

HUNT CAMP TRAIL IMPROVEMENT PROJECT PROJECT DESCRIPTION

PREPARED BY

Marin County Open Space District
April 2017



Hunt Camp Trail Improvement Project

Project Title

Hunt Camp Trail Improvement Project

Lead Agency Name and Address

Marin County Open Space District (MCOSD)
3501 Civic Center Drive, Suite 260
San Rafael, California 94903

Contact Person

Jon Campo
(415) 473-2686 or jcampo@marincounty.org

Project Location

Giacomini Open Space Preserve, San Geronimo, CA

Project Sponsor's Name and Address

Marin County Open Space District
3501 Civic Center Drive, Suite 260
San Rafael, California 94903

General Plan Designation

Open Space (OS)

Zoning:

APN: 170-130-32
Zoning: Residential, Single-Family Planned (RSP-0.05)

I. BACKGROUND

On December 16, 2014, the Marin County Board Supervisors approved the Road and Trail Management Plan (RTMP)¹ and certified its program Environmental Impact Report (EIR) (State Clearinghouse Number 2011012080) (MCOSD, 2014a and 2014b). The RTMP is a science-based comprehensive management plan to guide the MCOSD in the: 1) establishment and maintenance of a sustainable system of roads and trails; 2) reduce environmental impact of roads and trails on natural resources; and 3) improve visitor experience and safety.

The RTMP covers six regions (Figure 1) within Marin County, and 34 open space preserves. Region 2, which includes the project site, covers the following open space preserves:

- French Ranch
- Maurice Thorner Memorial
- Roy's Redwoods
- Gary Giacomini
- Loma Alta
- White Hill
- Cascade Canyon

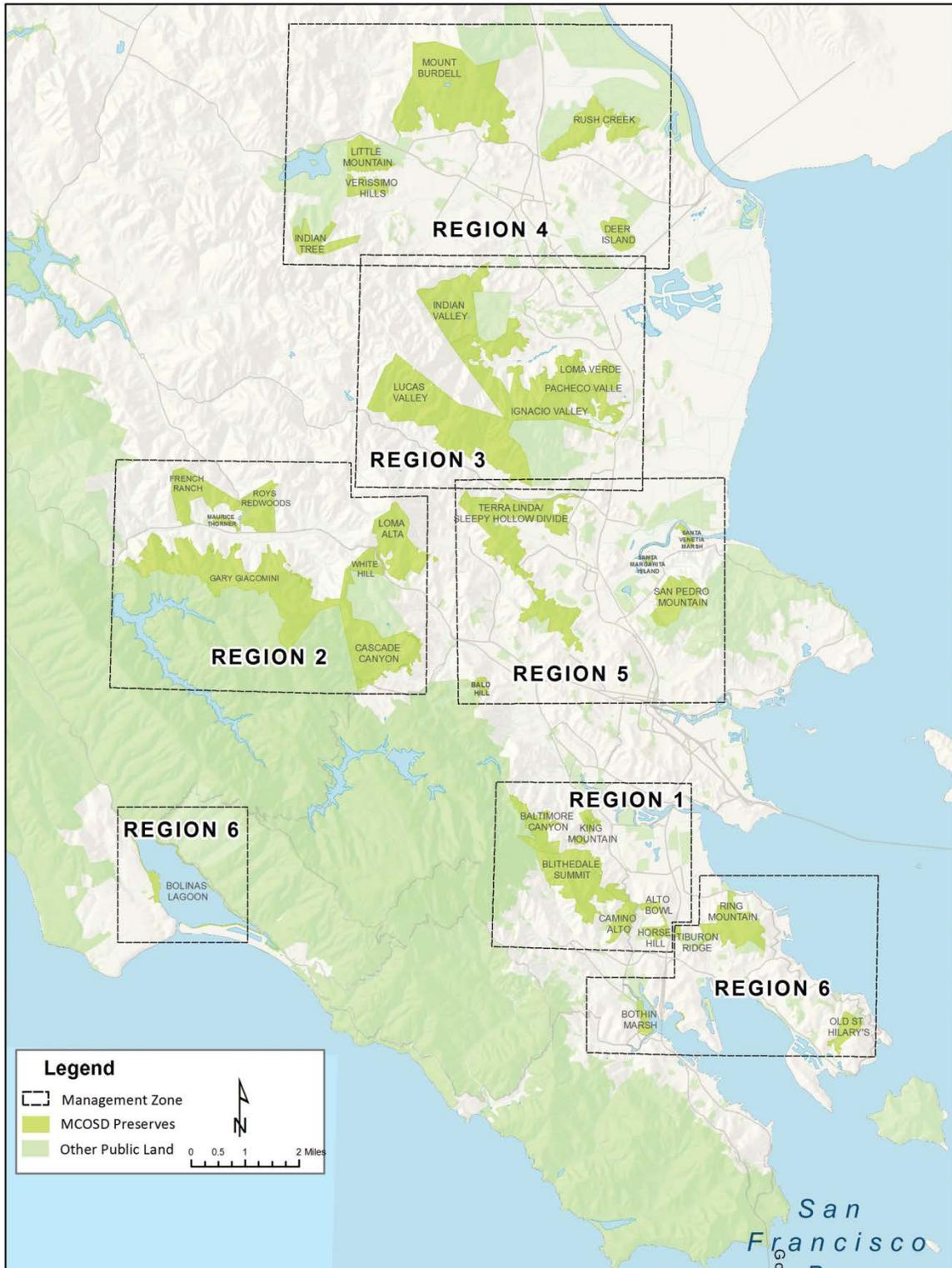
The MCOSD developed the RTMP over the course of four years based on extensive outreach and public input. After adoption of the plan and consistent with the RTMP's *Policy SW.2: System Roads and Trails*, the MCOSD initiated a process to designate a system of roads and trails in all existing open space preserves. The roads and trails eligible for consideration must have existed as of November 2011, which is when the MCOSD completed a report on the condition of the existing roads and trails. The designation of a formal road and trail system is proceeding on a regional basis. The road and trail designation for Region 2 occurred in late 2015. The Region 2 Designation Workshop was held on October 3, 2015. Following the workshop, the public had an opportunity to view and comment on the proposed road and trail system for Region 2 (Figure 2).

The RTMP incorporates existing policies from the Countywide Plan and the MCOSD's Policy Review Initiative. Additionally, it identifies 34 new policies that govern the MCOSD's road and trail system. The intent of these policies is to reduce the environmental impact from the roads and trail system and to improve the recreational experience. In addition to these policies, the RTMP defined several best management practices (BMPs) that will reduce resource effects from any road and trail projects.

¹ For a copy of the RTMP, go to http://www.marincountyparks.org/~media/files/departments/pk/projects/open-space/rtmp-eir/rtmp_lowres_3615_bookmarks.pdf?la=en. Printed copies are available from Marin County Parks for a small fee.

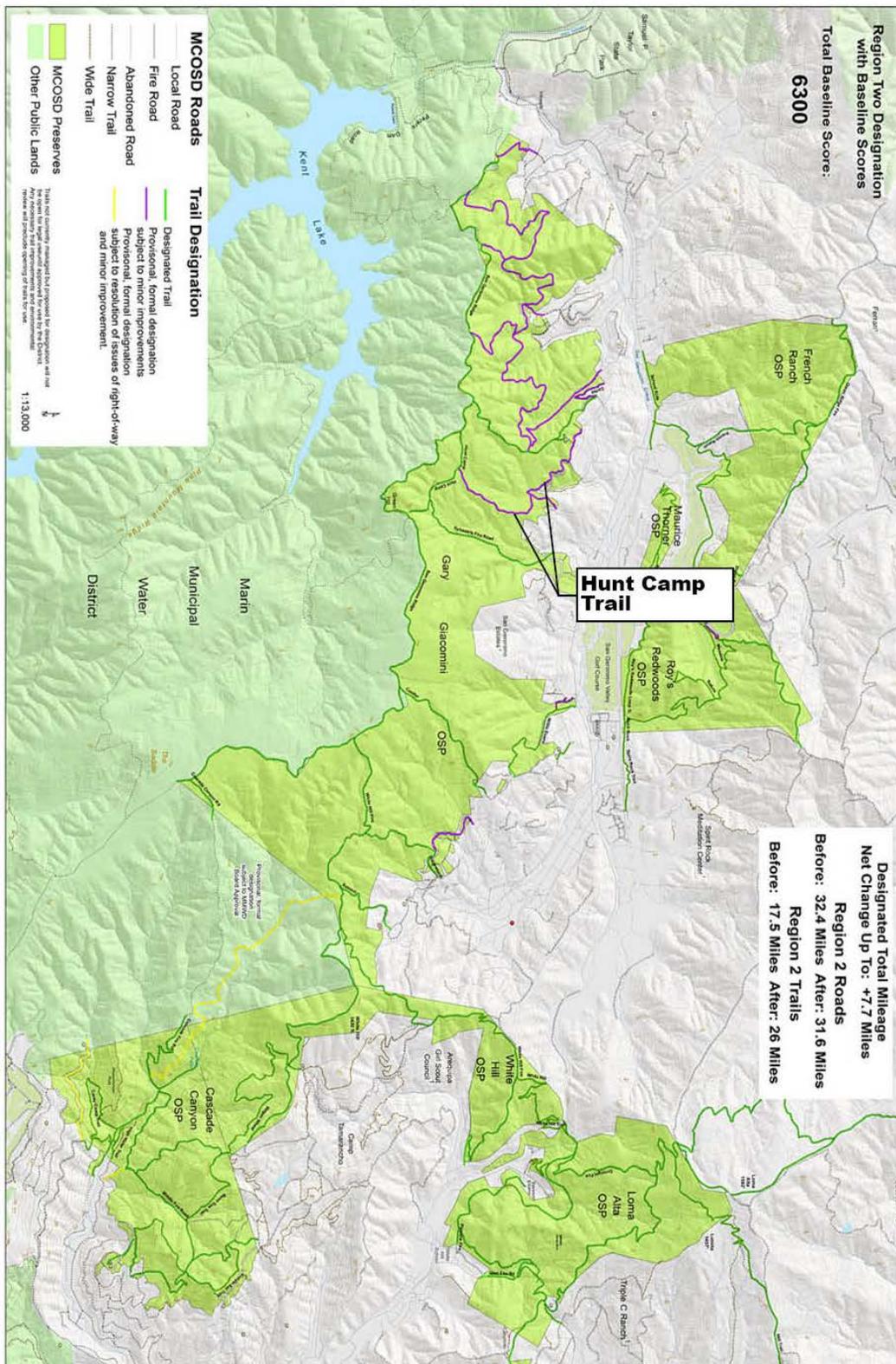
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Figure 1: MCOSD Preserves by Region



