

APPENDIX A

Parkside Trails Feasibility Study

Parkside Trails Feasibility Study



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This feasibility report explores the potential for extending trails through properties owned by Parkside Trails. These lands offer the potential to extend the Stevens Creek Trail and directly link Cupertino residents with nearby regional parks and open space preserves. A former quarry and an associated haul road comprise the Parkside Trails holdings. Acquisition of any of the parcels would add to Cupertino's park and open space acreage. The properties bridge the gap between the developed urban core of Cupertino and the rural Santa Cruz Mountains. This study evaluates the quarry and haul road areas to determine the feasibility of constructing public access trails.

The study was initiated in response to the Parkside Trails development proposal that seeks entitlements to build an 18-unit, single-family residential subdivision on approximately 9 acres of the site located off of Stevens Canyon Road. The remainder of the property acreage is located across the Stevens Creek and totals approximately 122 acres. The trail study area consists of these 122 acres that are located approximately 3,500 feet downstream from Stevens Creek Reservoir. The acreage includes one discontinuous parcel, a 40-foot wide haul road located between McClellan Road and Linda Vista Park. Stevens Creek County Park, Fremont Older Open Space Preserve, Deep Cliff Golf Course and Linda Vista Park border the quarry.

Quarry activities at the site ceased shortly before the State of California enacted the Surface Mining and Reclamation Act of 1975 (SMARA). This law sought to help regulate surface mine disturbance and require appropriate reclamation of surface mining during and after quarrying. The site evaluated in the feasibility report did not benefit from the development of a reclamation plan. As a result, the site poses challenges to trail development. These challenges include the oversteepened quarry slopes, altered drainages and substantial, on-going erosion. Although the natural processes of erosion and plant succession have been slowly reclaiming the landscape, the constraints to trail development have not diminished.

The feasibility determined that trails through the Parkside Trails properties are feasible, but unique challenges are associated with each proposed trail alignment. The proposed trails would connect the urban, all weather surface trail, which extends through Stevens Creek Corridor Park, to rural, natural tread, multiple use and hiking only trails in the regional park and open space lands. This feasibility study assessed the potential for developing trails against a variety of trail design guidelines that offer criteria for different trail uses and types of trails with varying tread widths and surfacing. This feasibility study considers three trail uses for connecting through the quarry property: shared-use trails serving mountain bicyclists, equestrians and hikers; limited use trails serving mountain bicyclists and hikers and single-use trails for hikers only. All of these trails would be constructed on natural surfaces. The haul road route was considered for a multiple use trail with an all weather surface similar to that developed in Stevens Creek Corridor Park.

This report provides a comprehensive review of trail feasibility and a range of conceptual design options for constructing trails. Cost estimates appropriate for budgeting purposes are provided for trail development. A snapshot of the proposed trails is provided in Table 1. The proposed length, width, surfacing and costs are identified for each trail. Each of the trails has a unique utility and could be constructed as a stand-alone facility. Trail access points and staging areas are also highlighted. The proposed trail system is identified on *Map 1 – Trail Alignments through Parkside Trails Property*. *Map 4 – Trail Connections by Property Parcels* highlights the routes by parcel for purposes of evaluating potential trail easements and land dedications.

The feasibility report includes the following chapters:

Chapter 1 – Purpose and Methodology describes the study area, summarizes the technical investigations, highlights outreach to agencies and identifies the trail design guidelines used to assess trail routes.

Chapter 2 – Site Analysis Findings reports on the existing topography, geology, biological resources and historic quarrying and current park operations. These physical conditions and land management practices guide the evaluation.

