

For MCP Only	
Proposal No.	Region
Project Score	

Road and Trails Management Plan (RTMP) Trail Proposal Form

Project Name: Cascade Canyon OSP Fish Protection Project

Applicant Name: Friends of Corte Madera Creek Watershed and Marin County Bicycle Coalition

Organization Name: same as applicant

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Organization Type: Nonprofit Organization • Individual Other

Section 1: Project Objectives

1. Short summary of project (800 characters or less). What does the proposal attempt to accomplish?

Cascade Canyon OSP is a popular recreational corridor for pedestrians, cyclists, and equestrians traveling in between residential areas of Fairfax, Pam's Blue Ridge, Camp Tamarancho, and Pine Mountain. San Anselmo Creek through Cascade Canyon OSP contains sensitive aquatic habitats that support federally- and state-listed steelhead and other native species. Recreational traffic through four at-grade creek crossings along Cascade Canyon Fire Road mobilizes fine sediment that could negatively impact downstream steelhead redds and the upstream passage of young fish into summer rearing habitat, and puts visitors at risk of being swept away by high creek flows during the winter rainy season. The goals of this proposal are to eliminate the need for the at-grade crossings, improve creek habitats, and improve visitor safety by:

- Replacing Ford #1 and Ford #4 with multi-use bridges (Bridge #1 and Bridge #3) (numbering from Best 2013),
- Constructing short segments of new multi-use trail to connect the bridges to Cascade Canyon Fire Road and Canyon Trail,
- Changing the use of Canyon Trail from dual-use to multi-use in between Bridges #1 and #3,
- Decommissioning High Water Trail along the north side of the canyon, and
- Addressing inadequate drainage along an approximately 100-ft-long reach of Canyon Trail east of Carey Camp Creek that is contributing to erosion of sediment into San Anselmo Creek.

The goals of the RTMP are as follows:

- Establish and maintain a sustainable system of roads and trails that meet design and management standards.
- Reduce the environmental impact of roads and trails on sensitive resources, habitats, riparian areas, and special status plant and animal species.
- Improve the visitor experience and visitor safety for all users, including hikers, mountain bikers, and equestrians.

2. Describe how the project will meet each goal (2000 characters or less).

Sustainable roads and trails: The new bridges would create a more environmentally sustainable route for pedestrians, equestrians, and cyclists traveling through the canyon. Currently, in order to move between the main trailhead at Cascade Drive and the popular destinations of Cascade Canyon Fire Road and Cascade Falls, users must utilize anywhere from one to four at-grade crossings (depending on their pedestrian/cyclist/equestrian status), or travel along the narrow, occasionally steep High Water Trail perched immediately above the creek. During and after heavy rains, wading through the creek can be very unsafe, and the highly exposed nature of High Water Trail makes it a risky option for many users, including children, the elderly and those with mobility challenges. With this proposal, visitors would instead have year-round access through the canyon starting at the Cascade Dr. trailhead, across Bridge #1, up Canyon Trail, and over Bridge #3. The roads and trails along this route meet modern design standards, with sustainable grades, minimal exposure, and appropriate widths and sight lines to support multi-use.