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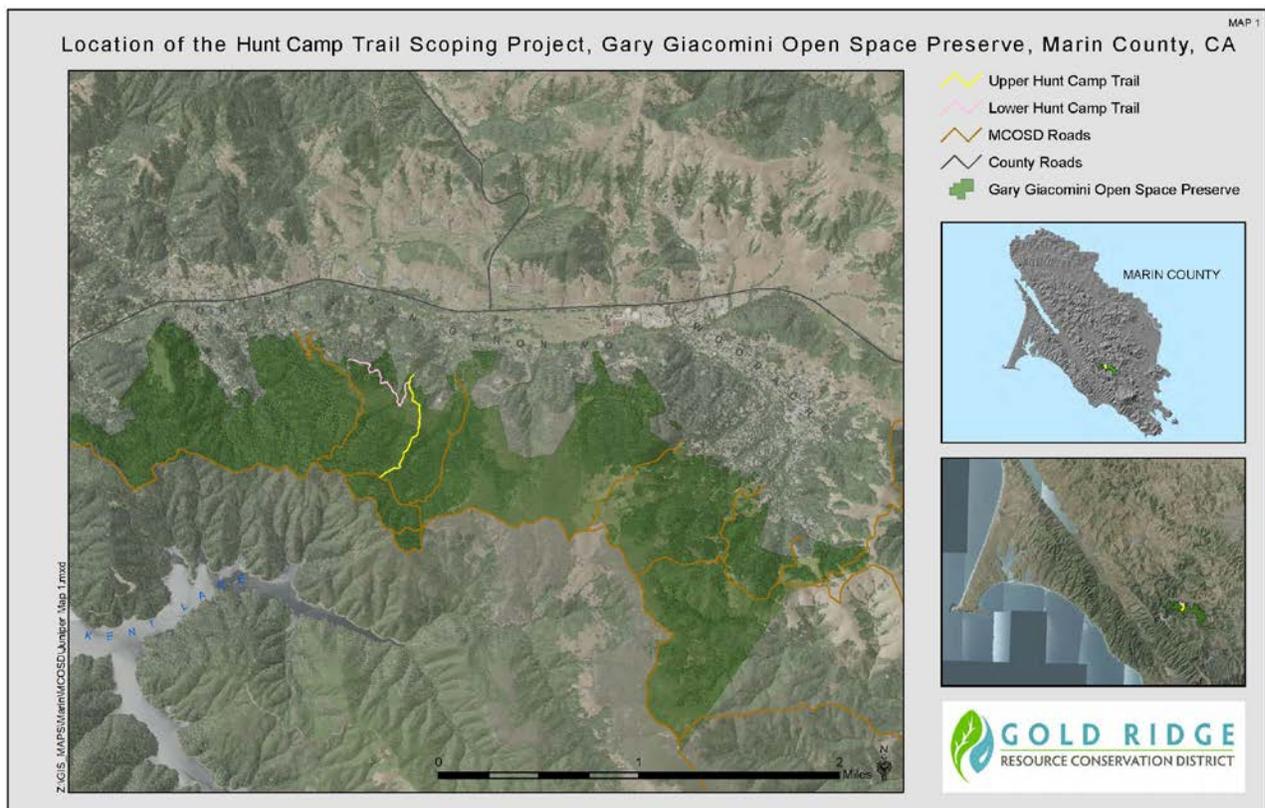
Figure 2: Region 2 Trail Designations



II. PROJECT SETTING

The project site is located within the Gary Giacomini Open Space Preserve, south of the unincorporated communities of Lagunitas, San Geronimo, and Woodacre. The preserve is surrounded by rural residential single-family residential development in these adjacent communities to the north, by the Cascade Canyon and White Hill Open Space Preserves to the east, and the Mount Tamalpais Watershed to the south and west. The project site includes the Hunt Camp Trail complex. Hunt Camp Trail is an informal unsanctioned trail connecting the San Geronimo Ridge to the valley floor via East and West Sylvestris Drive neighborhoods of San Geronimo and includes two discrete trails, identified as Upper Hunt Camp and Lower Hunt Camp (Figure 3). Upper Hunt Camp is the 3,400 foot ridgetop portion of the trail, extending between Hunt Camp Fire Road and East Sylvestris Drive (Figure 4). Lower Hunt Camp Trail is the 3,100 linear foot midslope portion of the trail, extending from Upper Hunt Camp Trail near East Sylvestris Drive to Juniper Road (Figure 5). These two trails are described in detail below. The project site is used for recreation (hiking, biking, walking etc) largely by local residents. As the trail is not incorporated into the MCOSD trail system, it is not currently maintained by County crews. However, ongoing maintenance takes place by unknown parties, including brushing and debris removal, installation and maintenance of drainage structures, and other activities.

Figure 3 – Hunt Camp Trail Map



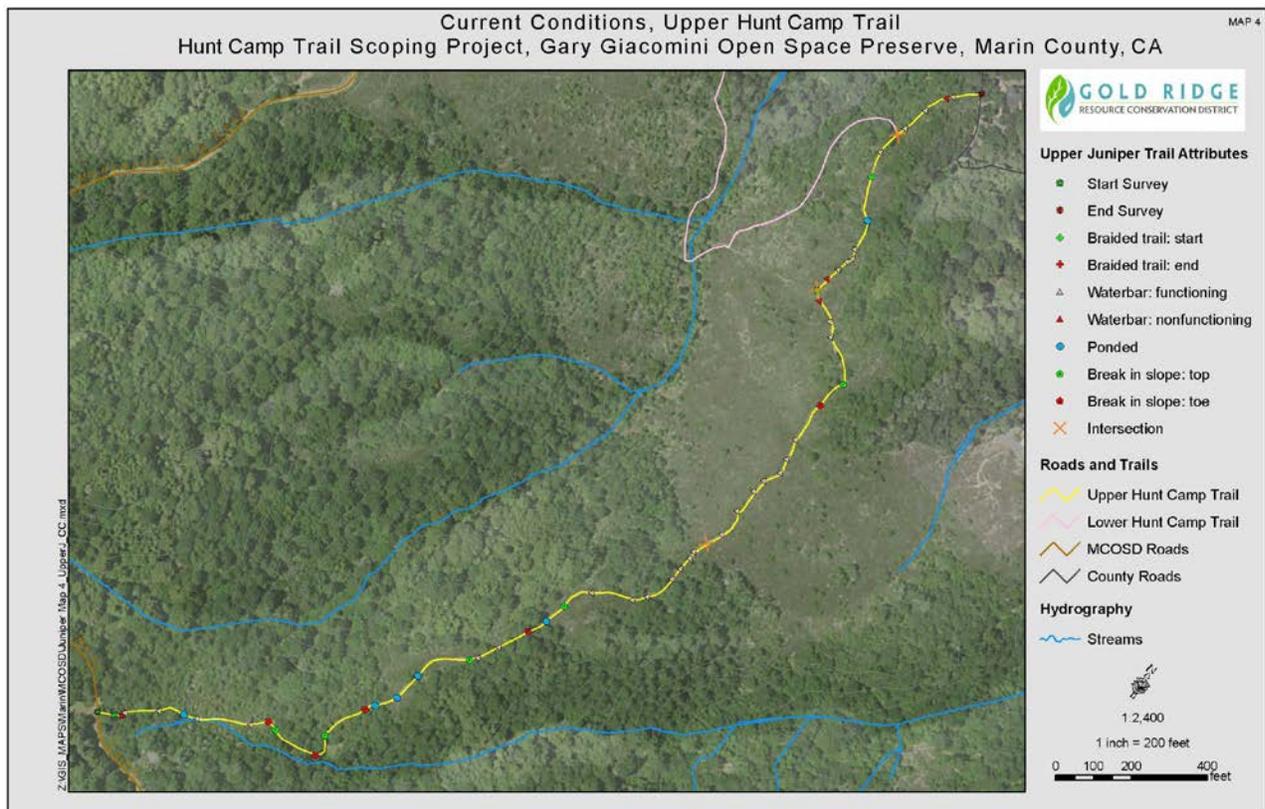
Source: Gold Ridge Resource Conservation District (GRRCD) 2016

