can be identified as best available science on any issue involving snow depth without addressing this factor in some manner. The Organizations submit that best available science brings new information and understanding to allow managers to explain why current management of OSV travel on the Stanislaus NF has been effective rather than providing the basis for change of this management. Best available science must be applied to allow for OSV usage on roads and trails recognized in summer travel management as significantly smaller amounts of groomed snow are sufficient for resource protection in these areas as these areas are important recreational corridors for usage of areas with deeper snow and will bring the Stanislaus into a consistent position with adjacent forest OSV decisions.^{4d} Research addressing behavior of high-pressure vehicles in uncompacted snow from Army Corps of Engineers. The Organizations would also like to address Army Corp research regarding the use of high-pressure vehicles on uncompacted snow. While the specific conclusions of this research are not relevant to these discussions regarding the use of low-pressure vehicles, the recognition of several basic facts are important to the discussion. Army Corp researchers concluded that comparatively high levels of force resulting from wheeled vehicle usage over small areas of uncompacted snow found that could be modeled for both hard snow and soft snow using the Capped Drucker-Page model. ³⁹ Similar modeling could also be developed for exceptionally small amounts of force being applied to thin layers of snow;⁴⁰ Army Corp and other researchers also accepted the fact that expanding the foot print of the vehicle reduced the pressure applied to the snow. While the conclusions are clearly not dispositive to the OSV travel questions due to the exceptionally large and small Scales the work was performed at, the fact that snow density can be modeled consistently is significant to recognize as USFS efforts have been applying such a model on the ground for years to avoid possible impacts to resources. Such modeling is clearly possible and scientifically valid as, a management tool and would support the conclusions of the 35 or more years of OSV management on the Stanislaus, mainly that snow is a highly effective buffer between recreational activity and resources under the snow.³⁹ See, Haehnel et al; A Macroscale model for low density snow subjected to rapid loading; Cold Regions Science and Technology. 40(2004) 193-21.1. See also, Richmond et al; A macroscopic view of snow deformation under a vehicle; Army Corp, of Engineers Special Report 81-17. July 1981,⁴⁰ See, Huang et al; Mechanical properties of snow using indentation tests; size effects; Journal of Glaciology; vol 59 No 213 (2013)^{4e}. Behavior of low-pressure vehicles in uncompacted snow. The Organizations are intimately aware that the behavior of snow and the snow buffer between resources and recreational activity will vary greatly throughout the country due to variations in snow density and rates of natural compaction. Uncompacted Rocky Mountains snow is VERY light and dry and compacts to a dense form of snow while snowfall in California or the Northeast often falls as dense, heavy wet snow and is very similar to heavily