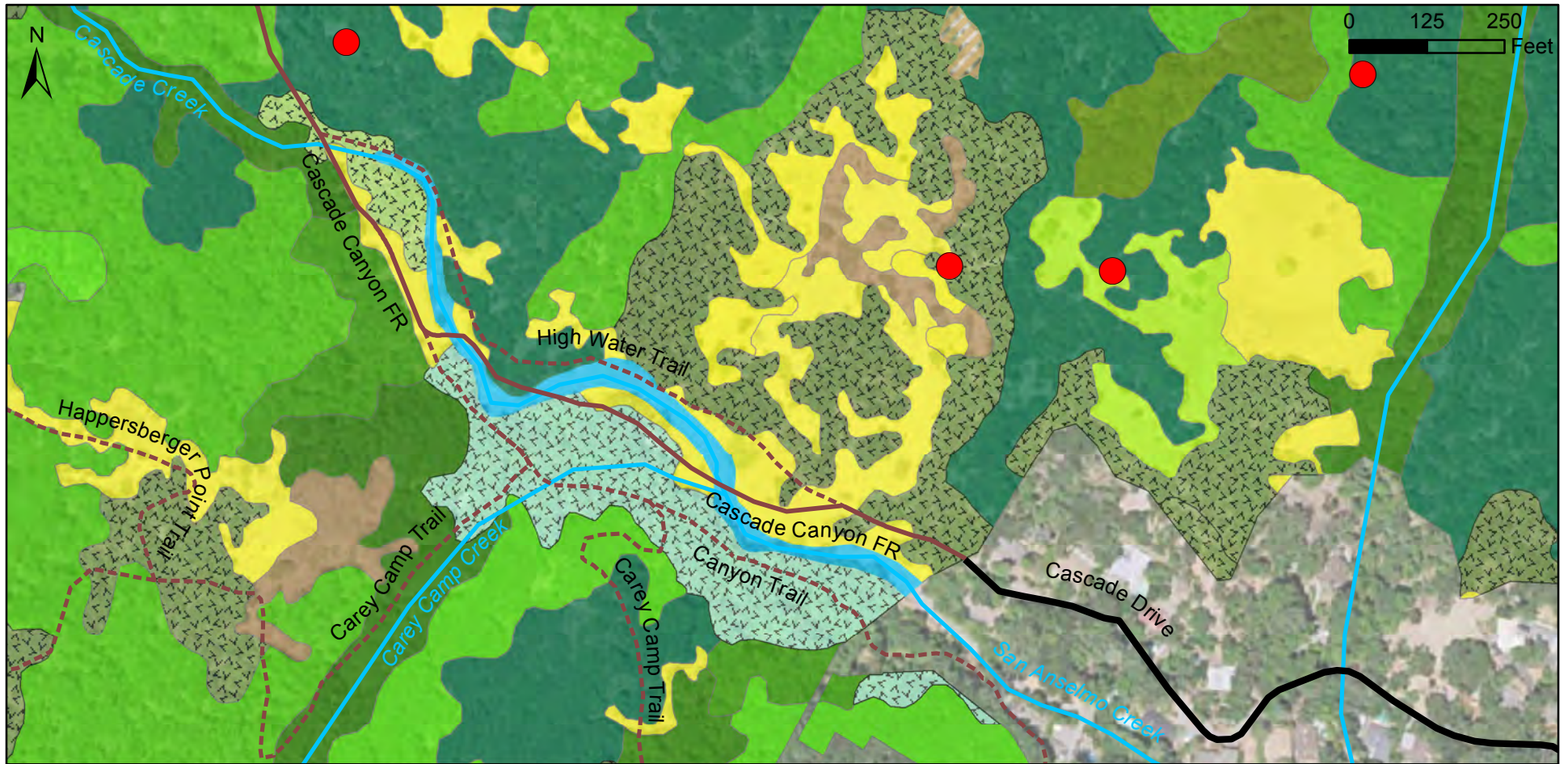
Environmental impacts: By eliminating 4 at-grade crossings through Cascade Canyon and removing High Water Trail, the proposal will dramatically reduce direct and indirect impacts to aquatic and riparian habitats within Cascade Canyon. The proposal will reduce trampling within San Anselmo Creek, which erodes sediment from the stream bed and banks that can smother salmon redds in downstream spawning habitat, and impedes the establishment of riparian vegetation that provides shade and support for the aquatic food web. The proposal will also reduce the erosion of sediment from steep and poorly drained portions of High Water Trail immediately adjacent to San Anselmo Creek. Finally, by consolidating public access through one corridor along the canyon floor, the proposal will likely reduce indirect impacts to vegetation and wildlife from human disturbance.

Visitor experience/safety. The proposal improves the visitor experience by providing a safe, scenic, year-round accessible route for hikers, cyclists, and equestrians between the main Cascade Road trailhead and destinations farther up-canyon. It improves safety by eliminating the need for visitors to choose between fording an active creek or utilizing a narrow, exposed path in order to move through the canyon. The new route over the bridges and along Canyon Trail is located on a nearly flat floodplain bench, with appropriate widths and sight lines to facilitate safe trail sharing by all users. Finally, consistent with the District's in-progress Inclusive Access Plan, the proposal improves user access by providing a safe, easily accessible route for parents with strollers, small children, the elderly, and users with mobility challenges. Such a route is currently absent in the canyon, particularly during the winter rainy season.

3. Describe how the project and its objectives are consistent with the policies, standards, and guidelines/BMPs listed in Chapter 5 of the RTMP (2000 characters or less).