Hunt Camp Trail Improvement Project

Upper Hunt Camp

The Upper Hunt Camp Trail is a narrow 2-3 foot wide and unimproved rocky ridgetop trail which descends from Hunt Camp Fire Road to East Sylvestris Drive (Figure 5). Low gradient segments of the trail that occur along ridgetop saddles are connected by steeper drops in a stair-step fashion down the ridgeline. The middle 65 percent of Upper Hunt Camp Trail traverses through mixed chaparral vegetation community that contains some rare plant species, while the trail segments extending from each trailhead occurs mainly under Douglas fir and mixed hardwood canopy. Drainage structures (drainage dips) have been constructed at regular intervals along the Upper Hunt Camp Trail by unknown parties (not MCOSD). However, due to the steep gradients and poor soil strength of the Dipsea-Barnabe and Henneke soils on which the trail is built, rutting is prevalent on the trail tread, leading to concentrated runoff on its surface.

Figure 4 – Upper Hunt Camp Trail



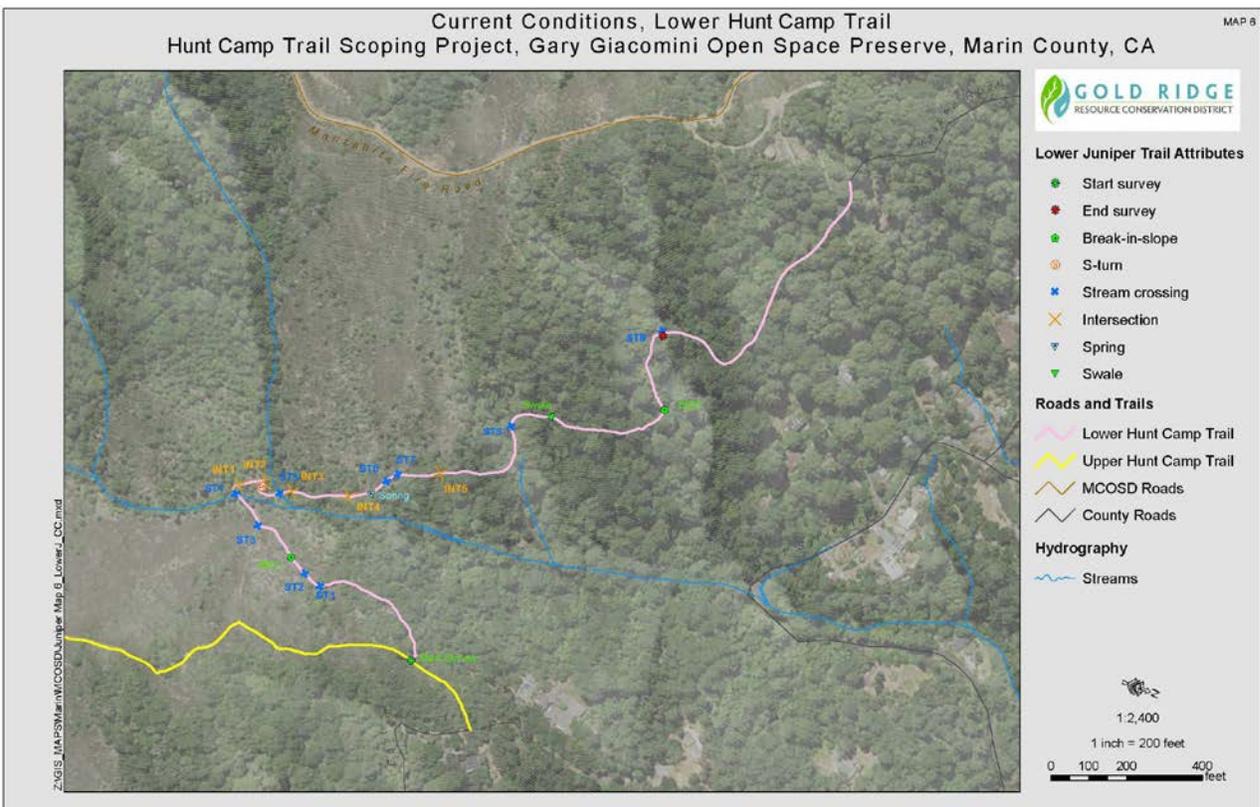
Lower Hunt Camp

The Lower Hunt Camp Trail is a midslope to inner-gorge alignment that generally contours between East Sylvestris Drive and Juniper Road (Figure 5). Most of the trail is a narrow 2-3 foot wide and unimproved rocky trail, with a portion of the western end occupying an abandoned road cut. The eastern end of the trail traverses through mixed chaparral, while most of the western portion of the trail, approximately 2,000 linear feet, occurs on slopes dominated by redwood and Douglas fir forest. The gentler gradient of the Lower Hunt Camp Trail, along with the deep, well drained

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Dipsea-Barnabe soils under the redwood and Douglas fir canopy has experienced far less rutting and erosion of the trail surface than on the Upper Hunt Camp alignment. However, along the stream-side portion of the trail in the serpentinites of the Henneke stony clay loam where chaparral dominate, the same low strength soils persist and rutting is occurring. Lower Hunt Camp Trail also traverses several small Class III ephemeral streams and two Class II seasonal streams. The two larger streams are negotiated with fords, while the smaller ephemeral streams are crossed with minimal armored fills, and one with a small wooden bridge.

Figure 5 - Lower Hunt Camp Trail



Vegetation

Vegetation zones in the project area include Legacy and Sustainable Natural Systems zones. These designations are derived from the MCOSD's Vegetation and Biodiversity Management Plan, which are described below (Figure 6):

Legacy Zone

The legacy zone includes lands that support unique or irreplaceable remnants of natural biological diversity, along with other vegetation types with high biological value. The habitats for plants that have been identified as threatened, endangered, or rare in the world, the nation, the state of California, or Marin County are included in this zone, along with wetlands and selected upland vegetation types, including redwood forest, serpentine grasslands, and chaparral. Also included are habitats and vegetation types that are at the boundaries of their geographic distributions and that may be important to detecting, and managing for adaptation to, the effects

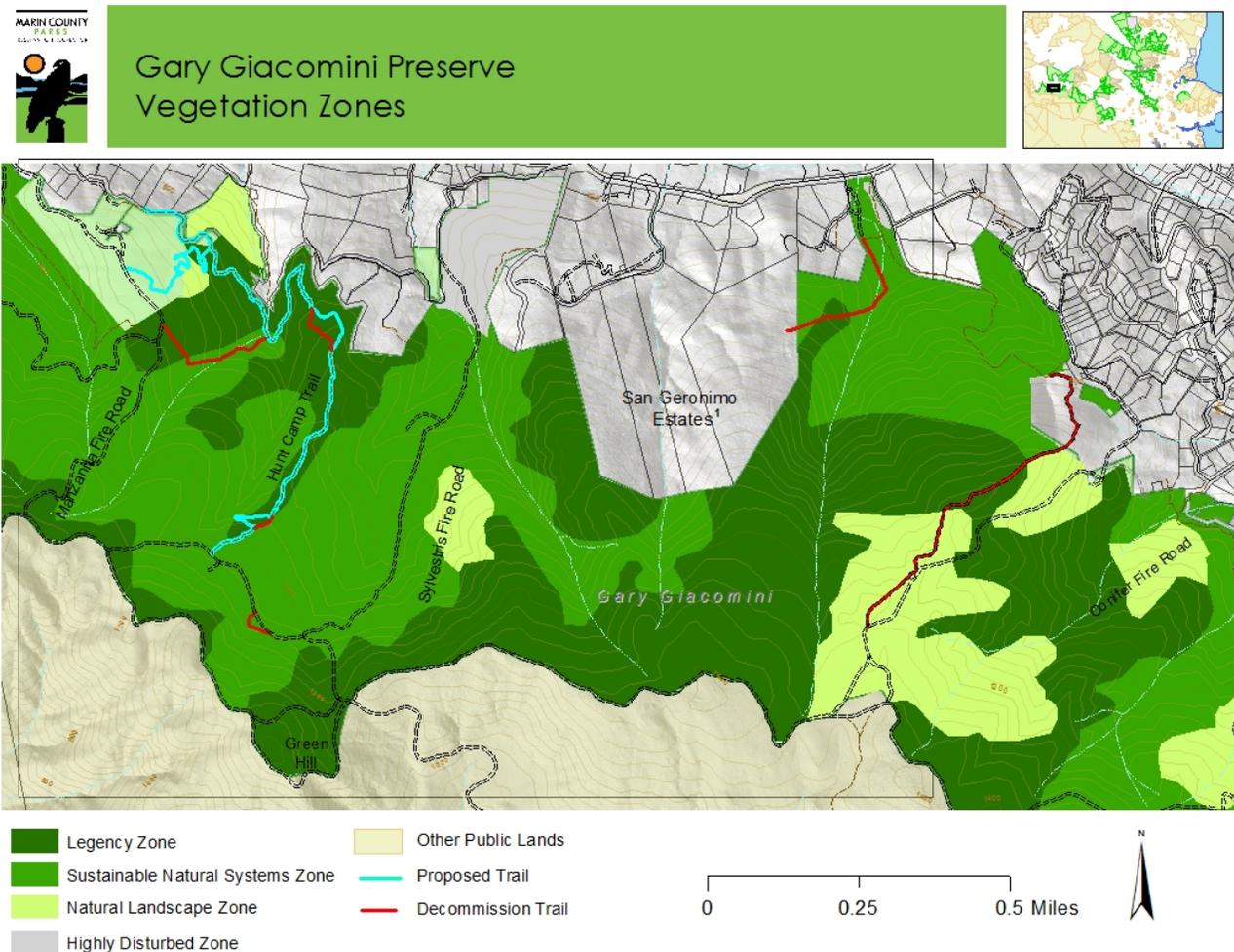
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of climate change. Native vegetation in this zone remains largely intact and free of invasion by nonnative plants. Because of their rarity and ecological importance, many species and vegetation types within this zone are protected by federal and state laws and regulations, or by other initiatives, such as the Upland Habitat Goals Project. The legacy zone will serve as a sanctuary for natural resources that otherwise could be permanently lost from Marin, California, and the world.