compacted snow in other locations in the country. The variations in density over time and geographic location may impact the amount of snow necessary to adequately protect resources. This situation has provided a difficult question to land managers developing OSV plans, mainly what is sufficient snowfall for protection of resources? While the specific answer to the question of minimum uncompacted snowfall at a location necessary for resource protection does not appear to have been scientifically concluded at this time, there is a large body of high-quality research that has been developed by those researching snow characteristics and recreational activities in relation to avalanche activity. Some of these works have addressed the levels of force that snow applies to resources under the snow and have measured the transmission of physical forces through snow with high levels of specificity and detail in order to more fully understand how avalanches are triggered. While this information is not dispositive on minimum snowfall, many of the conclusions are highly valuable in understanding the effects of natural forces on snow and how recreational activities relate to these natural forces. The conclusions of this research directly conflict with any conclusion of a minimum of 12 inches of snow is required to protect resources. A compelling body of work has generally originated out of the University of Calgary and has been driven by Professor Bruce Jamieson who has researched the behavior of uncompacted snow in the development and actions of avalanches for more than 2 decades in the Canadian Rockies. The Organizations would like to direct USES to a series of three studies Mr. Jamieson conducted with Scott Thumlert and several others, published in the Journal of Cold Regions Science and Technologies, which for purposes of this document will be referred to as the "Jamieson/Thumlert" studies. Copies of each of these research documents have been included with these comments for your convenience as Exhibit "8". The Jamieson/Thumlert studies were generally in light snow as the densities were 191 kg/m³, 203 kg/m³ and 219 kg/m³, respectively (averaged for the top 90 cm) and as a result are addressing snow densities that are simply unheard of on the Ashley NF but in later stages of the research, the scope was expanded to include more compacted/multilayer snow in the research process. In this research, snowmobiles climbing a hill under full throttle and skiers were traversing down the same hill were measured and factors such as snow displacement were incorporated into the analysis. This research concluded: "the static stresses applied to the surface of a mountain snow cover are similar for a typical skier (42.6 kPa, from 85 kg skier, 0.32 m² area) compared to a typical Snowmobile (3.8 kPa, from 350 kg machine and rider, 0.9 m² area). The fact that the magnitude of stress added to the snow cover should be similar for skiers and snowmobiles was further evidenced in Fig. 5 which showed stress vs. effective depth. There is no substantial difference between the fitted curves for the skier and snowmobile data."⁴¹ See, Thumlert/Jamieson et al; Measurements of localized dynamic loading in a mountain snow cover; Journal of Cold Regions Science and Technology; Vol 85 ed 94-101.; 2013 at pg. 99 emphasis added. A variety of testing processes were used over the three years started with skiers simply skiing over the test areas and advancing to skiers falling onto the testing areas and snowmobiles simply traveling over the area to snowmobiles jumping onto the test area or climbing uphill in the test area to simulate worst case scenario conditions. Video available for their research process here.⁴² While the Jamieson/Thumlert studies provide ground breaking information into low pressure snowmobiles and Skiers for application of force on snow, the scale or context of the work is difficult to apply for the creation of management decisions as the works are more targeted at how these minimal forces are related to avalanche triggering rather than application of force on flat ground. The concerns around the levels of force necessary to trigger avalanches is simply much lower levels of force than the levels of force that would result in resource impacts but this research provides additional context and understanding into the movement of force through various depths of uncompacted snow and how the effectiveness of snow as a buffer improves as the snow compacts naturally.⁴² See, <https://vimeo.com/20563669> While the conclusions of the Jamieson/Thumlert series of works are valuable alone as it is precedent setting nature of the dynamic measurement of force on snow from OSV/skier travel, these works are complex and difficult to place in a context for comparison. Earlier works of Bruce Jamieson with Brown provide good context for comparison of the Jamieson/Thumlert conclusions, as these earlier works provide Conclusions around generalized force from compacted snow on materials under the snow. This earlier research provides as follows: "Figure 7 illustrates the response of weak layer shear strength to increasing overlying load due to continued snowfall. The weak layer deposited on 16 January had an initial shear strength of 195 Pa and strengthened over 9 days to 1532 Pa (Fig. 7a). Overlying load increased by 196 Pa during the same interval. For the layer deposited on 21 February, Figure 1b shows shear strength and load increasing by 403 and 216 Pa, respectively over 5 days. For three separate time series measured shear strength

is plotted against the overlying load (Fig. 8). At each observation snowfall had increased the load and strengthening in the weak layer was measured. In all three cases strength is positively correlated with load (Fig. 8; Table 2). The average loading rate and average strengthening rate varied for each time series resulting in different slopes of linear trend lines fit to the data."4343 See, Brown & Jamieson; Evolving Shear. Strength, stability and snowpack properties in storm snow; Proceedings of the International Snow Sciences Workshop 2006 Telluride Colorado at pg. 15. (Emphasis added.) A complete copy of this research has been included with these comments as Exhibit "9"

