APPENDIX 3

Summary of Wolverine Analysis

The following is a summary of the BDNF's considerations, in the 2009 Forest Plan Revision and the 2016 FSEIS, of the effects of snowmobile (OSV) use on wolverine based on the progression of wolverine research and U.S. Fish and Wildlife Service (USFWS) listing determinations.

Wolverine Research and the Forest Plan Revision Process

At the time Forest Plan Revision started in 2002, very little research had been done on wolverines and anthropogenic disturbances. In the early to mid-2000's, the research focus was on wolverine habitat and distribution. Many of these habitat and distribution research projects took place on the BDNF.

What was available at the time of forest plan revision was the 2001, Heinemeyer et al denning model which the Forest Service adopted as the best available science at the time and incorporated into the revision process. Following are excerpts from some of the wolverine research projects and their comments relative to effects of winter recreation to wolverines that came out during and after the revision process. Of important note is that only a few of these projects were actually focused on effects to wolverines from winter recreation.

Squires 2003 completed carnivore studies in Pioneer Mountains (on the BDNF) where one of the objectives was to, "Determine habitat selection preferences of wolverine den sites relative to human activity." It stated that, "Limited research from Idaho and Canada suggests potentially important overlaps between wolverine reproductive denning habitat and winter recreation (Magoun and Copeland 1998)…Although concerns have been raised, no testing has been completed to determine if these activities displace or stress wolverine during this critical time." Unfortunately they were unsuccessful as none of the females denned or produced kits, although this was not completely unexpected as the females marked were not of average reproductive age. However they did document, "Wolverine crossed the Byway during the winter when the unplowed road is a major snowmobile trail, and our limited backtracking studies indicated the individuals were not reluctant to cross the Byway based on their snow trails."

Copeland et al published a paper in 2007 on seasonal habitat associations of wolverine in Central Idaho. This paper mentioned that, "...understanding those seasonal changes is important to land managers faced with assessing the effects of recreation, timber harvest, or livestock grazing in summer, and snowmobiling and skiing during winter." There were no conclusions other than more research is necessary.

One of the secondary objectives of the Copeland and Yates 2008 study was to, "Explore wolverine demographics and social character, further defining the relationship between reproduction and winter recreation." The 2004-2005 Progress Report further mentioned, "A primary concern presently facing land management agencies is the potential impact of human activities, primarily winter recreation, on wolverine reproductive denning." The 2008 Comprehensive Summary Update expresses, "Concerns over the sensitivity of denning female wolverine to human-related activities such as snowmobiling and backcountry skiing has led management agencies to restrict winter access into areas used by wolverines as potential denning habitat. Until we develop a better understanding of this relationship, consideration should be

given to protecting potential denning habitat during the critical denning months of February through April." Again, more research is needed on the subject.

In 2007 Inman et al state, "Wolverines may also be sensitive to human activity (Copeland 1996, Magoun and Copeland 1998), and managers suggest that numbers of backcountry recreationists during winter are increasing on public lands…" It mentions in the discussion, "It is unknown whether the move to the maternal den was the result of our slight alteration of the den, the presence of snowmobile activity, or neither." The management implications section states, "Our den sites and these habitat characteristics in general are often associated with areas where motorized access is limited or prohibited. It is not clear at this point whether wolverines are selecting maternal habitat based on a lack of human activity. However, due to the inherently vulnerable life history strategy of the wolverine, caution is warranted with regard to factors that could influence reproductive success."

Krebs et al 2007 while studying multiscale habitat use by wolverines in Canada hypothesized, "We expected wolverines to favor roadless areas year-round and to avoid intensive winter recreation (e.g., skiing and snowmobiling) areas during winter." They also stated that, "Our analysis is the first to consider winter recreation in addition to roads as habitat variables in a use-availability context." Winter recreation data included estimates of snowmobiling, backcountry skiing, and helicopter skiing in the Columbia Mountains study area. The study found that, "In the Columbia Mountains, where winter recreation was widespread, females were negatively associated with helicopter and backcountry skiing." They also recommended further research on helicopter skiing and backcountry skiing to assess impacts to wolverines. Although they only found helicopter and backcountry skiing to negatively affect wolverines, in their management implications section they state, "Human use, including winter recreation and the presence of roads, reduced habitat value for wolverines in our studies." This study continued to further the concern about winter motorized travel and wolverines.