Sustainable Natural Systems

The sustainable natural systems zone includes lands that are valuable for ensuring the ecological resiliency of natural systems and the associated character of Marin County. Lands in this zone, which generally form a natural buffer around lands in the legacy zone, include corridors supporting wildlife movements and potentially the movements of species adapting to climate change, areas of refuge for species living within or migrating through Marin County, and vegetation types that are not considered as biologically valuable as those included in the legacy zone, but that are still considered “hot spots” in terms of relatively high species diversity. Lands in this zone contain only minimal infrastructure, and the vegetation types are relatively free of invasive species.

Figure 6 – Gary Giacomini Preserve Vegetation Zones



Hydrology

The project site is within the Lagunitas Creek Watershed and is crossed by several small creeks that drain to San Geronimo Creek at the valley floor, including Montezuma and Creamery creeks as well as other unnamed creeks. San Geronimo Creek connects to Lagunitas Creek west of the project site.

III. PROJECT PURPOSE AND NEED

In 2015, MCOSD provisionally designated the Hunt Camp Trail for hikers and bicycle use, pending environmental review and the implementation of needed improvements, during the Region 2 designation process in 2015. The map for Region 2 (Figure 2) includes Hunt Camp as part of the system. The primary purpose of the proposed project is to officially designate Hunt Camp as part of the MCOSD trail system in a sustainable manner that reduces the ecological footprint of the trail. Specific objectives include:

- Improve trail stability;
- Reduce trail gradient;
- Improve site distances to improve safety;
- Maintain the primitive nature of the existing conditions of the trail;
- Reduce sedimentation to the San Geronimo watershed;
- Reduce impacts to rare and sensitive vegetation;
- Reduce trail density; and
- Reduce habitat fragmentation.

IV. TRAIL ASSESSMENT

The design process for the project began with a vegetation assessment of the Hunt Camp Trail corridor in 2016. MCOSD contracted with Shelly Benson, a botanist and biological consultant, to provide a detailed vegetation assessment, specifically focused on special status plant species and rare natural communities along the trail (Benson, 2016). This study provided the groundwork which would inform the trail planning process to minimize resource impacts as well as identifying reroute opportunities to move the trail alignment out of sensitive habitat whenever possible.

MCOSD also contracted with Gold Ridge Resource Conservation District to conduct a trail feasibility study (Gold Ridge Resource Conservation District, 2017). The purpose of the feasibility study was to document existing trail conditions and make recommendations for environmental sustainability improvements that would lead to official designation. The study included:

- Assessment of existing conditions of the Upper Hunt Camp Trail between Hunt Camp Fire Road and East Sylvestris Drive and the Lower Hunt Camp Trail between East Sylvestris Drive and Juniper Road;
- Identification of trail sections with serious and persistent erosion issues;
- Identification and analysis of potential alternatives to address serious erosion sites;
- Reconnaissance-level surveys of potential single track alignments to connect Lower Hunt Camp Trail to Manzanita Fire Road; and
- Recommendations to improve trail sustainability prior to adoption.

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The report included three alternative alignments (A, B, and C) for each reroute evaluated in order to provide MCOSD the opportunity to choose an alignment which minimizes environmental impacts while maximizing trail user safety. See the trail feasibility study for details on the alternative alignments considered by the report and MCOSD.

Additionally, the design process was informed by members of the community. MCOSD engaged the community through a series of stakeholder field visits to further facilitate the opportunity for feedback about the proposed project.

V. PROPOSED PROJECT

The project would improve the Hunt Camp Trail, including the construction of two trail reroutes (Reroute 1 and 2 on Upper Hunt Camp) and the installation of wet crossings and drainage, to support incorporation of the trail into the MCOSD trail system. These improvements would ensure the trail is properly drained and would minimize environmental impacts, while maximizing user safety. The project proposes to establish a new connector trail for hikers and cyclists, which would be constructed from the Lower Hunt Camp Trail to Manzanita Fire Road to respect private property rights and reduce unsanctioned trail use through bands of chaparral. Additionally, a small portion of the existing Hunt Camp Trail, connecting to Juniper Avenue, would be designated as hiking only, and would continue to provide a neighborhood connection to open space. To further reduce environmental impacts in the Gary Giacomini Preserve, the proposed project includes the decommissioning of over 6,000 linear feet of unsanctioned trails to reduce erosion and habitat fragmentation.

The proposed realignments, drain dips, and other actions to protect the environment and improve the user experience would improve the sustainability of the trail consistent with the RTMP policies, applicable BMPs, and trail design standards. These measures would substantially reduce impacts from erosion and runoff into nearby drainages, thereby reducing sedimentation into the Lagunitas Creek Watershed. These improvements would reduce the trail's physical impacts to the preserve and watershed. Based on the recommendations of the feasibility study, MCOSD is proposing the following project components (Figure 7):

- Upper Hunt Camp improvements;
- Lower Hunt Camp improvements;
- Construction of new hiker/biker connector trail from the Lower Hunt Camp Trail to Manzanita Fire Road and subsequent designation;
- Designate a portion of existing Hunt Camp Trail as a hiker only trail; and
- Decommissioning a total of over 6,000 linear feet of unsanctioned trails for five segments of unsanctioned trails, identified as trails 25440, 25552, 25710, and 25810.

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Figure 7 – Proposed Project



- Trail Reroute/New Trail
- Hiker/Biker
- Hunt Camp Alignment Decommission
- - - Hiker Only

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Upper Hunt Camp

Options to construct lower gradient, more sustainable reroutes around the most erosive areas on Upper Hunt Camp trail are somewhat constrained by vegetation species of concern, such as Marin Manzanita, although some reroute options exist, along with armoring sections of the existing alignment to harden the tread and decrease erosion rates. Based on the recommendations of the feasibility study, the MCOSD is proposing the following improvements along the Upper Hunt Camp Trail:

- Construction of Reroute 1;
- Construction of Reroute 2; and
- Implementation of drainage improvements.

Reroute 1: Reroute 1 would be a 560 linear foot, hand built 2-3 foot wide trail with a running grade of less than 10 percent. The new alignment would create a more stable and sustainable trail at a lower gradient and would not require the removal of any trees larger than 8 inches in diameter at breast height (dbh). Furthermore, Reroute 1 would allow the decommissioning of 193 linear feet of unsustainable and highly erosive portion of trail, which does not meet MCOSD trail standards.

Reroute 2: Reroute 2 would create a more stable and sustainable trail at a lower gradient and remove the current trail alignment out of sensitive species habitat (Marin manzanita). The reroute would be a 620 linear foot, hand built 2-3 foot wide trail with a running grade of less than 10 percent. This reroute would not require the removal of any trees larger than 8 inches dbh. Vegetation in the immediate area is comprised of madrone, Douglas fir and redwood understory. Furthermore, this reroute would allow the decommissioning of 510 linear feet of unsustainable and highly erosive portion of trail, which exceeds trail standards.

Photo 1: Eroded Trail Near Reroute 2



Photo 2: Looking Down Trail Near Reroute 2



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Drainage Improvements

Drainage improvements to the trails would include a number of options, including rolling dips, outsloping, and constructing causeways, etc. Rolling dips are drainage dips excavated into the trail to convey water off the trail. This is the preferred technique to get water off an existing trail. Outsloped tread is a technique that alters the trail to be lower on the outside or downhill side of the trail than it is on the inside or bank side. Outsloping lets water sheet across the trail naturally. The tread would be outsloped at approximately 5 percent. A causeway is a segment of trail tread which is elevated through poorly drained areas by importing gravel and filling the space between two parallel logs or rows of rock to retain the fill. Drainage treatments would be finalized in prior to construction and would likely include:

- Construction of one rock causeway (1ft x 2ft x 25ft) to alleviate chronically wet conditions;
- Improvement of thirty-two existing drainage dips are improved to properly drain the trail;
- Construction of four additional drainage dips; and
- Up to four trail reaches should be rock armored to prevent further gullying of the trail surface. This work would be within the existing trail corridor.