The data set for the above conclusions is provided in the following charts:[See attachment for time series graphs]Figure 7. Time series graphs of weak layer shear strength and overlying load for two separate wee layers: (A) layer deposited on 16 January 2006 was 10 mm thick, consisting of stellar crystals (1-2 mm) and decomposing fragments (1-2 mm). and had an initial (measured) and final (estimated) density of 56 and 188 kg/m³ respectively, (B) layer deposited on 21 February 2006, with an initial are final measured density of 38 and 135 kg/m³ respectively, was 45 mm thick at time of deposition and consisted of stellar crystals (1-3 mm). Markers represent an average of 12 measurements made at each observation. When the conclusions of the Jamieson/Thumlert works, mainly that skiers apply 2.6 kPa and snowmobiles apply on average 3.4kPa of force on the snow, is compared to the conclusions of the 2006 Brown/Jamieson research, mainly that natural snow compaction results in between 196 kPa and 216 kPa the conclusions are highly valuable and provide highly valuable conclusions in terms of scale of forces being applied. This research was also invaluable in understanding how snow is a more effective buffer as time and natural forces are applied to the uncompacted snow. When the force of an OSV or skier through minimal amounts of snow is compared to the force of the snow on the ground, the conclusion is that the snow provides almost 50 times more force on the ground than an OSV. While this is not dispositive for management, the fact that natural resources commonly survive application of forces averaging 50 times more than an OSV applies through minimal amounts of snow is highly valuable. This information is being provided to allow for a more detailed analysis and understanding of why current management has been effective in resource protection and why lesser amounts of snow may be permitted in certain circumstances, such as use of OSVs on developed roads and trails.

Adopt separate uncompacted snowfall depths for on and off trail usage that are supported by best available science conclusions that snow is a highly effective buffer of force and recognize that snow compacts naturally and this compaction results in greater resource protection than uncompacted snow in the planning process.

4f. Management of OSVs

The Organizations are aware that there has been a large amount of scientific data provided in these comments and would like to provide a general outline of how all this data ties back to the current planning process. While the Organizations are hesitant to specify sufficient snow levels for the protection of resources, as identified by the recent revisions to the USES winter travel rule there are several take-aways that we would like to identify that are valuable to the planning process.

1. Snow is a hugely effective buffer between recreational activity and resources buried under the snow;
2. Snow depths required on routes identified as summer OHV routes than the depth required for off trail usage of areas. This reflects the fact that these routes are generally hardened to a level that protects resources from much higher pressure vehicles being used far more frequently. This also allows OSV usage at lower snow times of the year when users are not seeking to ride off trail but rather are simply testing equipment after a summer of storage. This also allows grooming to occur to tie parking areas that may be receiving significantly less snow to desired recreational opportunities in areas that have received significantly more snow;
3. USFS has effectively managed OSV recreation for decades, even if the scientific basis for this management was not clearly understood or articulated at the time the decisions were made.

5a. Document reviews from anti access groups addressing wildlife concerns with motorized recreation must be critically reviewed. Up to date science must be relied on in the development of the RMP and that survey documents created by user groups opposed to multiple use are not a substitute for best available science. This is an issue we are forced to address in our comments as we are aware of several documents that have been circulated under the guise of best available science that are far from a planning resource but rather appears to desire to address travel management without regard to other management challenges or the priority threats on the issue. The Organizations would be remiss if the reliance on the works of Switalski asserted to be "Best Management Practices for OSV management" was not specifically addressed. While there are, numerous anti-access organization science summaries in circulation, the Winter Wildlands Alliance ("WWA") brochure appears to be the most common right now and targeting winter recreation only but is too often applied to all recreational