Environmental Criteria

Vegetation Management Zone: Canyon Trail and Cascade Canyon FR are mostly in the Sustainable Natural Systems Zone. Adjacent to the fords of San Anselmo Creek, they are in or near Highly Disturbed Zones. The entire length of the High Water Trail is in the Sustainable Natural Systems Zone (MCOSD 2015a). Dominant vegetation communities along the subject portions of Cascade Canyon FR and Canyon Trail include valley oak/California bay riparian, lower elevation mixed broadleaf forest (coast live oak, madrone, black oak), valley oak/grass, coast live oak alliance, and annual/perennial grassland (MCOSD 2008). See Figure 1 for a map of local vegetation communities.



Vegetation Communities

- Lower Elevation Mixed Broadleaf
- Mixed Riparian Forest
- Madrone – California Bay – Tanoak
- California Bay (pure)
- California Bay – Coast Live Oak
- Madrone Alliance
- Canyon Oak Alliance
- Redwood / California Bay

- Douglas-fir - Mixed Hardwoods
- Black Oak Alliance
- Coast Live Oak Alliance
- Valley Oak Riparian Forest
- Valley Oak/ grass
- (French) Broom Alliance
- Coyote Brush
- Grasslands
- Rocky Serpentine grasses

Existing Features

- Fire Road, Multi-Use
- Trail, Hiker/Equestrian Use
- Northern Spotted Owl Observations

Friends of Corte Madera Creek

**Friends of Corte Madera Creek & Marin County Bicycle Coalition
RTMP Region 2 Proposal:
Figure 1, Biological Resources**



Stream Conservation Area: The SCA Ordinance is being litigated; if it were enacted, the bridges would be in an SCA with a 100-foot setback. However, a bridge must inevitably be in the setback. Because one of the goals of the proposal is to reduce fords of the creek during wet weather, the net benefit would be substantial. The High Water Trail would also be within an SCA; elimination of this trail would benefit the water quality, riparian habitat, and salmonids that the SCAs are meant to protect.

Stream Crossings: The new bridges would cross San Anselmo Creek twice and be designed to pass the 100-year flow, including debris and sediment loads. High Water Trail crosses three small (ephemeral) tributaries to San Anselmo Creek; the two somewhat *ad hoc* bridges over these crossings are narrow and do not include handrails. The portion of Canyon Trail proposed for conversion from dual-use to multi-use includes one bridge over Carey Camp Creek. This wooden bridge is slightly less than 6 ft wide (68 inches), consistent with newer multi-use bridges on District lands, and has handrails and extensive lines of sight at each end. The proposal will reduce the negative impacts of stream crossings on aquatic/riparian habitats and water quality.

Stream Adjacency on Special Fish-bearing Streams: This portion of San Anselmo Creek contains the highest quality summer rearing habitat in the entire Corte Madera Creek watershed (Rich 2000). The proposal would improve salmonid habitat within the stream by reducing trampling and erosion impacts to the channel bed and banks.

Northern Spotted Owl Habitat: All of Cascade Canyon, including Cascade Canyon FR, Canyon Trail, and High Water Trail, is within the final Critical Habitat designation for Northern Spotted Owl (USFWS 2012). The CDFW Spotted Owl Observations dataset indicates at least three recorded observations within 1,000 ft of the proposed bridge locations; it is not clear if these observations are current or historic (Figure 1). Regardless, NSO are known from the area, and redwood-Douglas fir communities within the canyon potentially support NSO nests. Given that the proposed bridges are for multi-use and not vehicular traffic, their construction could likely be scheduled outside the NSO breeding season of February – August, so that disturbance to NSOs would be avoided.

Rare Plant and Wildlife Areas: Site-specific surveys are necessary to assess the potential for special-status plant and wildlife species to be present within proposed work areas; such surveys are outside the scope of this proposal. Aside from steelhead, special-status species with the potential to be present in San Anselmo Creek and the floor of Cascade Canyon include California red-legged frog (*Rana draytonii*), western pond turtle (*Emmys marmorata*), and California giant salamander (*Dicamptodon ensatus*).

Serpentine Soils: Serpentine soils are not present in the canyon floor.