Photo 3: Erosion from Trail



Photo 4: Poorly Draining Trail



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Lower Hunt Camp

As part of the project, this segment of trail would be incorporated into the MCOSD trail system as a hiker/biker trail. Additionally, based on the recommendations of the design process and feasibility study, the MCOSD is proposing the following improvements along the Lower Hunt Camp Trail:

- Improvement of nine small seasonal stream crossings to prevent erosion and enhance user safety.
 - Construct two small (approximately 20 foot long) bridges
 - Install require rock armored crossings at seven of the crossings to prevent erosion and sediment discharge from entering the watershed;
- Improvement of one spring crossing site with a rock armor crossing to prevent erosion; and
- Implement drainage improvements.

Stream Crossings

The project would improve nine creek crossings that range in size from approximately one to four feet wide and would cross unnamed ephemeral tributaries of San Geronimo Creek. Seven crossings would be improved with rock armor fill and two would require the installation of an approximately 20 foot long bridge.

Spring Crossing

The project would improve several spring crossing sites along the trail corridor. Treatments would require the appropriate drainage features such as rolling dips and rock armored swales.

Photo 5: Stream Crossing



Photo 6: Spring Crossing



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Drainage Improvements

As described above for Upper Hunt Camp, drainage improvements to the trails could include a number of options, including rolling dips and outsloping. Drainage treatments would be finalized prior to construction and would likely include:

- Installation of 11 rolling dips on the trail to improve drainage; and
- Improvement of outsloping at two locations to prevent ponding on the trail tread.

Hiker/Cyclist Trail Connector Trail

To further reduce unsanctioned trail use through bands of chaparral with species of concern and to provide an alternate egress for hikers and cyclists, the MCOSD is considering the construction of a connector trail from the Lower Hunt Camp Trail to Manzanita Fire Road. This trail would provide connection to the greater open space preserve trail network including Manzanita Fire Road and Candeler Canyon Trail via the Contour Trail. This connector would create approximately 2,100 feet of stable and sustainable trail at a grade less than 10 percent. The trail would be a hand built 2-3 foot wide trail with a running grade less than 10 percent. The reroute would not require the removal of any trees larger than 8 inch dbh. The area is comprised of madrone, Douglas fir, and redwood understory. Furthermore, the reroute would allow the rehabilitation of approximately 1,542 feet of unsustainable and highly erosive unsanctioned trail through a band of chaparral with species of concern.

Hiker Only Trail Designation

Currently, the Lower Hunt Camp Trail exits at the end of Juniper Road in San Geronimo. To respect private property rights and neighborhood concerns the project proposes to designate this small portion of the existing Hunt Camp Trail as hiker only. This would continue to provide neighborhood connectivity to the trail while respecting the privately owned and maintained road.

Trail Decommissioning

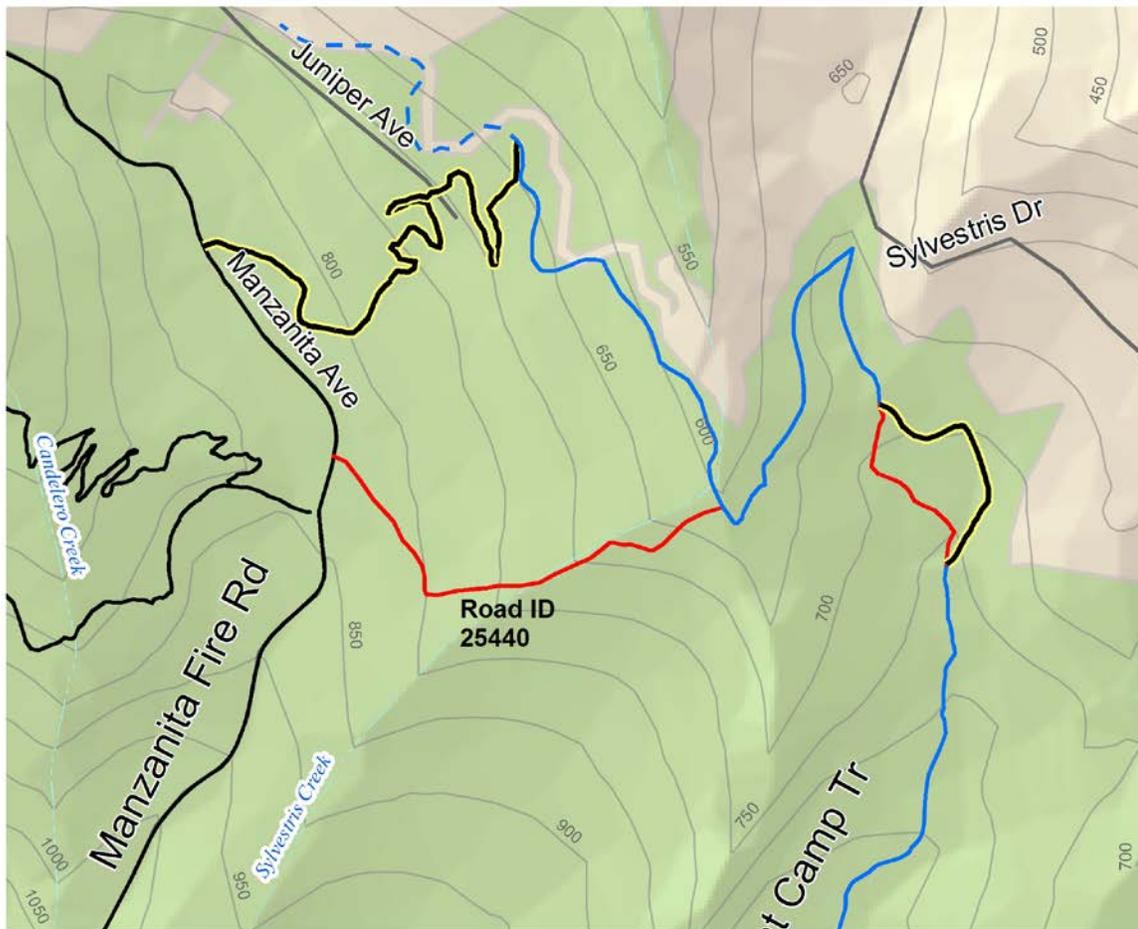
In order to meet a critical goal of the RTMP the proposed project includes the reduction of environmental impacts through the closure of unsanctioned trails and the reduction of habitat fragmentation. Trail decommissioning is proposed for four segments of unsanctioned trails, identified as trails 25440, 25552, 25710 and 25810. These unsanctioned trails were identified for decommissioning because they are either; redundant, fragmenting high value habitat, excessively steep and erosive, or lead the public to privately owned property. Each proposed decommission is described below:

Hunt Camp Trail Improvement Project

Trail 25440. The MCOSD evaluated this trail from its western trailhead at the Manzanita Fire Road to its intersection with the Hunt Camp Trail (Figure 8). The trail is an unsanctioned trail which is approximately 1,542 linear feet. The trail traverses significant habitat and is approximately 2-3 feet wide and well worn. Due to the biological sensitivity of the site the MCOSD would decommission the entire length of trail using only hand tools. Decommissioning of the entire length of trail would include the following:

- Scarification of trail bed using hand tools;
- Creation of obstructions using down native material and boulder placement;
- Signage at former junctions;
- Install native plants at the intersection of the Hunt Camp Trail;
- Douglas fir saplings may be utilized for creating obstructions. Those saplings taken must be less than 10 inch dbh and encroaching upon grassland or chaparral habitat.