activity. The Organizations are intimately familiar with this document as it is readily available on the Winter Wildlands website and it has been embraced as best available science in several other planning documents. This is simply astounding as WWA is a propaganda document created by those opposed to multiple use recreation, rather than a survey of best available science on the issue and the Organizations submit that this is exactly the type of document that must be strictly reviewed by planners. Representatives of the Organizations have attempted to discuss our concerns about the basic validity of the document with WWA representatives and have not had any success. We have included the American Council of Snowmobile Associations 2014 "Facts and Myths about Snowmobiling on Winter Trails" booklet as Exhibit 10 to these comments, in order to provide a complete background of all research on OSV travel in a timely and balanced manner. This document is a result of years of effort and a genuine interest in accurately reflecting the management issue and scientific research at the time of publication and often directly reflects the position of the USFS or USFWS on issues in order to provide a single point of reference on agency position. A cursory review of the Switalski/WWA document quickly identifies best management practices standards that were BADLY out of date at the time the document was published in 2015. The Organizations submit that the grim picture of multiple use recreation portrayed in this document is provided in an attempt to pull the range of alternatives towards closing routes. After a review of the booklet, the Organizations believe this document to be an attempt to move their Organizations mission of "snow less traveled" than a true survey of best available science on many issues as many studies have been repeatedly superseded or completely inaccurately summarized in this work. The Organizations believe a complete review of best available science and the position conveyed in the WWA brochure on each issue is not warranted but the Organizations believe several examples of the quality of low quality information or badly outdated nature of the information provided in this document are sufficient to substantiate our inclusion of this issue in our comments. The Organizations believe that the first step in developing truly effective management of any issue is establishing the landscape level summary of the threats and challenges for the species, as many factors are heavily influenced by activities that are totally unrelated and beyond management by the USFS. Overly restrictive management on public lands can directly undermine species management efforts being undertaken in partnership with private lands interests. The first relevant example of outdated and misleading and questionably relevant information being provided in the WWA brochure involves OSV emissions. The EPA is an Agency that has been specifically developed to address vehicle emissions and air quality and the USFS should not be addressing these types of issues in travel planning, as the USFS expertise is not in air quality and emissions standards. If the units are in compliance with EPA standards that should be the end of the USFS interest in emissions for vehicles. The Organizations vigorously assert that landscape level standards are that all units being produced and used in Utah are well below EPA requirements for these types of vehicles. Additionally, EPA and partner analysis find that localized air quality issues are totally unrelated to OSV travel further drawing the relevance of this information into question for travel management purposes. The WWA brochure provides the following information without any basis for comparison to other activities: This information might have been minimally informative to land managers in the decision-making process in 2002 but have to question the value of this information decades later, as the Overwhelming percentage of 2002 snowmobiles simply are no longer in use. Newer snowmobiles are more cost effective to ride, more reliable and operate in full compliance with EPA air quality requirements, which have reduced the number of emissions from this class of vehicle by more than 100%. The 2012 EPA standards for OSV travel are reflected in the following air quality standards: Any snowmobile manufactured after 2012 may only produce 1/2 the emissions that a 2002 unit was allowed to produce. The Organizations are aware that most new units are producing emissions far below even EPA standards for these types of vehicles. The Organizations have to question the relevance of emissions information for vehicles that were produced more than a decade ago and are no longer used. Again, the Organizations must question if assertions regarding the relevance of 2002 emissions outputs, decades after those emissions standards have been superseded is truly relying on best available science. An additional question could be raised on this issue, mainly since pollution appears to be asserted to be the basis for travel management closures, does the fact that 2017 equipment produces more than 50% less emissions than similar 2002 equipment mean areas should now be opened? Clearly such a question has no place in travel management analysis regardless of the direction of the question. This is not the only time that severely limited or questionably relevant information is provided in the WWA brochure. The WWA brochure also provides summaries of Water/Air