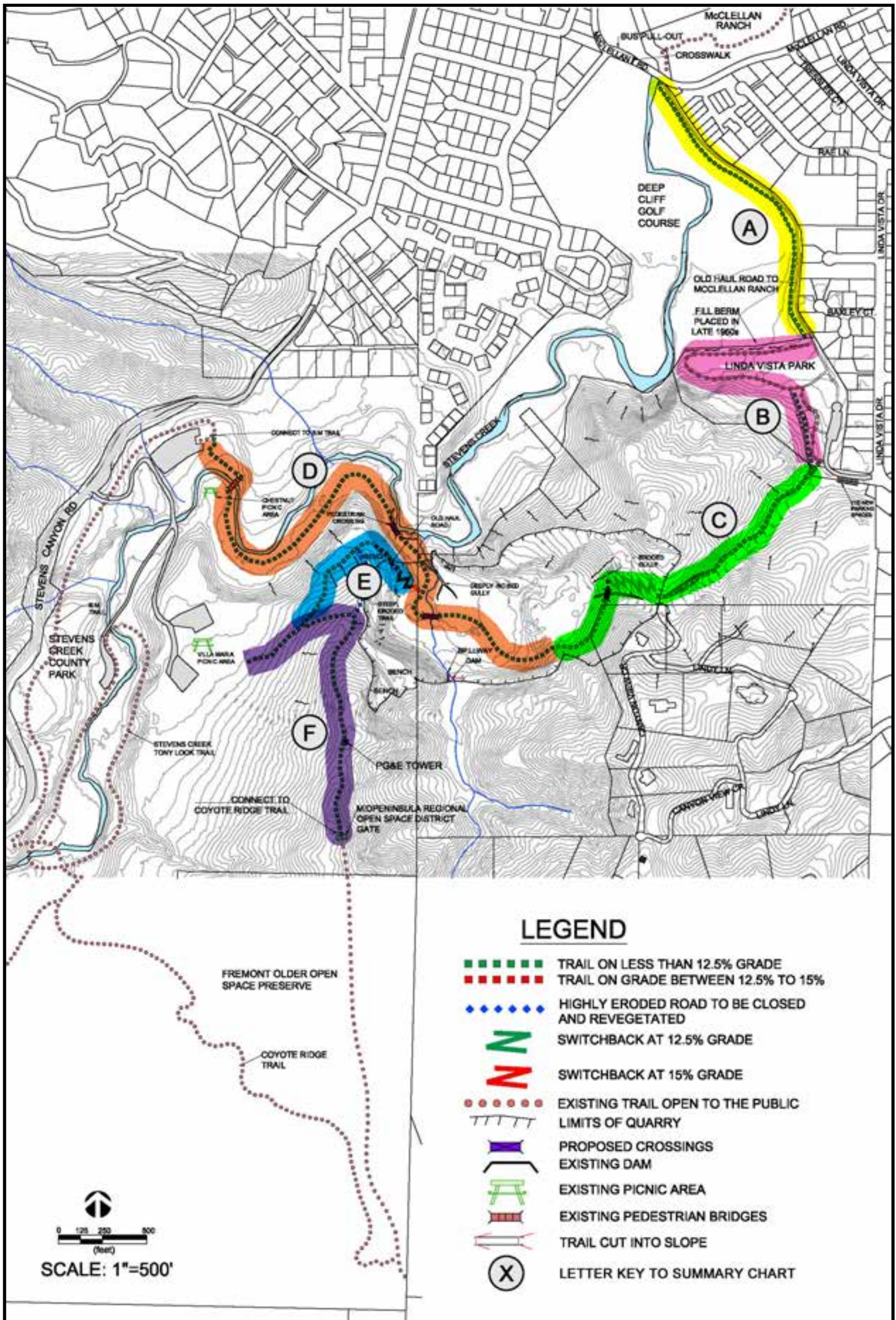
Chapter 3 – Trail Types and Features describes the potential trail uses, tread widths and trail surfacing investigated in this report. This chapter also described engineered structures and trail support facilities needed for the routes.

Chapter 4 – Investigated Trail Alignments describes the results of the feasibility study and identifies preliminary trail alignments and conceptual engineering solutions for routing trails through the altered quarry landscape and haul road.