Figure 8: Trail 25440

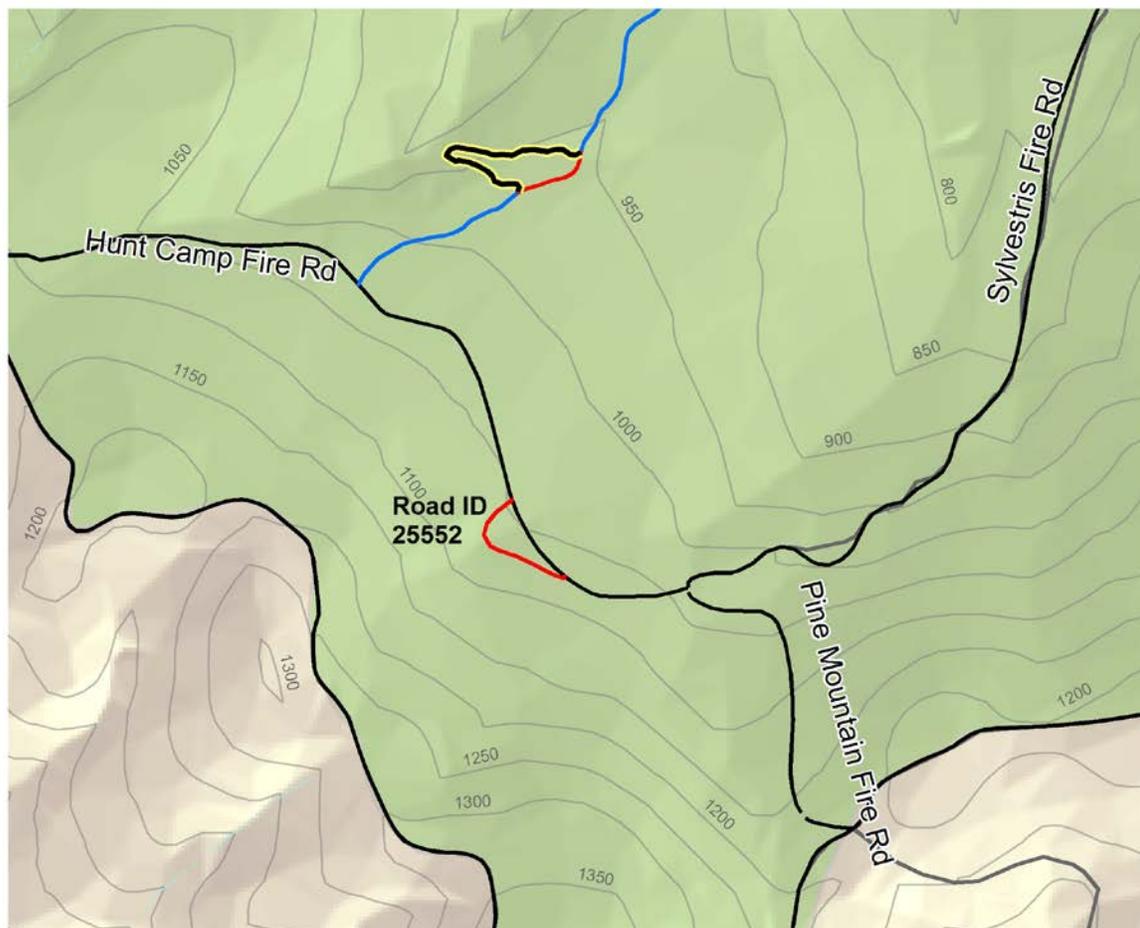


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Trail 25552. The MCOSD evaluated this trail located along the Hunt Camp Road, which is an unsanctioned, approximately 345 feet long trail segment extending from the Manzanita Fire Road, eastward to the ridgeline (Figure 9). The trail is a short redundant route which parallels the Hunt Camp Fire Road and is approximately four feet in width and well worn. The MCOSD would decommission the entire length of trail using only hand tools. Decommission of the entire length of would include the following:

- Scarification of trail bed using hand tools;
- Creation of obstructions using fallen native material;
- Installation of signage at former trail junctions.

Figure 9: Trail 25552

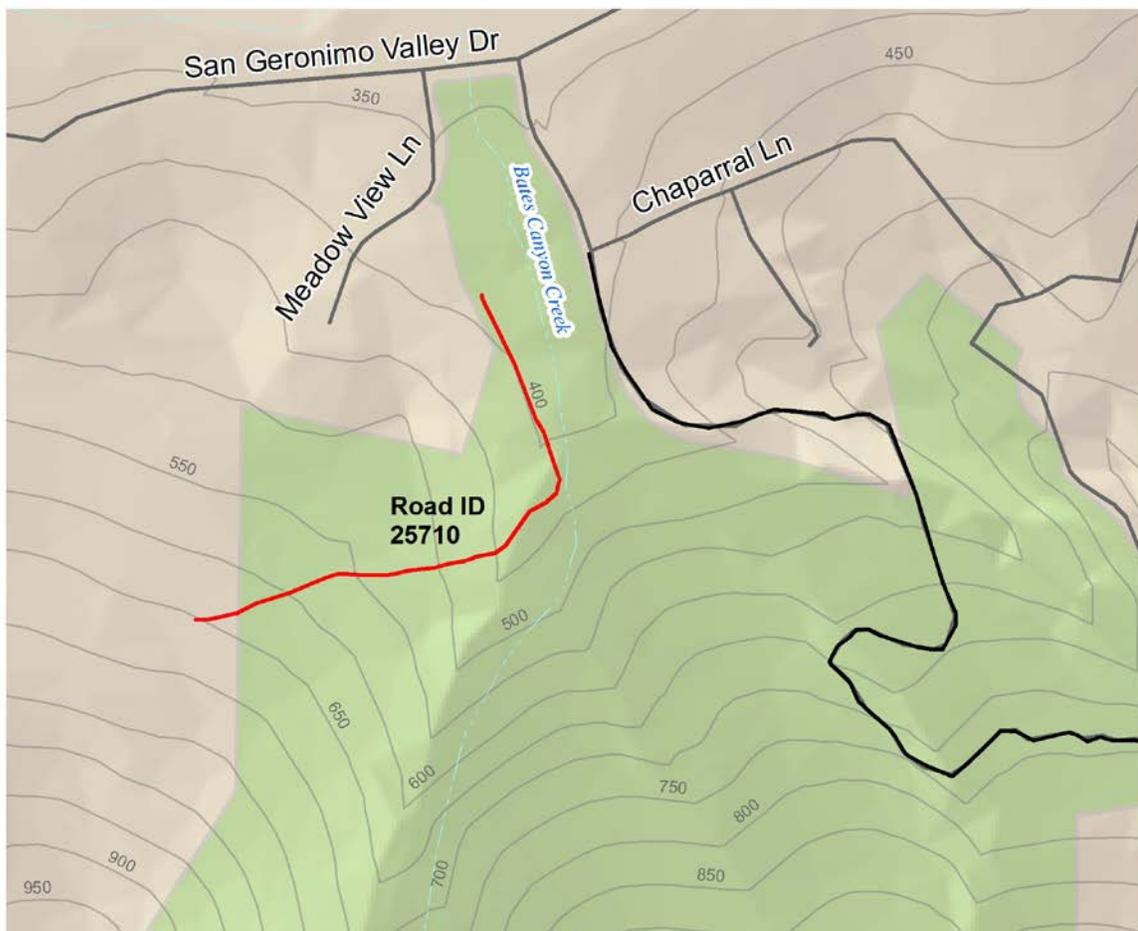


Hunt Camp Trail Improvement Project

Trail 25710. This trail is an abandoned fire road, which is approximately 1,472 linear feet. It traverses significant habitat and is approximately 10-12 feet in width and well worn. Furthermore, the trail leads visitors to a privately owned parcel of land. The MCOSD evaluated the trail for decommissioning from its northern trailhead at Meadow View Lane to where it exits MCOSD property at San Geronimo Estates (Figure 10). Decommissioning of the entire length would include the following:

- Decommission of trail would be completed with the use of both hand tools and a mini excavator. Methods would include; enhancement of existing drainage features, installation of weed free erosion control materials, light scarification of 2,350 square feet of trail bed and shoulder pull, boulder placement at trail entrance to define trail and block access to project site;
- Installation of approximately 500 square feet of native plants cover at trail entrance; and
- Installation of 50 linear feet of split rail fence installation (with signage).