Wetlands: Site-specific surveys are necessary to determine jurisdictional wetlands and waters of the state and federal governments. Bridge construction over San Anselmo Creek would likely occur outside of federal jurisdictional waters (above Ordinary High Water, Rivers and Harbors Act Section 10), but could potentially include work in federally jurisdictional wetlands (Clean Water Act Section 404). The state will likely claim waters/wetland jurisdiction over the bridge sites through CDFW (Streambed Alteration Agreement) and the Regional Water Quality Control Board (Clean Water Act Section 401 Water Quality Certification). Removal of the two small bridges within High Water Trail could also potentially trigger jurisdiction by state, though the plank crossing and the bridge could be removed (if the # piers were left in place at either end) without working in the creek.

Noxious Weeds: Noxious weeds including French broom (*Genista monspessulana*) are common in the canyon floor and along Canyon Trail. Construction activities and post-construction maintenance would be managed consistent with the VBMP (MCOSD 2015b) to prevent the further spread of weeds.

Preserve Trail Density: The RTMP does not specify a metric for how trail density will be measured. Decommissioning the High Water Trail, in conjunction with building Bridges #1 and #3 and opening Canyon Trail to bicycle use, would reduce trail redundancy while providing all-weather access to Cascade Canyon OSP.

Physical Criteria

Hydrological Slope: The lower portion of Cascade Canyon FR and Canyon Trail are located on relatively flat land in the valley floor. Most of the High Water Trail is relatively flat, but two sections in the middle are on rocky, exposed ledges cut into a steep slope. If the flatter ends of the trail were closed and revegetated with plants appropriate to the broad-leaved evergreen forest that dominates the area, access to the steep sections would be discouraged.

Trail Gradient: The maximum grade on Canyon Trail and the subject portion of Cascade Canyon FR is 5%. The High Water Trail is relatively flat on both ends and at a central point where it is tangent to a ford on San Anselmo Creek; its average grade is gentle to moderate, with a maximum grade around 40% in short, rocky sections.

Trail Width: The Canyon Trail width would remain unchanged at 6 feet. The new bridges would meet MCOSD standards for a multi-use bridge (4 to 5 feet wide with guardrails approximately 4 feet high). In flat, open areas, the High Water Trail is 6 to 8 feet wide; in the central rockier sections, it's ~2 ft wide.

Revised Universal Soil Loss Equation (RUSLE) Erosion Factor: The RUSLE tool is used to calculate erosion due to sheet flow across broad areas of a particular land use; it is not typically applied to the assessment of narrow linear features such as roads and trails within a wildland environment.

Most of the proposed work areas are relatively flat and would be unlikely to make a significant contribution to local erosion. Calculation of estimated soil loss through the RUSLE method is outside the scope of this proposal.

Amount of Excavated Soil Volume: The foundations for the new bridges would require excavation of native soils. Estimation of the necessary volumes of soil excavation for bridge/foundation construction is outside the scope of this proposal, and requires input from qualified structural and geotechnical engineers. If the two retaining walls on High Water Trail were removed, it would require the excavation of supported soil which could potentially be used to reestablish hillside slopes. The treatment of the High Water Trail retaining walls (and potentially excavated soils) also requires further consultation with qualified engineers, and is outside the scope of this proposal.

Social Criteria

Road/Trail Length: The reach of Canyon Trail to be opened to year-round multi-use would be approximately 1,490 feet, from about 100 feet inside the OSP to the intersection of Canyon Trail and Cascade Canyon FR. The High Water Trail is 1,242 feet long.

Distance From Development and Distance Between Intersections: Cascade Canyon FR is the main thoroughfare for users through lower Cascade Canyon, and begins at the western end of the residential area of Cascade Road. Canyon Trail begins at the end of Canyon Road, also a residential street (the portion of Canyon Trail in between Canyon Road and the vicinity of Bridge #1 will remain dual-use), and ends where it joins the Cascade Canyon FR, just upstream of Ford #3. The High Water Trail is entirely within the Cascade Canyon OSP; it begins about 200 feet west of the Cascade Canyon FR trailhead.

Terrain Quality: Cascade Canyon is a highly scenic area with impressive views; the proposal would increase the range of users who are able to access and appreciate this gem of the District. The bridges would provide excellent views of the creek, especially during high-flow periods when steelhead could be migrating upstream.

Connectivity to Regional Trail or Road/Trail on Adjacent Public Land and Connectivity to Destination Points or Attractions: Cascade Canyon is a popular destination in its own right, and serves as a gateway to adjacent public lands on MMWD property. This proposal will provide a year-round accessible route for hikers, cyclists, and equestrians through the canyon that improves local and regional recreational connectivity while enhancing protect of sensitive aquatic habitats. To avoid neighborhood controversy, bicycles would continue to be barred from using the section of the Canyon Trail between the Canyon Road trailhead and the vicinity of Bridge #1, and would instead use the Cascade Road trailhead.