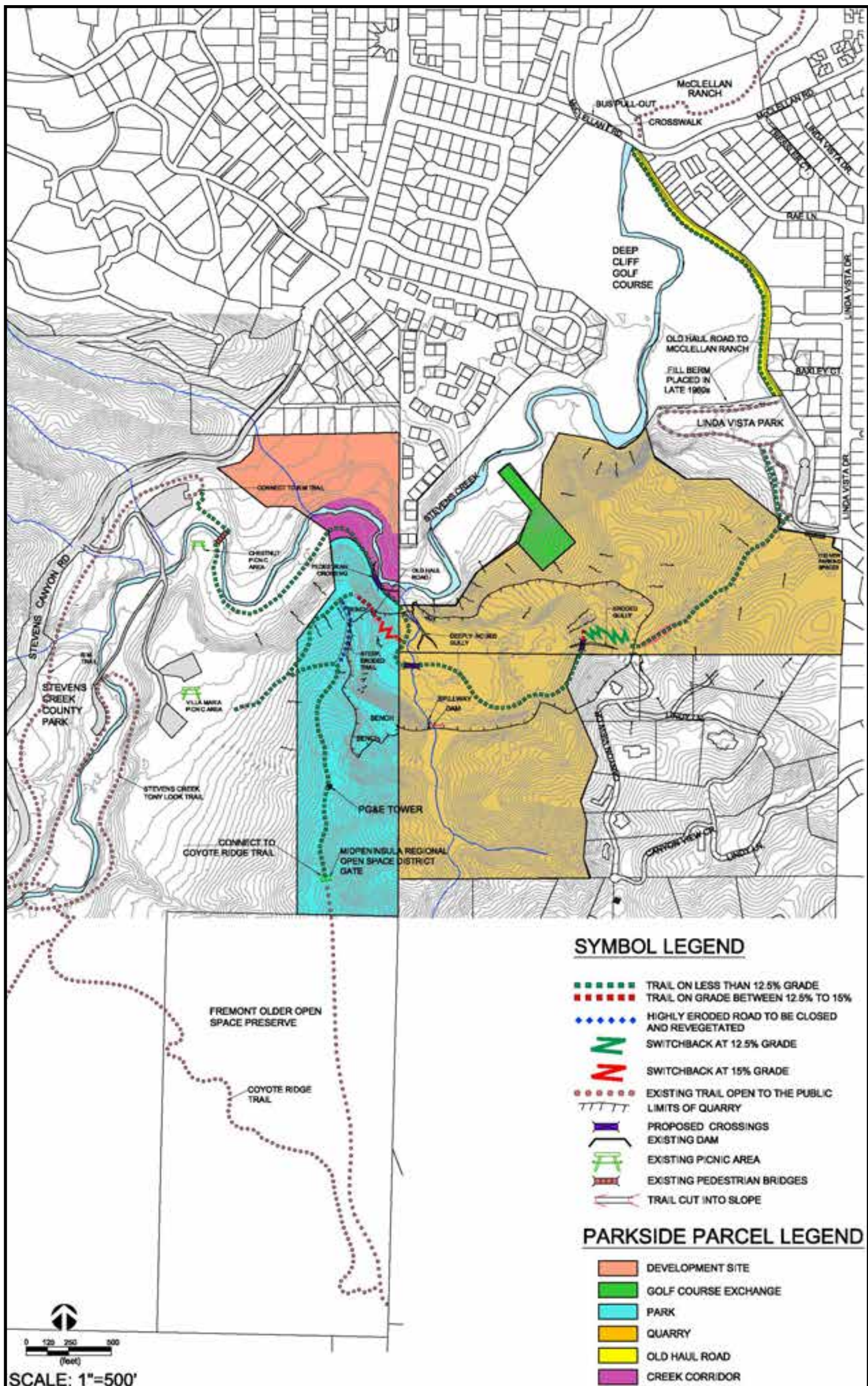
Chapter 5 – Implementation provides capital improvement project estimates for the routes including trail crossing structures, surfacing, site restoration and amenities necessary for budgeting purposes. This chapter also identifies future technical studies needed to further evaluate site conditions and reviews the regulatory framework for constructing projects.

Chapter 6 – Bibliography identifies reports and literature cited in the preparation of the feasibility report.

The purpose of the Parkside Trails Feasibility Study is to identify the potential steps and costs associated with developing trails within and around the proposed Parkside Trails development area. The preparation of this Feasibility Study should not be interpreted to mean the Parkside Trails project is or will be approved by the City, nor does it imply future actions by the City to develop the trails described in this study. The Parkside Trails Feasibility Study serves as supplemental material for the City's reference in reviewing the proposed Parkside Trails development proposal.



