ELEMENTAL

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ARCHITECTURE

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Alternatives Analysis

This Alternatives Analysis is in response to Mendocino County Planning's request from January 24, 2025 to discuss the environmental damage and economic feasibility of two alternative location/design scenarios raised by the California Coastal Commission (CCC). Specifically, the Coastal Commission inquired about the possibility of (1) site development within the northeastern portion of the property instead of the southwestern area and (2) constructing bridges over the wetland crossings. Both points are addressed below. This report was prepared by the architect and reviewed by the Principal Consulting Biologist, Sarah Bradley.

(1) SITE DEVELOPMENT WITHIN THE NORTHEASTERN PORTION OF THE PROPERTY INSTEAD OF THE SOUTHWESTERN AREA

Proposed Southwestern Location:

A building envelope was established when the parcel was created and approved by the CCC, as recorded in the vested CDP 1-81-85. The proposed project involves building a new single-family residence (SFR) within the existing CCC building envelope. A driveway turnaround will be installed close to the SFR to accommodate CALFIRE regulations.

The CCC-approved location necessitates crossing of presumed wetland. A restoration and mitigation monitoring program (RMMP) was created approved by the Regional Water Quality Control Board on November 26, 2024 to compensate for any potential impacts through the wetland crossings.

Alternative Northeastern Location:

This alternative configuration would locate the SFR approximately 1,000 feet further northeast than the proposed project, outside of the CCC-approved building envelope. Although this location would avoid a second crossing of the presumed wetlands, it presents several significant disadvantages compared to the proposed site.

Infeasible septic system

An operational and permitted aerobic septic system with leach field and replacement field exists in the southwest of the property, close to the proposed building site but approximately 900 feet away from the alternative location. Together with the elevation difference, this long distance would make it logistically and functionally prohibitively difficult to connect the system to the alternative building site. The gradient not only complicates installation due to the required precision in slope for effective wastewater flow, but also increases the risk of system failures and maintenance issues, imposing significant long-term operational challenges for a septic system whose design was optimized for a SFR in close proximity.

Beyond such operational issues, extending the septic system to the alternative location would involve extensive ground disturbance over the 900 ft distance, including the waste lines' crossing of wetland.

A potential alternative to connecting the existing septic system to the alternative site would be to abandon the existing septic system and build a completely new one closer to the alternative site. However, a comprehensive soils investigation (conducted by Carl Rittman, Certified Professional Soil Scientist) concluded that the only suitable site for a septic system among the eight different locations that were surveyed was the one in which the septic system was ultimately built. In particular, two locations in proximity of the alternative northeastern site were explicitly ruled out due to inadequate soils for septic disposal purposes. This leads to the conclusion that the alternative northeastern location is not a suitable building site for an SFR.

Deforestation

Our analysis has concluded that establishing a buildable space in the alternative location while keeping with the CALFIRE-mandated clearance of 30ft and building the CALFIRE-mandated 80ft-diameter turnaround would require the eradication of at least nine large pine trees, resulting in significant net loss of valuable flora and wildlife habitat. By comparison, no trees need to be cut for the building a SFR in the proposed building site. Therefore, the alternative location is comparatively less environmentally desirable in terms of tree and wildlife habitat preservation. Wildlife connectivity and habitat integrity will be negatively impacted by development in this alternative location.

Property-value decrease

The alternative northeast location would also not allow satisfactory use of the parcel with regard to ocean views from the SFR. Forcing a residence to be located further east on a bluff top parcel, contrary to the property owner's investment-backed expectations to build closer to the bluff and within a building envelope defined by the Coastal Commission as noted in a vested CDP, would significantly reduce the property's value.

Conclusion

Based on the above review, the proposed building location in the southwestern area is the most feasible, least environmentally damaging site. This conclusion is consistent with the findings of Biological Scoping Survey, Wetland Delineations, & Botanical Surveys from August 11, 2024: "In conclusion, it is the professional opinion of the qualified biologist at Dark Gulch LLC that the development, as existing and proposed, has not and will not significantly degrade presumed ESHA resources. Second, there is also ***no feasible less environmentally damaging alternative*** to existing and proposed developments."

(2) CONSTRUCTING BRIDGES OVER THE WETLAND CROSSINGS

Existing Culverts:

Two culverts have already been installed on the property to allow for the driveway to cross presumed wetlands.

Alternative Bridge Design:

In place of these culverts, two new bridges could be built to allow for these presumed-wetland crossings.

Environmental impact

Since the culverts are already developed, their continued use is expected to result in a less detrimental environmental impact compared to their removal and the construction of two new bridges.