Quality studies that are inaccurate at best and are sometimes simply erroneous. An example of such a summary involves the Musselman study, which the WWA brochure attempts to summarize as follows: "During the winter, snowmobiles release toxins such as ammonium, nitrate, sulfate, benzene, and toluene which accumulate in the snowpack (Ingersol 1999), and increase acidity (Musselman and Kormacher 2007)." Any summary of the Musselman work which attempts to support such a position is misleading and frustrating to the snowmobile community, as the snowmobile community partnered in the development of this study in an effort meaningfully address issues and develop parking facilities at the study location. The Musselman study clearly stated their conclusions as follows: "Seasonal differences were evident in air chemistry, specifically for CO, NO₂, and NO_x, but not for NO or O₃. NO₂ and NO_x were higher in summer than winter, while CO concentrations were higher in winter than summer. Nevertheless, air pollutant concentrations were generally low both winter and summer, and were considerably lower than exceedance levels of NAAQS." "Nevertheless, an air pollution signal was detected that could be related to snowmobile activity; but the pollutant concentrations were low and not likely to cause significant air quality impacts even at this high snowmobile activity site." The Organizations have never asserted that motors used for OSV recreation do not produce certain levels of emissions, as that would simply be insulting to all parties involved. Rather researchers have asserted these issues are very minimal in nature when addressing any landscape level emissions that might be in an area, as these new units are EPA compliant. Even when OSV emissions are addressed locally, they are found to be insufficient to warrant any further monitoring. If air quality is an issue that should be addressed at the landscape level, the Western Slope planning area is generally well within air quality standard's for the EPA and Colorado Department of Public Health. Any air quality concerns on the Western Slope are localized and related to particulate matter being released from wildfires in the vicinity: This issue again highlights the value of identifying a limited number of threats on the GMUG, such as poor forest health, as these factors can ensure that limited resources are directed to poor forest health and subsequent wildfires rather than 01-1V/OSV emissions. A second example of the misleading use of science in the WWA booklet involves lynx management standards and again provide a stark example of the systemic usage of out of date information in the WWA brochure. Lynx management is an issue the Organizations have now partnered with USFINS in addressing for more than decade and now have significant time and resources vested into in an attempt to insure best available science on since reintroduction of the lynx in Colorado. This support has taken a wide range of efforts including some direct donations of resources, significant support such as fuel oil and equipment retrieval in the backcountry. The WWA brochure clearly asserts that "no net gain" remains the rule for OSV travel in lynx habitat, stating as follows: "The Canada Lynx Assessment and Conservation Strategy set planning standards on Forest Service lands that include, "on federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by Lynx Analysis Unit... and map and monitor the location and intensity of snow compacting activities that coincide with lynx habitat, to facilitate future evaluation of effects ?n lynx as information becomes available" (USDA FS 2000, p.82). "This was a relevant summary of research in 2000, as research on the lynx was exceptionally limited in 2000 and "no net gain" was temporarily relied on for management of these areas. Research in 2000 on this issue was more aptly summarized as identifying the numerous gaps in research rather than a peer reviewed body of science to develop a management plan. As these gaps in research were resolved, new management guidelines were periodically released for management of lynx habitat and as a result the 2000 LCAS has been superseded by the Southern Rockies Lynx Amendments in 2008 and the 2013 release of the updated Lynx Conservation Assessment and Strategy, which was signed and developed in partnership with the USFS. These management documents have clearly moved away from the "no net gain" standard and towards a truly science-based management structure as previously discussed in these comments in significant detail. The conflict between the 2000 LCAS relied on in the Winter Wildlands brochure and accurate up to date management standards clearly provided in the 2013 LCAS is immediately apparent, and not addressing this conflict would possibly allow a plan to be developed based on badly out of date information and research. Given that the WWA/Switalski document was not released until 2 years after the release of the 2013 LCAS, there was more than enough time to provide accurate information in the WWA/Switalski survey. The Organizations submit that the failure to reflect best available science on the lynx casts a shadow over the reliability of the entire document. A third example of the misleading usage of science in the WWA document involves a comparison of the Wolverine management standards from the USFWS and the WWA brochure, which again provides evidence of the lack of scientific basis