Map 1 – Trail Alignments through Parkside Trails Property



Map 4 – Trail Connections by Property Parcels

Trail Key	Trail Segment	Begin Segment	End Segment	Access Points and Staging Areas	Trail Uses ¹	Surfacing ²	Width ³	Approximate Length (miles)	Budget Estimates ⁴
A	Haul Road Trail	McClellan Road	Linda Vista Park	McClellan Road McClellan Ranch Preserve Linda Vista Park Linda Vista Drive	Walkers and Bicyclists	All Weather Surface	8' to 10'	0.35	\$5,270,000 ⁵
B	Linda Vista Park and Trail Improvements	Linda Vista Park	Quarry Ravine near Linda Vista Park Entrance	Linda Vista Park Linda Vista Drive	Walkers and Bicyclists	All Weather Surface	8' to 10'	0.35	\$980,000
C	Ravine Trail	Quarry Ravine near Linda Vista Park Entrance	Quarry Floor	Linda Vista Park Linda Vista Drive Stevens Creek County Park	Limited Use – Hikers and Mountain Bicyclists OR Single Use – Hikers Only	Improved Natural Surface and Natural Surface	4' to 6'	0.50	\$2,625,000 ⁶
D	Quarry Floor Trail	Quarry Floor	Chestnut Picnic Area and Rim Trail	Linda Vista Park Linda Vista Drive Stevens Creek County Park	Limited Use – Hikers and Mountain Bicyclists OR Single Use – Hikers Only	Natural Surface	4' to 6'	0.75	\$1,300,000 ⁶
E	Spur Trail to Coyote Ridge Trail Extension	Quarry Floor Switchbacks	Coyote Ridge Trail Extension	Linda Vista Park Linda Vista Drive Fremont Older OSP	Limited Use – Hikers and Mountain Bicyclists OR Single Use – Hiking Only	Natural Surface	4' to 6'	0.25	\$1,105,000
F	Coyote Ridge Trail Extension to Villa Maria Picnic Area	MROSD Gate in Fremont Older Open Space Preserve	Villa Maria Picnic Area	Linda Vista Park Linda Vista Drive Stevens Creek County Park Fremont Older OSP	Shared Use – Hikers, Mountain Bicyclists and Equestrians	Natural Surface	8' to 10'	0.50	\$475,000

Table 1 – Trail Alignments Summary

- 1 – Trail uses are proposed based upon site topography and existing uses on connecting trail segments (See Chapter 3 – Trail Types and Features).
- 2 – Trail surfacing materials are proposed to match those on existing connecting trails and to fit the character of the site such as rural, mountainous terrain or urban, valley floor conditions. An all weather surface may be constructed of asphalt paving, porous concrete or other hardscape material. An improved natural surface requires imported material to improve the durability of the underlying geologic formation. Two formations are present within the study area – an Unnamed Sandstone Formation and the Santa Clara Formation. The Unnamed Sandstone Formation is erodible and would require the placement of baserock to improve the trailbed. The baserock is onsite and is comprised of the quarried Santa Clara Formation material. A natural surface uses the existing ground as the trailbed.
- 3 – Trail width is guided by the types and intensities of trail use and the trail setting and terrain. Generally, wider trails serve more varied trail uses. A 4' wide trail would provide adequate width to support hikers only. A 6' wide trail would accommodate both hikers and mountain bicyclists. The 8' to 10' wide trail from McClellan Road to Linda Vista Park would support urban trail uses including walking and bicycling, whereas the 8' to 10' Coyote Ridge Trail Extension would provide a natural surface for equestrians, mountain bicyclists and hikers. Budget estimates are based upon the widest potential trail width (See Chapter 3 – Trail Types and Features).
- 4 – Budget Estimates include design, construction, project delivery costs (CEQA, permitting, technical studies, project management, construction management and testing and inspections) and design and construction contingency allowances. The numbers identified in the table reflect the high end of the estimated budget range (See Chapter 5 – Implementation).
- 5 – The Haul Road budget estimates includes the full range of trail location and surfacing options (See Chapter 5 – Implementation).
- 6 – The Ravine Trail and Quarry Floor Trail together provide a route from Linda Vista Park to Stevens Creek County Park. These trail segments would likely be built simultaneously to provide a through route across the quarry.

