

Suggestions for East Vail Work Force Housing Subdivision (Booth Heights) Mitigation Measures

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Gene Byrne, Rick Kahn, and Melanie Woolever, Consulting Wildlife Biologists

We have been retained by the Town of Vail to provide recommendations on the proposed Booth Heights development in East Vail that will provide workforce housing and other development. Our recommendations focus primarily on impacts to bighorn sheep but also are relevant to mule deer, elk, black bear, peregrine falcons and other wildlife species.

We realize that some of these mitigation suggestions may not be the responsibility of the proponent but may instead fall on the CPW, TOV or U.S. Forest Service to implement. However, we believe that they are important for the long-term sustainability of this sheep herd and other wildlife species.

Due to the already limited winter and transitional range for bighorn sheep and the relatively small number of sheep in this herd, our collective view is that finding another location for this development would offer the **best** mitigation for this sheep herd. We encourage revisiting the evaluation of the 11 development sites previously studied and subsequently dismissed prior to this project being proposed. One or more of those sites might be preferable. We realize this may not provide a viable alternative. We offer the following mitigation recommendations for the Booth Heights location. Please keep in mind that the impacts to this already struggling bighorn sheep herd as a result of this development might not be able to be mitigated. Based upon our collective experience, most wildlife mitigation efforts do not provide the intended mitigation result. There is no certainty, even with these measures, that this herd will be able to sustain itself considering the human disturbance-associated impacts related to this development.

ON-SITE

High Importance

- Obtain a conservation easement on 17.9-acre NAP providing for general wildlife. We do not consider these acres winter bighorn sheep habitat although area does provide for some bighorn sheep movement. This area does provide mule deer summer range, elk summer and winter range, black bear habitat and other wildlife habitat. It needs to be protected on this basis.
- Move the bus stop, including the pedestrian access route, to the east end of the property.
- Prohibit trails to NAP, TOV lands and USFS lands, with a cooperative year-round area closure.
- Provide a buffer zone along Pitkin Creek trail to protect bighorn sheep winter range if any vegetation work is done in the NAP.
- Schedule dirt work and major construction for summer-time months while also avoiding peregrine falcon conflicts from June 1 to Nov. 15. These dates could be modified if new CPW information regarding bighorn sheep use is obtained.
- Use rigorous enforcement and signage rather than a fence on the rock berm. A fence could be added if CPW indicates the need has arisen.
- Revegetate the rock berm area with grasses and shrubs that will provide bighorn sheep winter forage.

- Open a migration corridor on the west side of the rock berm area that will allow bighorn sheep to access the rock berm.
- Ban dogs domestic sheep and domestic goats from the development area. We understand that ADA service animals are an exception,

Medium Importance

- Consider reducing the number of units in the development. Intuitively, fewer people moving about the area will reduce the impact on bighorn sheep. Quantifying the degree of impact reduction is difficult.

Lower Importance

- Open the forest canopy in the NAP using a shelter wood cut, stacking and burning, prescribed fire or other workable solutions. This will benefit deer, elk and other some other wildlife species but likely will have limited benefits for bighorn sheep.
- Remove jackstraw trees in NAP to benefit deer and elk using the area.

OFF-SITE

High Importance

- Establish a Colorado Wildlife Habitat Enhancement Special District (C.R.S. Title 32) that will have an elected board of directors from the Vail Valley. The special district could include all or most of the Vail Valley from East Vail to Edwards. The taxpayer funded revenues could be used to finance future wildlife enhancement projects, wildlife studies and purchase wildlife habitat and conservation easements within the local defined area. The special district is a unique and groundbreaking approach to wildlife management and mitigation which recognizes that all people, developers, business owners, homeowners and visitors have impacts on wildlife and wildlife habitat and all should be involved in mitigating those cumulative and collective impacts and help to sustain this valuable resource.
- Establish a mitigation fund for enhancement and protection of bighorn sheep habitat. We suggest a minimum of \$50,000/year for the 10-year period. This could be proponent funded or a partnership with the developer, residents and/or visitors. The habitat fund concept would provide for long-term evaluation (10-year monitoring listed below) and the long-term, repeated habitat enhancement that will be required to maintain bighorn sheep habitat conditions. It would also provide a funding source to address potential post-development impacts.
- Immediately help fund a bighorn sheep movement study in cooperation with CPW, USFS and the proponent to determine how sheep are using the Booth Creek areas. By using GPS collars and with an adequate sample size, the TOV and CPW could better understand the importance of the area, where other potential habitat treatments could be considered, sub-groups of sheep that might have differing movement patterns and also sources of mortality including potential disease issues that could help determine impacts of development.
- Focus treatments and habitat enhancements around prime bighorn sheep ranges e.g. Booth Creek cliffs on the East and West sides of Booth Cr on both TOV and FS habitat.
- Burn or cut, stack and burn to open-up aspen woodlands. Burning will be most effective and cheapest alternative. Both options should be used to ensure prescribed fire safety.

- Treat burn areas with herbicide effective in preventing native vegetation from being replaced by cheat grass and other noxious weeds post-burn.
- Investigate methodologies to allow for prescribed fire. Hotter fires will likely be more effective in achieving bighorn sheep habitat improvement in this area. It is expected that this will require public/private partnerships.
- Prohibit bike paths and sidewalks along the frontage road in the Booth Creek area. In the event they are allowed, close them during the winter to facilitate bighorn sheep use.
- Work with USFS and TOV to set up a winter closure on the Booth Creek area to prevent human recreation use.
- Work with USFS to prohibit dogs year-round on the Booth Creek area.

Medium Importance

- Remove jackstraw timber. Burning would be most effective and cheapest, but there may be a need to cut, stack and burn some areas to establish adequate fire lines.
- Cut/maintain migration corridors suggested in the 1998 USFS habitat plan.
- Consider fertilization. It might be wise to do a treatment/control study to determine efficacy of treatments. Remember that fertilization will be an ongoing project if the desired vegetation response is necessary in the long-term.

Lower Importance

- Consider using salt or other supplements to keep bighorn sheep away from the frontage road and I-70.
- Encourage CPW to update current CPW wildlife maps to reflect the current distribution and use patterns. We do not believe they currently have the data to do this. The study listed in the High Importance section will inform this. However, if the study is not done, CPW should update the maps to the best of their ability.