During the Forest Plan Revision process from 2002-2009, there was no empirical evidence documenting snowmobile disturbance was a factor causing wolverine mortality. Even so, based on potential theories that disturbance at den sites could negatively affect wolverine productivity from the above stated research, winter motorized closures were proposed in much of the wolverine denning habitat on the Forest. Alternative 1, the existing condition had 64% of modeled wolverine denning habitat (Heinemeyer 2001) open for winter motorized travel while Alternative 6 Modified (the selected alternative) had only 31% of the habitat open. Conversely, Alternative 6 Modified closed 69% of wolverine denning habitat (Heinemeyer 2001) to winter motorized recreation. The forest was being fairly proactive in protecting wolverine habitat as the issue of motorized winter recreation had not even been raised by USFWS in any of the Endangered Species Act (ESA) findings by the time the revision had been published.

Since the Forest Plan Revision was signed in 2009, more research has been published on wolverines, their distribution, habitat and potential effects from winter recreation.

In Inman et al 2013, they developed priorities for metapopulation conservation, and state in the discussion section, "…public land managers in the CLR could need to address winter recreation management (Krebs et al., 2007) such that reproductive rates are not encumbered…" However, "developing incentives for maintaining natural areas on privately owned lands needs to be a priority." Connectivity across the vast landscape was one of the main priorities for conservation.

The most recent study on wolverines and winter recreation use was started in 2010 by Heinemeyer, Squires and Copeland, a combined effort by seasoned wolverine researchers. The over-arching project goal is to increase the understanding of the spatial and temporal interaction between winter recreation and wolverine habitat use, movements, and denning. Year one they stated, "The first winter of data has shown that resident adult wolverines have established home ranges across a landscape with a range of recreation activities and levels or recreation intensity. All 3 females established dens within these home ranges, although one female lost kits to unknown causes relatively early in the denning period. There may be some indication of behavioral responses or adaptations of wolverines in the preliminary data exploration such as shifts in the diel activity periods to reduce movements during peak recreation periods." Their latest progress report was published in 2015, which is also the conclusion of their six years of field data collection. Their focus as of 2015 was to analyze the responses of wolverines to winter recreation. In personal communications, Squires stated that even though wolverines are present and reproducing in Idaho in spite of heavy recreational use (including use in a developed ski area), some level of effect to individuals may occur. It is extremely important to remember that this research results are preliminary and the data analysis has not been completed. This research is summarized in the 2016 FSEIS pages 157-159.

Research on potential effects of winter recreation to denning wolverines is still evolving, but the results are beginning to look different than the original theories. However, current research indicates that closing 69% of the wolverine denning habitat on the BDNF to motorized recreation is proactive. Although there could be small localized effects, there is little/no evidence that closing more wolverine habitat is needed for the viability of the species, and therefore the proposed OSV travel on the BDNF under Alternative 6 Modified would not jeopardize the wolverine population.

Endangered Species Act Regulatory Process in Reference to the Wolverine

The wolverine has been looked at for a potential ESA listing as far back as 1985. At this time it was evaluated as a Category 2 species which meant that the Service had information indicating that proposing to list it as endangered or threatened was possibly appropriate, but conclusive data on biological vulnerability and threat was not currently available to support a proposed rule. The status was reviewed in 1989 and in 1994 with the same conclusion. In 1995 and 2003, the USFWS announced 90-day findings based on petition received in both 1994 and 2000. The USFWS found that in both cases, the petition did not present substantial information indicating that listing the wolverine in the contiguous United States may be warranted. In 2006, a U.S. District Court ordered the USFWS to make 12 month findings on the status of the wolverine. In 2008, the Service found that after reviewing the best available scientific and commercial information, they determined that the population of North American wolverine occurring in the contiguous United States did not constitute a listable entity under the Act and that the North American wolverine (*Gulo gulo luscus*) that occurs in the contiguous United States was not warranted for listing. This was the status of the wolverine when the BDNF forest plan was revised in 2009.