Vegetation Community Variety: As discussed above under “Environmental Criteria”, the canyon supports a variety of vegetation communities including broadleaf hardwood forest, redwood glades, riparian oaks, and annual/perennial grasslands. While moving through the canyon, visitors will be able to appreciate the canyon’s impressive variety of vegetation, while enjoying scenic views of serpentine scrub and chaparral on the ridgelines above.

4. Does the project affect trails that connect to a sanctioned trail on adjacent public or private property?
Yes ● No ○
5. Will this proposed project require coordination with adjacent public or private landowners? If so, please explain.

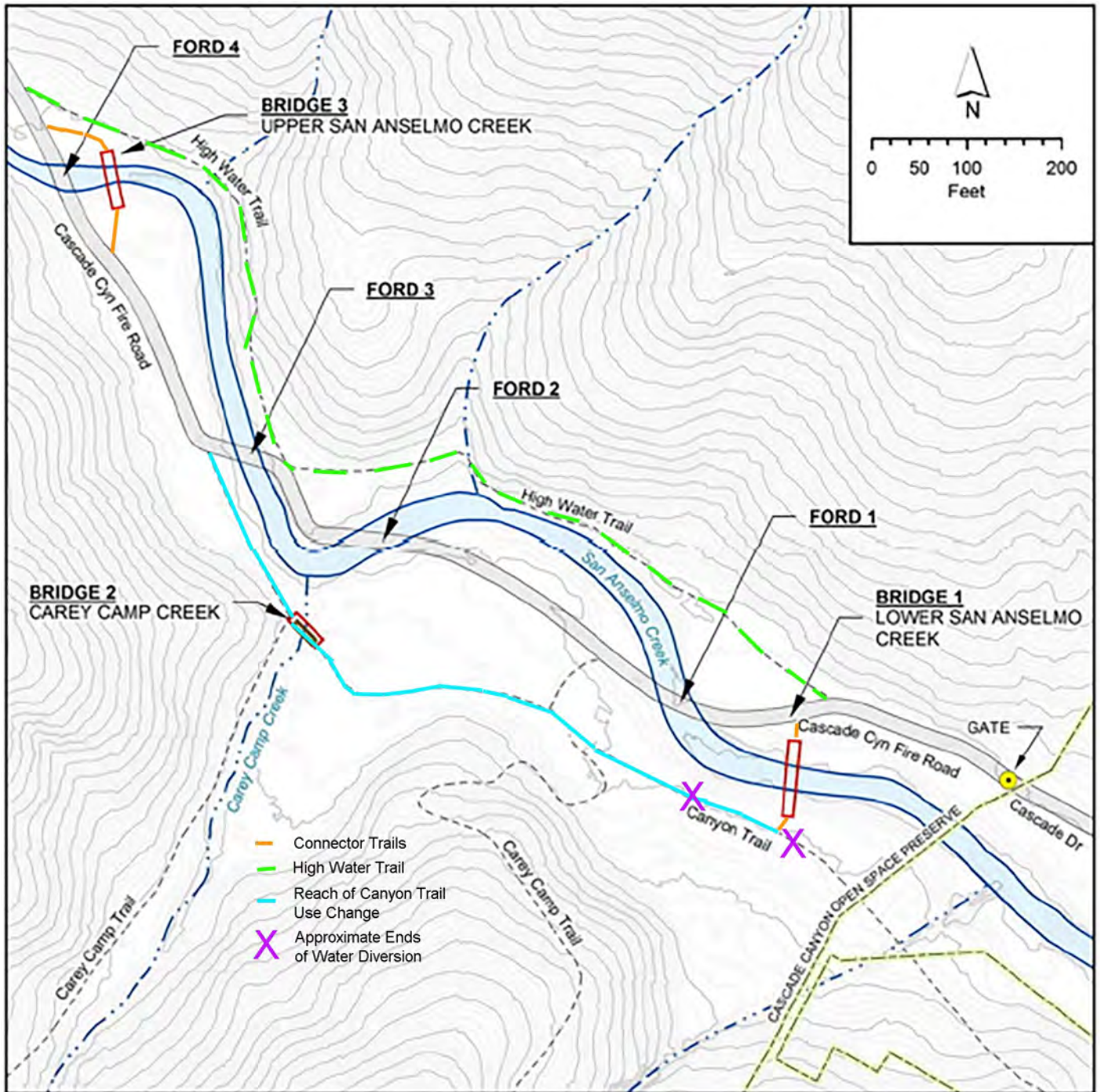
Canyon Road residents may request reassurance that bicycle use of Canyon Road will not increase, since bicycle traffic will continue to be limited to the Cascade Road trailhead.

