

Cougar Trail Design Team Summary and Presentation of Final Proposed Alignment 6/25/2015

The Cougar Design Team began work in January 2015 to determine an alignment for the Cougar Trail Complex. This group was approved by the MA Board to build on the previous work of volunteers and the open space manager to work to achieve a balanced trail design. The team reviewed two biological reports (from 2012 and 2014) and synthesized the data in attempts to develop a final recommendation for the Cougar Trail. In 2012, Bill Mangle (ERO Resources- biologist) completed what he described as a "limited, existing biological information with field reviews focusing on big picture habitat patterns and integrity versus focused inventories of specific trail corridors" which were completed in 2014, by the CNHP biologists. Broader scale biological surveys are more commonly done when an extensive management plan is being written versus a specific, designated trail corridor where exact locations of resources present are being mapped and located, which was done in the 2014 survey of the actual trail corridor by CHNP biologists.

The Cougar design team is composed of Ken Caryl residents and staff with a broad spectrum of backgrounds, experience, and values. The group met regularly to discuss the issues below as well as meeting with, the Colorado Natural Heritage Program (CNHP) biologists who conducted the 2014 survey, and made several field trips.

The following goals were agreed upon by the group:

1. Balance recreation and conservation
2. Incorporate results of biological report to come up with an alignment
3. Optimize all considerations, including biology, technical design, buffers to properties, and view-sheds.
4. Provide resident access to the southern part of KCROS, serving the southern community.
5. Reduce / minimize biological impacts and avoid / prevent sensitive biological impacts.
6. Develop a final design consistent with the Trails Master Plan
7. Produce a document for how the conclusion was reached (this document)

The primary biological concerns discussed throughout the meetings were:

1. Habitat Fragmentation
2. Riparian crossings
3. Golden Eagle and raptor habitat

Another biological concern was *Claytonia rubra* and other rare and uncommon plants and plant communities. While *Claytonia rubra* is rare statewide, it appears in many places in Ken Caryl Ranch. Biological findings from other reports such as Jefferson County Open Space's Survey of Critical Biological Resources and the Ken-Caryl Ranch Trails Master Plan were also considered.

The team discussed year-round loop opportunities, as well as minimizing in the visual impact of the trail from Manor Ridge, the neighborhood, from the valley entrance and other vantage points. The team also discussed user experience related to the visual impact of the Lockheed Martin facility from the proposed alignment.

There is basic agreement among the Design Team that believes that the proposed trail plan as presented reduces and minimizes, to the best extent possible, the biological concerns presented in this report but a consensus was not reached.

There are 4 main biological points discussed in the report: Fragmentation, Golden Eagle and raptor habitat, riparian areas, and *Claytonia rubra*. (References contained in the text below refer to markers on the attached map. e.g. - F1) The following sections summarize the biological concerns and how these concerns were discussed in the trail design process in attempt to mitigate impacts.

Fragmentation

1. CNHP biologists identified that this parcel of land, owned by Ken Caryl Ranch, is an undeveloped piece of land where “three major ecosystems come together: 1) Rocky Mountain Lower Montane-Foothill Scrublands; 2) Rocky Mountain Gambel Oak-Mixed Montane Scrubland; and 3) Western Great Plains Foothill and Piedmont Grassland;” and is contained within a Jefferson County Potential Conservation Area. The biologists indicated that trails can cause fragmentation of lands making our job of balancing resource concerns even more important.
2. The Trail Master Plan (TMP) makes the statement that “the proposed trails provide reasonable access while minimizing impacts to sensitive environmental resources.” The plan presented in the TMP “preserves several large, intact blocks of undisturbed habitat to continue to provide a refuge for wildlife that are more sensitive to human presence. While the introduction of trails will result in habitat fragmentation and disturbances to individual animals, the level of disturbance is not likely to rise to the level of impact that would affect the ability of these species to continue to thrive on Ken Caryl Ranch. Whenever possible, additional measures should be taken during the trail design and construction process to further avoid sensitive resources and reduce environmental impacts.” (page 23)
3. The proposed trail alignment causes fragmentation although less so than compared to the original TMP alignment by concentrating the foothills climbing section (F1) and leaving a large undisturbed foothills area, causing less fragmentation of the “hidden valley,”(F2) and by modifying the alignment at the north-west end of the alignment (F3), causes less fragmentation of the open south-facing grassy slopes.
4. Trail usage in this area will cause impacts. The extent of which is not and will not be completely known. The patrolling of the trail and the reduction of any social trails will assist in reducing further fragmentation issues. The impact is diminished compared to public trails due to the reduced density of trails and reduced frequency of use compared to other trail systems. (TMP page 7)

Golden Eagle and raptor habitat

1. The Colorado Division of Wildlife (DOW) 2008 raptor guidelines indicate that a “‘holistic’ approach is recommended when protecting raptor habitats. While it is important for land managers to focus on protecting nest sites, equal attention should focus on defining important foraging areas that support the pair's nesting effort. Hunting habitats of many raptor species are extensive and may necessitate interagency cooperation to assure the continued nest occupancy.” DOW recommends a minimum ½ mile buffer for Golden Eagle nesting sites, for all human encroachment from Dec 15 to July 15 noting that “the buffer areas suggested reflect an informed opinion that if implemented, should assure that the majority of individuals would continue to occupy the area. Additional factors, such as intervening terrain, vegetation screens, and the cumulative impacts of activities should be considered.” The proposed alignment provides intervening terrain and vegetation screens. The eagles nest on the south-west facing rock, so the rocks provide visual screening of the northern foothills.
2. The original as well as the revised trail designs are outside of this ½ mile buffer. The closest point of the proposed alignment is 2/3 mile from the golden eagle nest site. (E1)
3. CNHP biologists indicated that eagles primarily use land within a 2 mile radius of the nest for foraging. To cause less impact to eagle and raptor foraging land, which is believed to be the ridges and valleys of the foothills, this alignment provides a slightly larger undisturbed area of land (E2) that can be used by the Golden Eagles and other raptors than does the original TMP alignment. All proposed alignments considered are within the 2 mile radius foraging area.
4. The Golden Eagles nest is directly across from the LMCO building within the ½ mile buffer, and appear to be acclimated to development, including cars, buildings, residential development, maintenance activities at the water tank, and other multi-use trails.