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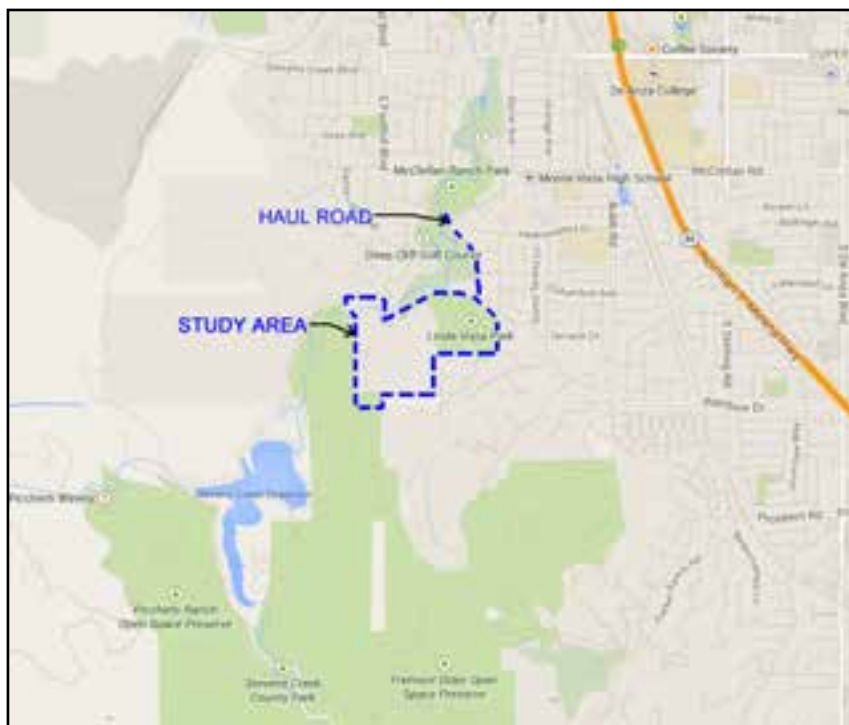
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OVERVIEW

The purpose of this trail investigation is to further assess potential trail linkages between McClellan Road and Stevens Creek County Park and Fremont Older Open Space Preserve through property owned by Parkside Trails. This private property includes land that formerly supported a quarry operation and includes the quarry site and a haul road that extends between McClellan Road and Linda Vista Park in Cupertino. The property is accessed from Stevens Canyon Road and extends across Stevens Creek to the main quarry site. The Parkside Trails property was previously evaluated as a part of the *2002 Cupertino Stevens Creek Trail Feasibility Study*. This investigation provides a current assessment of land capabilities, trail alignments, design concepts and construction budget estimates for developing trails through these lands. The report also identifies environmental considerations associated with the potential trail easements and parkland dedications.

REGIONAL SETTING

The Parkside Trails property is located within the Stevens Creek watershed approximately 3,500 feet downstream from Stevens Creek Reservoir. Stevens Creek is a spring fed perennial stream that flows northeast from the Santa Cruz Mountains to San Francisco Bay through the cities of Cupertino, Sunnyvale, Los Altos and Mountain View (*See Map 1 - Regional Setting Map*). The property is primarily bordered by open space including the 1,077-acre Stevens Creek County Park, 739-acre Fremont Older Open Space Preserve, 56-acre Deep Cliff Golf Course and 11-acre Linda Vista Park. The eastern ridgeline is bounded by widely scattered, single-family residences. The site ranges in elevation from approximately 360 feet at the centerline of Stevens Creek to approximately 750 feet on the ridges of the quarry. The site provides views across Santa Clara Valley and South San Francisco Bay to Alameda County. Coyote Hills is viewed looking north and Mission Peak is seen to the south from the ridgeline.