Figure 10: Trail 25710

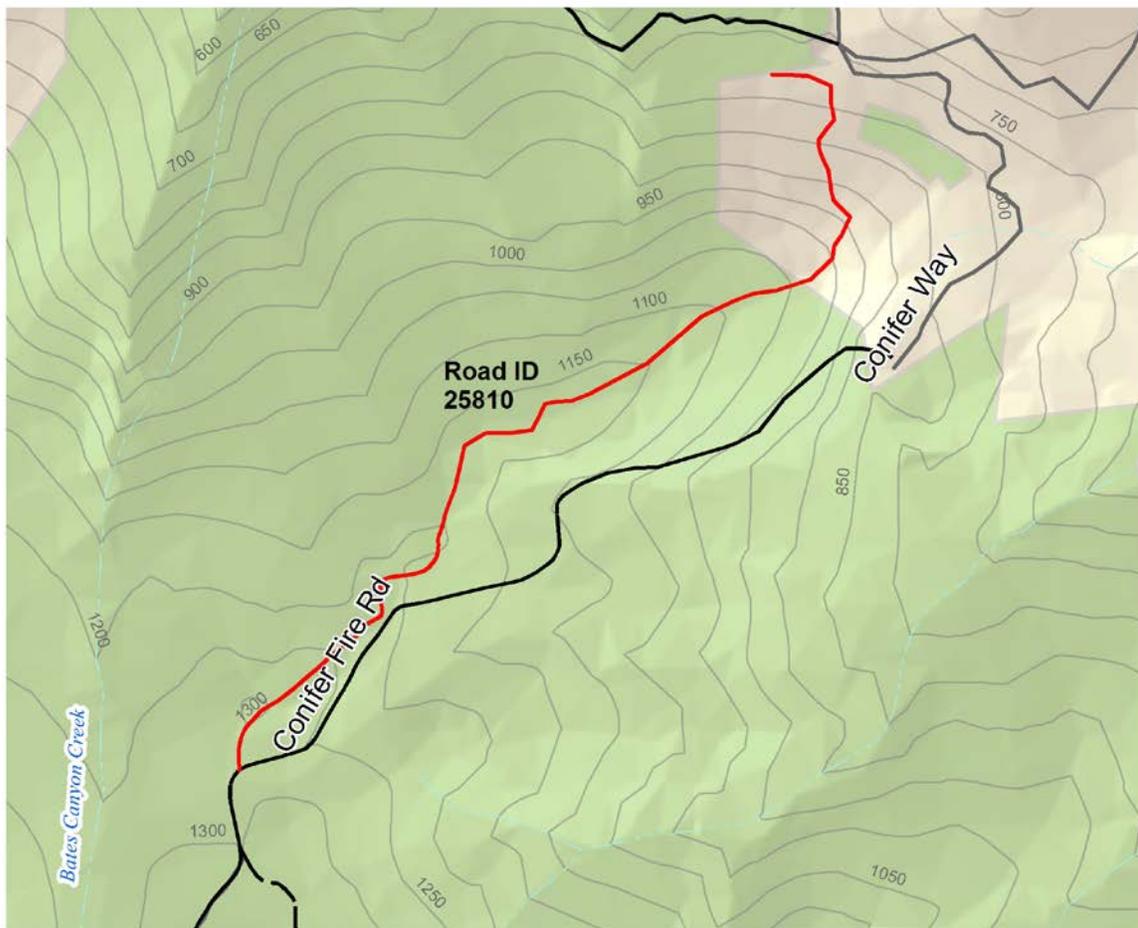


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Trail 25810. The MCOSD evaluated this trail from its northern connection with the Willis Evans Trail and southern connection to the Conifer Fire Road (Figure 11). The trail is an unsanctioned trail which is approximately 3,590 feet in length. The trail is a redundant fall line trail which traverses significant habitat and is extremely steep with a maximum grade of approximately 40 percent and approximately 3-5 feet in width. Additionally, the trail leads visitors to a privately owned parcel of land. Decommission of the entire length would be completed with the use of hand tools and would include the following:

- Scarification of trail bed;
- Installation of erosion control material at sections of trail with greater than 20 percent grade;
- Creation of obstructions using down native material;
- Installation of signage at former trail junctions; and
- Douglas fir saplings may be utilized for creating obstructions. Those saplings taken must be less than 10 inch dbh and encroaching upon grassland or chaparral habitat.

Figure 11: Trail 25810



VI. CONSTRUCTION

Construction of the project would adhere to the Road and Trail Standards and BMPs outlined in Chapter 6 of the RTMP. Construction would be multi-phased as a result of timing requirements due to sensitive species and for wet weather considerations.

Construction of the project would not begin until preconstruction surveys (BMP Wildlife-2, 3, and 4) have determined that sensitive species are not present in the project area or after August 1, 2017. Construction would begin in late summer/fall of 2017 and would likely extend into 2018. Construction related to water crossings and earthwork involving heavy equipment would end October 15, 2017 and not begin until May 15, 2018 (BMP Water -6) to prevent erosion during the rainy season. As this window overlaps with northern spotted owl nesting season, Equipment work with decibel levels 20 dBA above ambient would end March 1, 2018 and only hand work would take place before the 2018 northern spotted owl nesting season has ended.

Construction would take place four days a week, Monday through Friday, from 7:00 a.m. to 6:00 p.m. Construction of the project would require up to 2 to 3 permanent MCOSD staff members, 5 to 6 seasonal staff, multitude of volunteers, and a CCNB crew of 10 people for 2 weeks minimum. Equipment would include a mini excavator, carriers, cement mixers, generators, ATVs, a jackhammer, skillsaw, sawzall, and hand tools (hedge trimmers, chainsaws, etc.)

Construction staging areas would be restricted to existing MCOSD roads and trails or other areas that would avoid any significant impacts on sensitive natural resources as required by BMPs described in the MCOSD's Road and Trail Management Plan. Access to the project site for construction vehicles and equipment would be from Sir Francis Drake Boulevard. During construction, the MCOSD would limit trail access for safety purposes and would install signs at preserve entrances to warn trail users.

VII. OPERATION AND MAINTENANCE

After project construction, use of the trail for public recreation would continue similar to existing conditions. The trails would be utilized largely by locals for hiking, biking, dog walking, and other allowable recreational purposes. The project would be designated into the Region 2 trail system and would be published on all maps, which would increase public knowledge of the Hunt Camp Trail system. However, as the project does not include any parking or other amenities to improve access to the trail system, increases in trail use are anticipated to be minor and largely proportional with regional population growth.

Once the trails are incorporated into the MCOSD trail system, the trails would be maintained by MCOSD staff. As the trails are designed to improve existing trail sustainability, this level of maintenance is expected to be low. Regular maintenance includes, brushing of the trail corridor, maintaining drainage structures, and clearing fallen trees and trail obstructions and would occur as needed. As part of the project, the decommissioned trail segments would be monitored to ensure revegetation is successful and to prevent continued use of the decommissioned trails. Minor work may occur as needed to prevent access to the decommissioned trails.

VIII. PROJECT DESIGN FEATURES

The project would be designed and constructed in compliance with the RTMP. See Appendix A for a list of all applicable BMPs that are incorporated into the project. The figures below show typical drawings for some of the proposed project features.

Figure 12: Rock Armored Swale

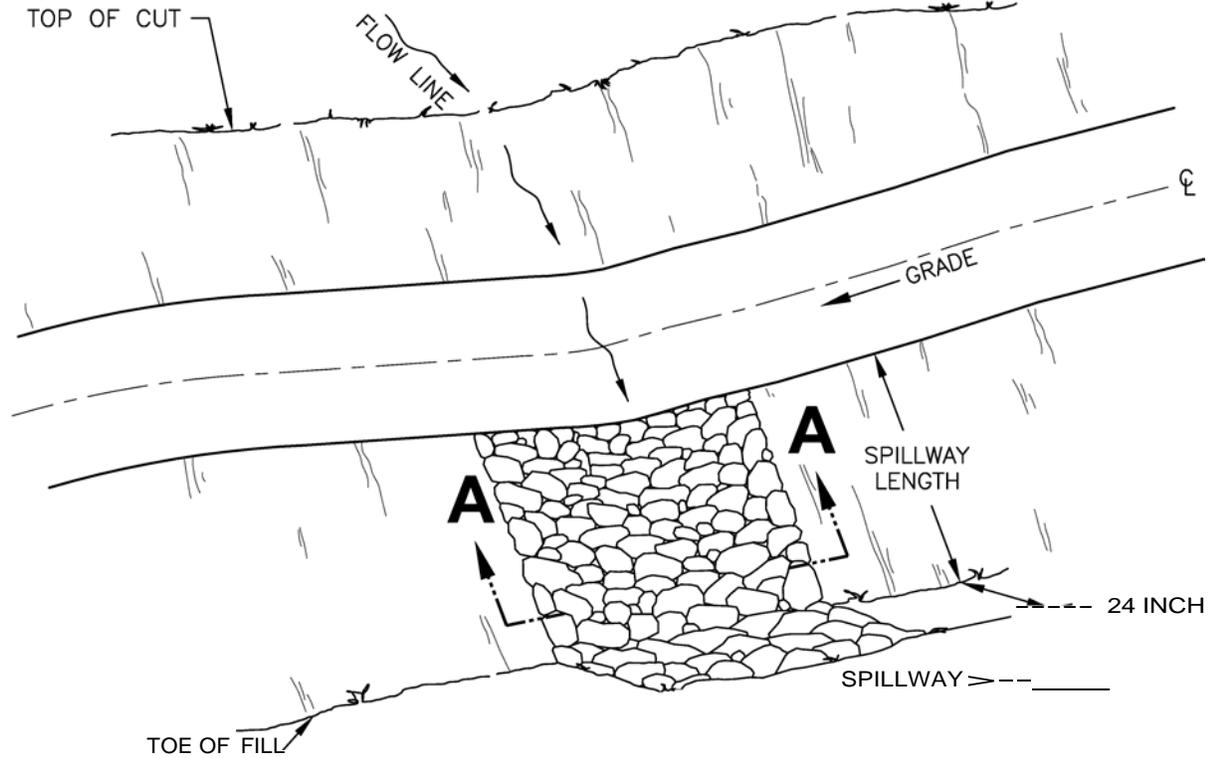
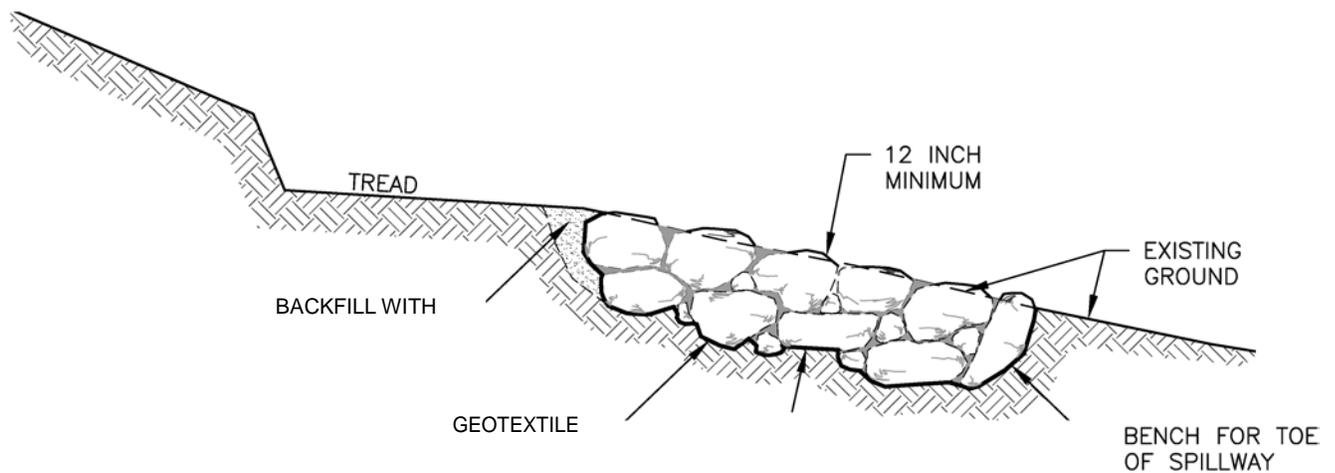