for much of the WWA brochure. The WWA brochure summarizes Wolverine management standards as follows: "Key management schemes for protecting wolverine include limiting disturbance and retaining and restoring habitat connectivity. Managers can reduce the potential conflict with snowmobiles and Wolverine by identifying areas of overlap and managing accordingly." This management position simply cannot be reconciled with recent USFWS listing decisions regarding the Wolverine that convey a very different standard for the management of recreational activities in Wolverine habitat. USFWS management specifically states: "there should be no changes to forest management as the result of an area being designated as habitat". While there was concern regarding the climate change being identified as the primary threat to the Wolverine in the most recent listing decision that ended in determination that the Wolverine was not warranted for listing as threatened or endangered, no concerns were registered regarding the accuracy of these management position that was taken with regard to general forest management standards. Given the clarity of these USFWS statements, the Organizations again are concerned that best available science has not been relied on for the development of the WWA brochure. Awareness of the lack of basic accuracy in the WWA document is critical in establishing a high-quality science based RMP for the GMUG.⁵¹³ Land managers must be aware of the severely checkered past performance of those proposing best management practices. As noted in the previous sections of these comments, there are serious conflicts between what is recognized as best available science on numerous issues and that being provided from user groups who are proposing best management practices for users outside their interest group. The basic concern for these standards is not limited to a lack of scientific basis, but also extends to the implementation of social values as part of the BMPs. It is unfortunate that these documents are not the first time BMP's have been proposed based on inaccurate science and the Organizations believe that understanding the exceptionally poor response and immediate user conflict that resulted when the USFS moved to adopt these BMP's will be critical in avoiding creation of an institutional user conflict in the Ashley RMP. Adam Switalski, the author of the WWA Booklet, has proposed OHV management BMP's previously which were adopted by the USFS as Appendix D of the "Comprehensive Framework for Off-Highway Vehicle Trail Management". The Organizations have enclosed relevant portions of this guide and related documents as this guide was immediately withdrawn by the USFS when vigorous public opposition to the BMP's was voiced. The Framework is not locatable on the internet currently to our knowledge. The Organizations would be remiss if the huge levels of overlap between the BMP's in the Framework and WWA Booklet were not addressed both from a scientific and social aspects. While the framework BMPs targeted all multiple use recreation, the implementation of the WWA Booklet BMPs for a smaller subset of the multiple use community is no more acceptable to the Organizations. This overlap starts with the fact that both documents were published in the same scientific journal and given the immediate vigorous response to the original BMP's, the Organizations would question why any journal would not review any further articles with a high level of scrutiny. Additionally, many of the same standards are again proposed to the best management practices for multiple use recreation. A few examples of the significant overlap of socially based standards are as follows: - Both publications assert motorized usage should be prohibited in a proposed Wilderness Area; - both attempts to tie multiple use recreation to management challenges unrelated to multiple use, such as the impairment of water quality; require - Multiple use only occur in areas with a trail density of less than 1 mile per square mile; - both provide identical offset distances for watershed related issues; and - a blanket prohibition of multiple Use in areas identified as habitat for endangered or sensitive species. While the verbiage of the BMP's is clearly more polished in the WWA booklet, the BMP's that were the basis of the immediate user conflict have not changed. Often standards are provided with absolutely no basis for the standard, such as 1 mile per square mile standard or are standards that conflict with best available science or are standards, such as the prohibition of motorized usage in WSA areas, where historical usages are specifically recognized and protected by federal law. The Organizations believe that avoiding the vigorous user conflict that resulted immediately from adoption of the BMP's from Mr. Switalski by the USFS nationally in the GMUG RMP revision. Implementation of socially based management standards is no more acceptable at the forest level than it was at the national level. The Organizations submit that if there is truly an issue to be resolved, the motorized community has a long and proud history of partnering with GMUG managers to resolve the issue. Inadvertent implementation of management BMP's that are not soundly based would negatively impact this partnership and should be avoided and a full awareness of the history of all proposals is a critical component of avoiding these negative impacts.⁶ Economic importance of motorized recreation on the Ashley NF to local communities. The