Project actions (by segment):

All project components are shown on Figure 2.

Segment Name	Proposed Action
a) New Bridge #1 and Bridge #3	Build two new bridges
b) Trail connectors to new bridges	Build short new trail segments
c) Open a portion of Canyon Trail to bicycles	Use change
d) Decommission High Water Trail	Decommissioning

Figure 2: Project components (Base map from Best 2013)



Segment a) Bridge #1 and Bridge #3

Section 2: Action Summary and Metrics

1. Action title: New #1s

2. Action type: New Trail Decommission Reroute Change in Use
 Road to Trail Conversion Reconstruction
 Other Two new bridges across San Anselmo Creek

3. Action summary (800 character or less)

Two new multi-use bridges would be constructed across San Anselmo Creek to provide year-round access to Cascade Canyon OSP, shown on Figure 2, modified from Best (2013). Design and permitting would be required. During construction, BMPs would be implemented. A barrier structure would be installed to deter bicycle traffic continuing on the Canyon Trail east of Bridge #1.

4. Trails affected: Cascade Canyon FR, Canyon Trail

5. Time frame for action (relative to the sequence of other proposed actions).

Bridges would be constructed first, then new connector trails completed, and finally the High Water Trail decommissioned. The Canyon Trail use change would occur after the bridges and connecting trails were constructed.

6. Will action involve volunteers? Yes No

Action type:

Increase recreational access (new trail, change in use)

More enjoyable trail (existing trail conditions, problem areas)

Unsustainable trail reduction (rerouting, trail closures)

Redundant trail reduction (rerouting, trail closures)

Sediment reduction (rerouting, trail closures)

Wildlife/botanical benefit Removes hazards

Length of proposed trail to be built, rerouted, reconstructed, converted, or decommissioned:

Bridge #1 = up to 60 feet

Bridge #3 = up to 80 feet

Desired trail width (average) = 5 to 6 feet (bridge width)

Section 3: Action Location Information

1. Latitude, longitude (in decimal degrees, NAD83):

Center of Bridge #1: 37.978126, -122.614840; Center of Bridge #3: 37.979803, -122.617302

These are taken from the approximate locations on Google Maps, which uses datum WGS84. The uncertainty in the location of the points on the map almost certainly overwhelms the discrepancies between NAD83 and WGS84.

2. Location description (including the affected preserve or park and all connecting trails):

Cascade Canyon OSP, Cascade Canyon FR, Canyon Trail

3. Location map (please attaché on USGS topographic base map or send the .kml file to msagues@marincounty.org with the project name in subjectline):

Base map is in Best 2013, cited above; Figure 2 shows the locations of connector trails. The trail at the north end of Bridge 3 could join the end of the High Water Trail approximately 60 feet from its northern end and reduce the new trail length to approximately 50feet.

4. Road IDs of relevant segments (if known) trails:

Cascade FR 27100; Canyon Trail 27200

Section 4: Environmental Impacts and Implementation Details

Marin County Parks recognizes that applicants may not have access to the information requested in this section. Enter “don’t know” where applicable.

- a) Number of streams to be crossed or stream crossing decommissioned: Two
- b) Vegetation types impacted or restored: Depends on precise bridge design/location details unavailable at this time. Vegetation in the bridge vicinities includes mixed hardwood, oak riparian, and ruderal grasses.
- c) Anticipated wildlife issues: Seasonal constraints on construction to protect salmonids and nesting birds
- d) Number of trees to be removed: Bridge #1, unknown; Bridge #3, none
- e) Other environmental impacts or benefits: Water quality and salmonid habitat improvements by removing recreational traffic from the wetted stream.
-

Segment b) Connector Trails to Bridge #1 and Bridge #3

Section 2: Action Summary and Metrics

1. Action title: Trails to connect new bridges to the existing system

2. Action type: New Trail Decommission Reroute Change in Use
 Road to Trail Conversion Reconstruction Other _____

3. Action summary (800 character or less)

The two new bridges will require short new trail segments to connect to the Canyon Trail and the Cascade Canyon FR. Part of the High Water Trail at its northern end could be used as part of the connection from Bridge 3 to Cascade Canyon FR. After the bridges are completed, the new trails would be constructed and areas disturbed during construction repaired.