Figure 13: Rock Spillway for Drainage Dip or Cross Drain



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Figure 14: Rock Spillway for Culvert Outlet

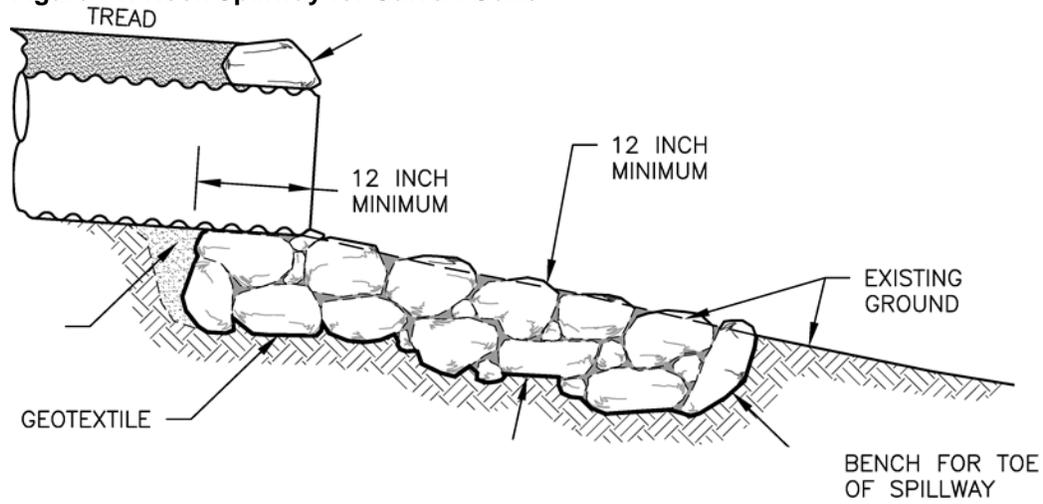


Figure 15: Rock Retention Wall

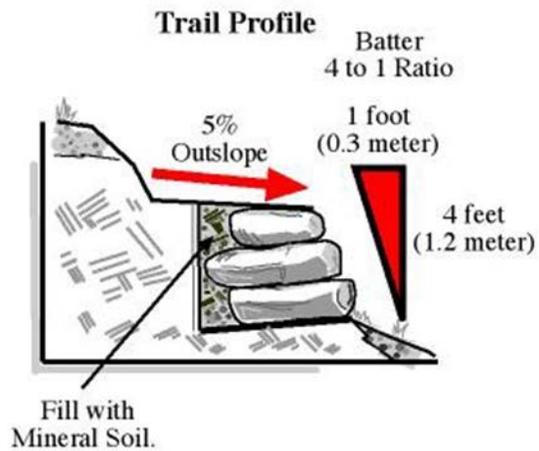
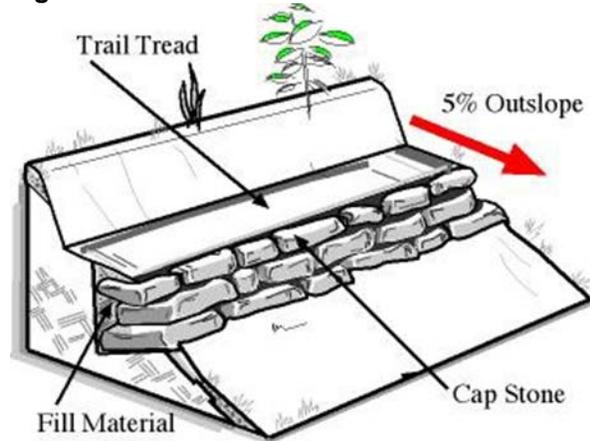
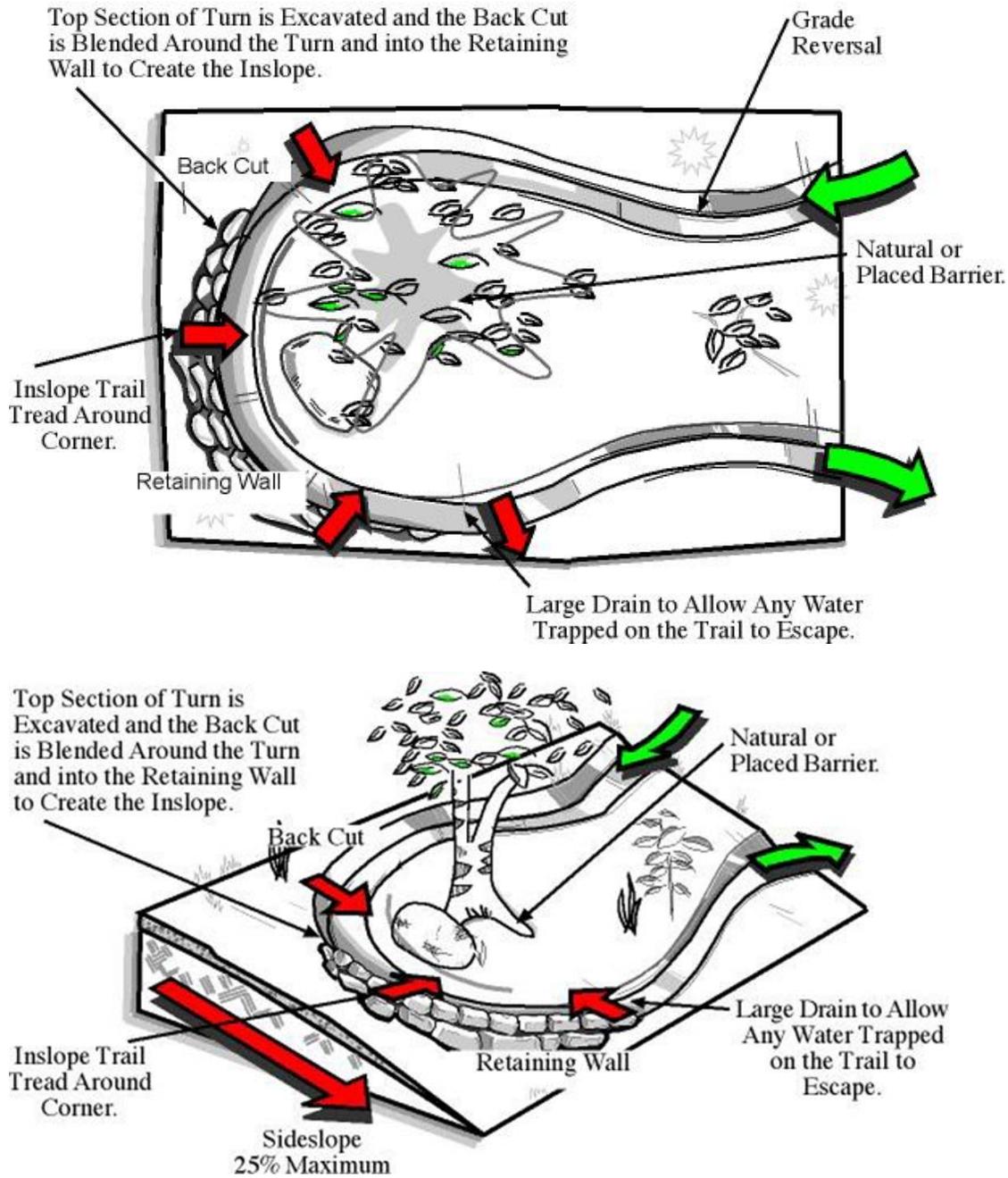


Figure 16: Insloped Turn

Insloped Turn



IX. REQUIRED APPROVALS

The proposed project requires the following permits and approvals, which would be obtained prior to construction:

- U.S. Army Corps of Engineers
- San Francisco Bay Regional Water Quality Control Board
- California Department of Fish and Wildlife.

X. REFERENCES

Benson, 2016. Botanical Survey of the Juniper Trail, Gary Giacomini Preserve Marin County Open Space District. October 4.

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