Map 1 - Regional Setting Map

The Stevens Creek corridor was first identified as a regional recreation asset more than 50 years ago and was included in the *Regional Parks, Trails and Scenic Highways Element of the Santa Clara County General Plan*. Today, the Stevens Creek corridor is identified as a sub-regional trail route (Route S-2) in the *1995 Santa Clara Countywide Trails Master Plan* and significant portions of the trail have been developed by the City of Cupertino, City of Mountain View, Santa Clara County Parks and Recreation Department and Midpeninsula Regional Open Space District. Many of these trail segments have been developed in collaboration with the Santa Clara Valley Water District. The trail is used for walking, jogging, bicycling, environmental education activities and nature exploration.

SITE HISTORY

The Parkside Trails property is the site of a former quarry. Quarrying operations were undertaken by the McDonald-Dorsa family who sold the property to Kaiser Permanente Cement, which was founded by Henry J. Kaiser. Quarrying activities ceased in the 1970s. In 1987 the cement plant and surrounding lands were bought by Hanson, a British holding company. The cement plant was renamed Hanson Permanente Cement and non-essential land holdings were sold by the new owner. The closed quarry had several interim owners all of whom were interested in developing luxury homes on the 131 acres. The property was purchased in 1999 to develop a private school, Canyon Heights Academy. This same owner now proposes to develop 18 single-family homes on 9 acres of the site that is accessible from Stevens Canyon Road. The remainder of the site, approximately 122 acres, is located across Stevens Creek.



Looking across quarry floor to saddle on eastern ridgeline.

Linda Vista Park was purchased by the City of Cupertino in 1969. The 11-acre site was originally a part of the McDonald-Dorsa quarry. The park was dedicated in 1970 and was one of the first parks developed in Cupertino. The 1.56-acre former haul road that connected the quarry to McClellan Road was retained as a part of the quarry holding. Linda Vista Park is situated between the haul road and the quarry.

FEASIBILITY STUDY INVESTIGATIONS

This trail feasibility study included review of aerial photographs, maps and documents, site reconnaissance walks and development of conceptual trail alignments and designs. These feasibility investigations included assessments of the biological resources and the geotechnical and engineering constraints associated with the quarry and streambanks. The results of these technical studies are applied throughout this report.

Background information pertinent to the Parkside Trails property was reviewed in an effort to become familiar with the projects and processes that created the existing opportunities and constraints associated with these lands. Significant time was spent directly observing

field conditions. Site visits were conducted to verify trail alignment feasibility and gather additional data needed to develop trail design concepts. During the fieldwork, information was gathered on opportunities including connectivity to existing trails and adjacent points of interest. Constraints to trail development including land capability, biological resources, environmental factors and institutional issues were analyzed. The preliminary trail alignments and design solutions to constrained areas are included in this report for review by coordinating agencies including Santa Clara County Parks and Recreation Department, Midpeninsula Regional Open Space District, Santa Clara Valley Water District and Pacific Gas and Electric Company.

Technical Evaluations

In order to assess the feasibility of potential trail alignments between McClellan Ranch and Stevens Creek County Park, we have performed the following technical evaluations:

- Review of Available Maps and Reports – We obtained historical documents pertaining to the site geology and previous geologic and geotechnical investigations at the site;
- Base Map Generation – We generated a very detailed topographic base map using available County LiDAR data;
- Historical Aerial Photograph Evaluations – We evaluated historical stereo-pair aerial photographs spanning 1948 to present in order to obtain historical information on quarrying activities at the site, and to evaluate geologic and geomorphic conditions and changes over time;
- Geologic Mapping – Original geologic mapping was performed to characterize the current site conditions of the property and along proposed trail alignments;
- Geologic Cross Sections – Four geologic cross sections were generated through critical areas of interest to evaluate the site topography and underlying geology as it may relate to proposed trail alignments and feasibility;
- Trail Walks – Several trail walks were performed to evaluate the feasibility of various potential trail alignments, to identify a preferred trail alignment, and identify geologic and geotechnical constraints; and
- Conceptual Trail Designs and Costs – We developed conceptual trail designs, grading volumes, and associated costs for the preferred trail alignment.