Assuming a bridge that is 12 feet wide and 20 feet long, the directly affected area amounts to 240 square feet. Beyond the direct footprint, construction would impact an additional buffer area on either side of the bridge. If we assume a conservative buffer of at least 10 feet on each side, the total area affected amounts to 640 square feet (32 feet x 20 feet) disturbed space per bridge. This area would be subject to vegetation removal, soil compaction, and potential runoff issues during and after construction.

The construction of a bridge, from site preparation to completion, takes several months to a year. During this time, the area would be exposed to continuous disturbance, increasing the likelihood of soil erosion and sedimentation in the wetland. The use of heavy construction machinery, which is necessary for building a substantial structure like a bridge, would not only increase soil compaction but also contribute to noise pollution and emissions. The construction of a bridge typically also involves temporary water turbidity due to sediment upheaval, and the physical presence of construction personnel and equipment in the wetland. These factors can adversely affect both terrestrial and aquatic wildlife habitats.

Although a bridge may allow for greater connectivity compared to culverts, it could still present barriers or create shade that alters the microhabitat below, potentially affecting aquatic and plant life.

Retaining the existing culverts avoids additional land disturbance and the associated risks of habitat fragmentation during new construction. The culverts, having been a part of the landscape for some time, may have allowed the surrounding ecosystem to adapt around it. Altering this by introducing new structures could disrupt these adaptations, affecting species that have grown dependent on the current configuration. The culverts thus offer a more sustainable option by preserving the current ecological balance, minimizing disruption, and utilizing existing resources.

Economic feasibility

Since the culverts are already developed, their continued use will have significant economic benefits compared to the building of two new bridges.

Building a new bridge involves significant costs, including materials like steel and concrete, labor for construction, and costs for engineering and design. Based on best estimates for a reinforced bridge, the cost per square foot can be expected to be approximately $500, leading to a total cost of $120,000 per bridge, for a grand total of $240,000 for both bridges. By contrast, maintaining the culverts involves no construction cost.

The economic feasibility of maintaining the existing culverts rather than replacing them with new bridges strongly favors the culverts, especially when considering not only direct costs, but also the risk of project delays and the complexity of maintenance.

Pedestrian versus vehicular bridge

A pedestrian footbridge, while potentially narrower than a vehicular bridge (e.g., 6 feet vs. 12 feet wide for two people to comfortably walk next to each other), still introduces unnecessary

environmental disturbance compared to the existing culverts. Construction would require vegetation removal, soil compaction, and foundation work within wetland areas, disrupting habitat connectivity and causing erosion. Even with a smaller footprint, shade effects would alter microhabitats below, impacting plant growth and aquatic life. The construction process—requiring machinery, material transport, and prolonged site activity—would impose additional stress on the wetland ecosystem. Additionally, the significant distance from the parking area at the property entrance to the house—approximately 1,200 feet—raises serious concerns regarding compliance with CAL FIRE regulations, as emergency vehicles would be unable to access the residence in case of fire. Beyond safety issues, requiring individuals to transport groceries and other essentials across such a distance would be practically infeasible, further underscoring the need for vehicular access in close proximity to the SFR. Finally, the footprint of one bridge would be 6 x 20 feet = 120 square feet. Estimating the costs for concrete footings, lumber, and steel reinforcement at $500 per square foot, this would result in $60,000 per bridge for a total of $120,000 for two bridges. Given that the culverts already function without ongoing impact, replacing them with a bridge is an unjustified ecological intrusion.

Conclusion

In conclusion, retaining the existing culverts presents a more sustainable and economically feasible solution, minimizing environmental disruption and preserving ecological stability, compared to the substantial costs and ecological risks associated with constructing new bridges.

The property owner has already incurred more than $55,000 in county- and state-induced compliance costs over the course of the permitting process throughout the past year alone, including expenses for a new biological scoping study, a new wetland delineation, a new botanical study, a new geotechnical report, several architectural revisions, and various permitting fees paid to the County of Mendocino and the Regional Water Control Board— all despite holding a vested Coastal Development Permit for constructing a SFR in the very location requested in the new CDP. Additionally, the construction and monitoring of a new wetland under the approved RMMP—designed to mitigate assumed driveway impacts—is expected to exceed $14,000. These figures do not account for travel expenses to and from the site or lost income due to the time required to consult with subject matter experts for study preparation. Forcing further changes, whether for bridges or septic relocation, would trigger cascading expenses in additional permitting, design revisions, and construction, creating an unjust financial burden and a significant strain on the property owner’s resources.