4. Trails affected: Canyon Trail, Cascade Canyon FR, High Water Trail

5. Time frame for action (relative to the sequence of other proposed actions).

Bridges would be constructed first, then new connector trails completed, and finally the High Water Trail decommissioned. The Canyon Trail use change would occur after the bridges and connecting trails are constructed.

6. Will action involve volunteers? Yes • (revegetation, trail building) No ○

7. Action type:

- Increase recreational access (new trail, change in use)
- More enjoyable trail (existing trail conditions, problem areas)
- Unsustainable trail reduction (rerouting, trail closures)
- Redundant trail reduction (rerouting, trail closures)
- Sediment reduction (rerouting, trail closures)
- Wildlife/botanical benefit Removes hazards

Length of proposed trail to be built, rerouted, reconstructed, converted, or decommissioned

Trails to Bridge #1 = ±40 feet

Trails to Bridge #3 = ±100 feet

Desired trail width (average) = 6 feet

Section 3: Action Location Information

1. Latitude, longitude (in decimal degrees, NAD83):

North end of trail to Bridge #1: 37.978238, -122.614791; North end of trail to Bridge #3: 37.979919, -122.617499. These coordinates use datum WCS84.

2. Location description (including the affected preserve or park and all connecting trails:

Cascade Canyon OSP: Cascade Canyon FR, Canyon Trail, maybe part of High Water Trail

3. Location map (please attaché on USGS topographic base map or send the .kml file to msagues@marincounty.org with the project name in subjectline):

Map in Figure 2 is based on Figure 1 in Best 2013, cited above.

4. Road IDs of relevant segments (if known) trails:

Cascade FR 27100; Canyon Trail 27200; High Water Trail 27110

Section 4: Environmental Impacts and Implementation Details

Marin County Parks recognizes that applicants may not have access to the information requested in this section. Enter "don't know" where applicable.

- a) Number of streams to be crossed or stream crossing decommissioned: None
- b) Vegetation types impacted or restored: Depends on precise trail design/location details unavailable at this time. Vegetation in the trail vicinities includes mixed hardwood, oak riparian, & ruderal grasses.
- c) Anticipated wildlife issues: Seasonal constraints on construction to protect salmonids and nesting birds
- d) Number of trees to be removed: Number for approaches to Bridge #1 has yet to be determined; none for Bridge #3
- e) Other environmental impacts or benefits: Water quality and salmonid habitat improvements by removing bicycle and foot traffic from the stream.

Segment c) Change the Use of Canyon Trail

Section 2: Action Summary and Metrics

1. Action title: Canyon Trail Use Change

2. Action type: New Trail Decommission Reroute Change in Use
 Road to Trail Conversion Reconstruction
 Other _____

3. Action summary (800 character or less)

To keep traffic out of San Anselmo Creek, the use designation of the Canyon Trail between Bridge 1 and Bridge 3 would be changed from dual-use to multi-use. This action includes trail reconstruction where Canyon Trail diverts and channels water flowing off the uphill slope, delivering sediment to SanAnselmo Creek. This would be repaired to prevent water diversion by the trail.

4. Trails affected: Canyon Trail

5. Time frame for action (relative to the sequence of other proposed actions).

Bridges would be constructed first, then new connector trails completed, and finally the High Water Trail decommissioned. The Canyon Trail use change would occur during the first wet season after the bridges and connecting trails are constructed.

6. Will action involve volunteers? Yes No

7. Action type:

- Increase recreational access (new trail, change in use)
- More enjoyable trail (existing trail conditions, problem areas)
- Unsustainable trail reduction (rerouting, trail closures)
- Redundant trail reduction (rerouting, trail closures)
- Sediment reduction (rerouting, trail closures)
- Wildlife/botanical benefit Removes hazards

Length of proposed trail to be built, rerouted, reconstructed, converted, or decommissioned

Canyon Trail = ±1,490 feet, depending on precise location of connector to Bridge #1

Repair (rolling dips, out-sloping, or similar) to prevent water diversion = 100 – 110 feet

Desired trail width (average) = 6 feet

Section 3: Action Location Information

1. Latitude, longitude (in decimal degrees, NAD83):

Junction of southern connector to Bridge #1 and Canyon Trail: 37.978007, -122.614833; Junction of Canyon Trail and Cascade Canyon FR: 37.978997, -122.616907; downstream end of reach that diverts water: 37.97778, -122.61450. These coordinates use datum WCS84.