Outreach to Agencies

The project team, consisting of City of Cupertino staff and consultants, coordinated with various agencies to solicit input on trail feasibility, possible trail alignments, jurisdictional issues, and to identify potential future stakeholders. Site trail walks and conferences were coordinated that included representatives from Santa Clara County Department of Parks and Recreation, Midpeninsula Regional Open Space District, representatives and consultants from the City of Cupertino, and representatives and consultants for the private property and developer. The team has also met with representatives of the Santa Clara Valley Water District to solicit input from the District on potential creek impacts from the

proposed residential development. The State Mining Board was also contacted to determine whether or not the Surface Mining Control and Reclamation Act (SMCRA) of 1977 would trigger any future mitigation related to the past quarrying activities at this site.

2002 CUPERTINO STEVENS CREEK TRAIL FEASIBILITY STUDY

This trail study reviewed and assessed trail alignments and design concepts proposed in the 2002 Stevens Creek Trail Feasibility Report. This previous project included the formation of the Stevens Creek Trail Task Force and a two-year public input process. A total of 20 meetings were held with neighborhood associations, the Stevens Creek Trail Task Force, Cupertino Parks and Recreation Commission and Cupertino City Council to gather feedback on the trail routes. The 2002 study evaluated the potential to develop the Stevens Creek Trail from Rancho San Antonio County Park to Stevens Creek County Park. The Parkside Trail Feasibility Study updates and more fully develops many of these early conceptual trail alignments and design elements.

TRAIL DESIGN GUIDELINES

A number of relevant documents have provided criteria for assessing trail feasibility and guidelines for developing trail design concepts. These documents include:

- 2005 Cupertino General Plan
- 1995 Santa Clara Countywide Trails Master Plan
- 1999 Santa Clara County Interjurisdictional Trail Design, Use and Management Guidelines
- 2005 Santa Clara County Parks and Recreation Department Trail Maintenance Manual
- 2006 Santa Clara Valley Water District, Water Resources Protection Manual: Guidelines & Standards for Land Use Near Streams
- 2012 California Department of Transportation Highway Design Manual: Chapter 1000 Bicycle Transportation Design
- 2013 Architectural Barriers Act Accessibility Guidelines: Outdoor Developed Areas

SITE TOPOGRAPHY

The majority of the project site is located along the southeast side of Stevens Creek, approximately 3,500 feet downstream of Stevens Creek Reservoir. The site is characterized, in general, by moderately steep to steep (10- to 35-degree inclination) natural, rolling hillside topography. Historic quarrying at the site has modified this topography, with a large portion of an east-west trending, natural ridgeline removed. The resulting topography includes highly disrupted, precipitously steep (35- to 65-degree inclinations) quarried slopes ranging in height from 100 to 250 vertical feet. Two prominent, mostly level old quarry floor areas occupy the mined former ridgeline. These old quarry floor areas include the eastern (upper) floor, and the western (lower) quarry floor, which are separated by an approximate 40- to 60-foot, very steep to precipitous (30- to 45-degree inclinations), heavily dissected cutslope that also contains localized artificial fill. The upper and lower quarry floors are bounded on nearly all sides by the precipitous old quarry cutslopes.



The steep cutslopes of the quarry are clearly visible.

Drainage along the old quarry slopes is characterized by uncontrolled sheetflow directed to the quarry floor areas. In general, quarried slopes with inclinations greater than 30-degrees are susceptible to erosion and gullying. Prominent erosional gullying is present along the northeastern quarried slopes where inclinations range from 33- to 38-degrees, and along the southwestern quarried slopes where inclinations range from 45- to 60-degrees. The southwestern slopes, due to their precipitous inclinations, have large debris fans at their base, and display signs of active slumping and shallow landsliding. Drainage along the upper quarry floor is characterized by several active, very deeply incised drainage gullies that capture runoff from the eastern slopes and direct it to the lower quarry floor. These gullies contain near-vertical embankments with active slumps. The lower quarry floor captures drainage from the eastern floor area, the southern drainage channel after bypassing

the earthen dam, and the precipitous western slopes, and directs it toward Stevens Creek in the northwestern portion of the site. A deeply incised drainage gully up to approximately 15 to 20 feet deep, directs runoff from these areas to Stevens Creek.