However, on February 4, 2013 the USFWS, based on the potential effect of climate change, issued a Proposed Rule to list the wolverine as a threatened species under the ESA. 78 Fed. Reg. 7864 (Feb. 4, 2013). The USFWS proposed a special rule that would limit protections of the ESA only to those necessary to address the threats to the species. In so doing, the USFWS determined that in the case of the wolverine, human activities in wolverine habitat such as

snowmobiling, backcountry skiing, and land management activities like timber harvest and infrastructure development, which do not constitute threats to the species, would not be prohibited or regulated. The USFWS intended to make a final determination on whether to add the wolverine as a threatened or endangered species within one year.

In the USFWS's February 4, 2013 Proposed Rule the USFWS made specific findings regarding dispersed recreation, which included snowmobiling. The USFWS, considering the most recent Heinemeyer et al. research, stated:

> "Although we can demonstrate that recreational use of wolverine habitat is heavy in some areas, we do not have any information to suggest that these activities have negative effects on wolverines. No rigorous assessments of anthropogenic disturbance on wolverine den fidelity, food provisioning, or offspring survival have been conducted. Disturbance from foot and snowmobile traffic associated with historical wolverine control activities (Pulliainen 1968, p. 343), and field research activities, have been purported to cause maternal females to abandon natal dens and relocate kits to maternal dens (Myrberget 1968, p. 115; Magoun and Copeland 1998, p. 1316; Inman et al. 2007c, p. 71). However, this behavior appears to be rare, even under intense disturbance associated with capture of family groups at the den site (Persson et al. 2006, p. 76), and other causes of den abandonment may have acted in these cases. Preliminary results from an ongoing study on the potential impacts of winter recreation on wolverines in central Idaho indicate that wolverines are present and reproducing in this area in spite of heavy recreational use, including a developed ski area, dispersed winter and summer recreation, and dispersed snowmobile use (Heinemeyer et al. 2012, entire). The best scientific information available does not substantiate dispersed recreational activities as a threat to wolverine.
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> Dispersed recreation like snowmobiling and back country skiing, and warm season activities like backpacking and hunting, occur over larger scales; however, there is little evidence to suggest that these activities may affect wolverines significantly or have a significant effect on conservation of the DPS. Preliminary evidence suggests that wolverines can coexist amid high levels of dispersed motorized and nonmotorized use (Heinemeyer et al. 2012, entire), possibly shifting activity to avoid the most heavily used areas within their home ranges."

78 Fed. Reg. 7878, 7888 (Feb. 4, 2013).

Subsequently after the 2013 Proposed Rule, the USFWS did not list the wolverine as either threatened or endangered under ESA. Rather, on August 13, 2014, the USFWS withdrew its proposal to list the wolverine in the contiguous United States as a threatened species under the ESA. The USFWS determined that the effects of climate change are not likely to place the wolverine in danger of extinction now or in the foreseeable future.

In subsequent litigation, on April 4, 2016 the Federal District Court for the District of Montana vacated the USFWS's withdrawal of the Proposed Rule. As such, the wolverine is currently a proposed species under the 2013 Proposed Rule.

Due to the proposed listing of the wolverine in 2014 the Forest Service Northern Region, encompassing all in the Northern Region including the BDNF, prepared a Biological Assessment on the effects of Forest Plan activities, including snowmobile (OSV) travel, on the wolverine. It

found that OSV use was not a threat to wolverine and "will not jeopardize the continued existence of the DPS of the North American wolverine." (USFS 2014). In May 2014, the USFWS concurred with the Region's finding for all forests in the Northern Region, including the BDNF (USFWS 2014). This concurrence was confirmed by the USFWS on June 15, 2016.