5. The question is “what is the tipping point”? While these eagles appear to be habituated to human presence, professional biologists recognize “it is important that the entire context of cumulative impacts be considered when recreational trails and other developments are being considered Golden eagles are particularly sensitive to human disturbance and are likely to abandon their nests during the incubation period if disturbed Human disturbance is reported to be responsible for 85 percent of Golden Eagle nesting failures along the Front Range” (Snetsinger and White (2009), Palmer (1988)). Current trend data available online indicate that Golden eagle populations are declining in portions of their range but have been relatively stable in others over the last 40 years according to data collected from Audubon Christmas Bird Counts and other counts conducted throughout the year (Butcher and Niven, 2007).
6. Sean Warren contacted Bill Mangle, a wildlife biologist with ERO resources, who provided the original biological opinion in the TMP several years ago and more recently “spent some time looking at the CPW nest data and google earth” which, together with his “impressions and memory of that area” leads him to believe that the location of the revised trail alignment “would have a negligible effect on the eagles, and efforts to hide/screen the trails or push them further north would give (us) more certainty.” “My recommendation would be to have no trails south of... Docmann Gulch, limited or no trails within the ½ mile buffer, and no restriction on the remainder.” (Email, personal comm., Mangle to Warren, 4/3/15).
7. The TMP notes that “It is important to consider the long term viability of nearby foraging areas that sustain the nesting raptors”. While the general biological opinions in the TMP considered foraging areas in the context of proposed trails in the TMP, subsequent and more detailed biological opinions refine our understanding of the golden eagles and their foraging areas.
8. The revised trail alignment (as indicated in #2 and #3 above) reduces the impact, compared to the original TMP alignment, to the Golden Eagle and other raptor nesting habitat.
9. Predicted impacts of trail usage in this area are unknown, however the impact is reduced due to the decreased density of trails and reduced frequency of use compared to other trail systems. (from TMP page 7)

Riparian Areas

1. The CNHP biology report and the Trail Master Plan indicate that riparian areas are areas of higher biodiversity and tend to be corridors for wildlife. These are found in wetter areas, generally in drainages and are only a small part of the total land area (less than 3%), they provide habitat for nearly 80% of the wildlife species.
2. Modifications to the alignment have been made to reduce the number of riparian crossings. On the upper section of the Cougar trail, the original number of riparian crossings was originally 7 in the 2014 biology report, and 5 in the 2012 biology report, for a total of 12 riparian crossings. This has been reduced to a total 8 in the revised Upper Cougar alignment, a 33% reduction
3. The most substantial riparian crossing (R1) is about 100 feet long. This crossing has been determined to be the most efficient crossing spending the least amount of time in the riparian zone, compared to other potential crossing locations of this drainage.
4. The Trail Master Plan indicates that trail users should have reasonable opportunity to experience riparian settings, while limiting impact. The TMP also states that we should “avoid any new impacts to riparian habitat areas” but that “a single crossing of a riparian area is preferable to a trail that runs through the riparian area for a long distance.” (from TMP page 8)

***Claytonia rubra* and other plant impacts**

1. *Claytonia rubra* is rare in Colorado but is seen relatively frequently in Ken Caryl Ranch
2. It grows primarily in the shrubland, generally not in the dense oak thickets, nor in grassland. The species is an annual, so it re-seeds itself every year.
3. Because of its abundance, *Claytonia rubra* is secondary biological concern that can be avoided with micro-siting the alignment.

4. On Upper Cougar, there were 7 locations of *Claytonia rubra* observed. By re-routing the alignment, the number of occurrences has been reduced to 3. Much of this habitat has been avoided to reduce the impact (C1).
5. No other sensitive plant species or plant communities were found in the biological studies.

Other Considerations

The climbing section of the proposed alignment is further north than it was previously, and as such, it may be somewhat more visible from the valley than the original alignment. The original alignment hid the trail from view very effectively. The proposed alignment may be more visible, especially when newly constructed, but should be well disguised as vegetation re-grows. Thus this proposed alignment represents a compromise: it is better from a biological standpoint, but isn't as well disguised.

The proposed alignment doesn't provide views down into the rugged and picturesque Docmann gulch. This is a compromise to mitigate biological concerns.

There are more switchbacks in the proposed alignment than the original alignment. This is a compromise to mitigate biological concerns.

The proposed alignment utilizes a steep north-facing drainage for a significant portion of the proposed trail. This terrain will create difficult construction conditions with up to 60% cross slopes.

The new trail will be constructed in accordance with the Ken Caryl Ranch trail construction standards that represent the best practices for construction of sustainable and maintainable trails.

Summary of Recreation and Conservation Balance

Trails do create an impact, and throughout this process, the Cougar Design Team has attempted to minimize/reduce biological impacts to sensitive resources to the extent possible. While the team agreed on a large portion of the trail, there is not full agreement on every piece of the alignment. Part of the team believes that this trail is a good compromise from the original alignment that will provide a great user experience while taking the biological resources we are blessed with into careful consideration.