Organizations would like to highlight the economic importance of motorized access to public lands both for the economic contributions that flow from motorized usage but also from the fact that motorized access is a significant component of all recreational activity. The value of these economic contributions is becoming more and more important to the basic survival of local communities as more traditional economic contributors, such as mining and timber-based industries, continue to decline. The Organizations are supplementing the previously provided information on the economic importance of motorized access to public lands, both as an individual economic driver and as an important component of almost every other recreational pursuit on the forest. Previously we had submitted extensive user group analysis and preliminary information from the Department of Commerce regarding the economic importance of outdoor recreation. We believe that Alternative C recognizes the importance of multiple use access to the PSI for the basic existence of many communities across the forest. The newly released analysis from the Department of Commerce clearly identifies the economic importance of motorized activity as follows: 4444 https://www.bea.gov/system/files/2019-09/orsa0919_1.pdf[See attachment for graph 'Nominal Value Added for Largest Conventional Recreation Activities 2017']4545 https://www.bea.gov/system/files/2019-09/orsa0919_1.pdfNationally, it should be noted that motorized usages, including access vehicles such as RVs and boats, basically outspent all other forms of recreation combined. When the economic contributions of motorized access and usage are compared to the economic contribution of recreational activities of those opposed to motorized usage, the imbalance is simply not able to be summarized as motorized access is more than 10 times larger in terms of spending. When this analysis is reduced to the state level the BEA finds that recreational activities accounts for more than \$5.5 Billion in economic activity and that motorized usage, both summer and winter contributed more than 10% of total without accounting for equipment purchases. 45 While the Organizations do not contest that developed skiing is a larger economic contributor to the Utah economy, the Organizations would note that downhill skiing as an economic driver is geographically limited in its ability to support local economies. This situation could not be more evident than on the Ashley NF, which identifies no visitation for downhill ski related activity. If the topography to support a ski area is not available, these are facilities that cannot be simply built. Dispersed motorized opportunities can be pursued across almost any landscape.[See attachment for 'Table 1: Forest Service Resource Outputs by Program for the Ashley National Forest during 2016']4646 See, USDA Forest Service; Jobs and Income: Economic Contributions 2016 at a glance; 2016 at pg. 3. A complete copy of this analysis is available here: <https://www.fs.fed.us/iemceconomics/contributionsjdocuments/ataglancepublished/intermountain/AtaGlance-Ashley.pdf>The strength and importance of motorized usage to the economic contributions from the Ashley NF to the local communities is reflected in the most recent round of analysis of forest service lands provided in the National Visitor Use Monitoring process. This process provides the following breakdown of visitation to the Ashley NF.[See attachment for '% Main Activity' graph]47As reflected in the national analysis from the Department of Commerce, motorized access and usage of public lands remains a major economic contributor to the Ashley NF planning area. The Organizations believe an accurate economic analysis is critically important to the decision-making process. Given the fact that significant portions of the Ashley NF are primarily used for recreational purposes, the comparative spending profiles of recreational usage is highly important information. It has been the Organizations experience that often-comparative data across user groups is very difficult to obtain. The USES provided such data as part of Round 2 of the National Visitor Use Monitoring process and those conclusions are as follows:[See attachment for 'Table 3: Visitor Spending for high, average, and low spending areas by activity']4847 See, USDA Forest Service; Ashley NF Visitor Use Report; National Visitor Use monitoring data collected FY 2017; Last updated August 20, 2019 at pg. 21.48 See, USDA Forest Service; White and Stynes; Updated Spending Profiles for National Forest Recreation Visitors by Activity; September 2010 at pg. 6. While the above agency summary data has become somewhat old, the Organizations simply don't see any change in the comparative spending profiles of these users' groups. The Organizations are aware of detailed research addressing certain portions of this analysis above.7. ConclusionsThe Organizations encourage the Ashley NF planners to develop a reasonably short and concise RMP for the Forest. Not only does this request comply with general USFS guidance on forest plan revision, but this type of a plan simply allows the public to more fully understand what the plan does and does not provide for which will result in a plan that is simply more relevant with the passage of time. This simplicity will also avoid situations in the future where the USFS is forced to address new challenges and an outdated and overly specific forest plan is no longer a resource for dealing

with this challenge but is rather another barrier to effectively addressing that issue. Additionally, the Organizations have provided a large amount of scientific data around winter recreation and the behavior of snow in response to this recreational activity. The Organizations are aware that the Ashley is not pursuing a winter travel plan at this time but we are also keenly aware that the RMP will be a significant tool in the development of a winter travel plan at some point in the future. As a result, the Organizations believe this information is important to the basic planning process as it allows planners to explain with far higher levels of detail the reasoning that winter travel management has been effective in avoiding resource impacts on the Ashley NF over the more than 3 decades of time that the Ashley has allowed OSV usage on the forest. It has been the Organizations experience in other forests and planning areas that often these basic types of information about winter travel are some of the first pieces of information drawn into question in planning on the erroneous assumption that no one has ever researched snows behavior in relation to mechanical and natural forces being applied to it. Obviously, this is incorrect as the Army Corp and a wide range of other researchers have concluded with high levels of detail that snow of all types is a highly effective buffer between resources and any activity that is occurring on the surface of the snow. If you have questions please feel free to contact either Scott Jones, Esq. at 508 Ashford Drive, Longmont, CO 80504. His phone is (518)281-5810 and his email is scott.jones45@yahoo.com, or Fred Wiley, ORBA's Executive Director at 1701 Westwind Drive #108, Bakersfield, CA. Mr. Wiley phone is 661-323-1464 and his email is fwiley@orba.biz.

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