2. Location description (including the affected preserve or park and all connecting trails):

Cascade Canyon OSP, Canyon Trail

3. Location map (please attaché on USGS topographic base map or send the .kml file to msagues@marincounty.org with the project name in subjectline):

Base map in Figure 2 uses in Figure 1 in Best 2013, cited above.

4. Road IDs of relevant segments (if known) trails:

Canyon Trail 27200

Section 4: Environmental Impacts and Implementation Details

Marin County Parks recognizes that applicants may not have access to the information requested in this section. Enter "don't know" where applicable.

- a) Number of streams to be crossed or stream crossing decommissioned: One
- b) Vegetation types impacted or restored: None
- c) Anticipated wildlife issues: None
- d) Number of trees to be removed: None (the trail may need to split to go around one tree)
- e) Other environmental impacts or benefits: This use change would keep recreational traffic out of the salmonid stream.

Segment d) Decommission High Water Trail

Section 2: Action Summary and Metrics

1. Action title: High Water Trail Decommissioning

2. Action type: New Trail Decommission Reroute Change in Use
 Road to Trail Conversion Reconstruction
 Other _____

3. Action summary (800 character or less)

The relatively flat ends of the High Water Trail would be planted with shrubs and trees to discourage continued use. The small bridge and the plank that cross two of the three stream crossings would be removed pending further consultation with engineers. It is possible that if use persists, it would be

4. Trails affected: High Water Trail

5. Time frame for action (relative to the sequence of other proposed actions).

Bridges would be constructed first, then new connector trails completed, and finally the High Water Trail decommissioned. The Canyon Trail use change would occur during the first wet season after the bridges and connecting trails were constructed.

6. Will action involve volunteers? Yes ● (trail work) No ○

7. Action type:

Increase recreational access (new trail, change in use)

More enjoyable trail (existing trail conditions, problem areas)

Unsustainable trail reduction (rerouting, trail closures)

Redundant trail reduction (rerouting, trail closures)

Sediment reduction (rerouting, trail closures)

Wildlife/botanical benefit Removes hazards

Length of proposed trail to be built, rerouted, reconstructed, converted, or decommissioned:

High Water Trail =1,242 feet. The western ~50 feet may be retained as part of the connector from the new Bridge #3 to the Cascade Canyon FR.

Desired trail width (average) = n/a

Section 3: Action Location Information

1. Latitude, longitude (in decimal degrees, NAD83):

Beginning of trail: 37.978373, -122.614607; end of trail: 37.980010, -122.617548. These coordinates use datum WCS84.

2. Location description (including the affected preserve or park and all connecting trails):

Cascade Canyon OSP, High Water Trail, Cascade Canyon FR

3. Location map (please attaché on USGS topographic base map or send the .kml file to msagues@marincounty.org with the project name in subjectline):

Base map Figure 2 uses Figure 1 in Best 2013, cited above.

4. Road IDs of relevant segments (if known) trails:

High Water Trail 27110; Cascade Canyon FR 27100.

Section 4: Environmental Impacts and Implementation Details

Marin County Parks recognizes that applicants may not have access to the information requested in this section. Enter "don't know" where applicable.

- a) Number of streams to be crossed or stream crossing decommissioned: Three
- b) Vegetation types impacted or restored: Mixed hardwood, oak riparian, annual/perennial grassland
- c) Anticipated wildlife issues: Seasonal constraints on construction to protect salmonids and nesting birds
- d) Number of trees to be removed: None
- e) Other environmental impacts or benefits: Improved water quality and salmonid habitat

References

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- Marin County Open Space District (MCOSD). 2008. Vegetation – Marin County Open Space District. GIS database produced by the California Department of Fish and Wildlife Biogeographic Information and Observation System (BIOS): ds957. Available online at ftp://ftp.dfg.ca.gov/BDB/GIS/BIOS/Public_Datasets/900_999/ds957.zip
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