SITE GEOLOGY

The distribution of geologic materials at the project site has been characterized by detailed aerial photograph analysis and by detailed field geologic mapping. The results of our aerial photograph analysis and geologic mapping are depicted on the Engineering Geologic Map and Engineering Geologic Cross Section A-A' through D-D' (*See Appendix – Plate 1: Engineering Geologic Map*). The distribution and engineering properties of the various earth materials plays a critical role in determining constraints to potential trail alignments. The following describes the earth materials encountered at the project site, and some of the critical engineering properties associated with each material, beginning with the youngest material and ending with the oldest bedrock material:

Surficial Deposits:

Artificial Fill (Af) – Artificial fill materials at the site were identified within the old quarry, along historic haul roads associated with old quarrying activities, and within the proposed residential development. All artificial fill materials encountered, with the exception of a small area in the northwest corner of the proposed residential development area, are considered non-engineered fill. These materials consist primarily of unconsolidated granular soil materials with a relatively low percentage of fines, with the potential for settlement and soil creep. These materials are generally unsuitable for support of trails or foundations for trail support structures on slopes as they are prone to settlement, erosion, and soil creep. We also identified a small (approximately 15 to 20 feet high) embankment dam in the southern portion of the old quarry consisting of artificial fill soils placed across the prominent drainage channel.

Alluvial Fan/Slopewash Colluvium (Qf) – Alluvial fan and slopewash deposits are found in isolated pockets throughout the project area and are associated with the accumulation of surficial soil materials that have been transported downslope as a result of gravitational processes. These materials generally consist of unconsolidated granular and fine-grained material, and are generally unsuitable for trail support on slopes due to its susceptibility to erosion, settlement, soil creep, and expansion/contraction characteristics. These materials, if found on gently inclined to relatively level slopes, may be suitable for trail support.

Landslide Deposits (Qls) – Landslide deposits have been identified in isolated areas on the subject property. These materials generally consist of unconsolidated displaced surficial soil and bedrock materials in low slope positions. In general, these deposits should be avoided for trail alignment consideration due to their potential for settlement, reactivation, or from being impacted by landslide debris from upslope source areas. However, if the deposit is old, is in a low slope position, and the upslope hazard from landsliding is low, then these deposits could be considered for hosting a trail alignment.

Alluvium/Alluvial Terrace Deposits (Qal/Qt) – Alluvium and alluvial terrace deposits are common throughout the property, and primarily bordering Stevens Creek. These materials generally consist of unconsolidated granular deposits of sand and gravel with a low percentage of fines. The terrace deposits were formed as Stevens Creek eroded historical flood plains across the area, leaving alluvial deposits across the flood plain. Subsequent uplift of the Santa Cruz Mountains and downcutting of Stevens Creek has resulted in the dissection of the older flood plains, and the stranding of these alluvial deposits as relatively

level terraces adjacent to Stevens Creek. We have identified a minimum of four discrete terrace surfaces (Qt_1 through Qt_4), with Qt_1 corresponding to the youngest terrace, and Qt_4 corresponding to the oldest relative terrace surface. These geologic materials are generally suitable for hosting trail alignments; however, these materials are susceptible to erosion and undercutting where adjacent to Stevens Creek.

Bedrock Units:

Santa Clara Formation (QTsc) – The Santa Clara Formation is the primary bedrock unit exposed throughout the western and central portions of the property, and consists of moderately consolidated sedimentary deposits of light brown conglomerate and sandstone, with isolated interbeds of siltstone and claystone. Bedrock stratification generally dips moderately to steeply to the south, and thus, south-facing slopes may be susceptible to dip-slope landslide failures, particularly where siltstone or claystone interbeds are exposed. In general, the Santa Clara Formation materials in this area, due to their granular nature, tend to have a low expansion potential, and contain few deep-seated landslides. Surficial failures are common on steep slopes due to weathering of the outer 5 to 10 feet of the bedrock. Historic quarrying of the property has resulted in abundant exposures of the Santa Clara Formation in the western and central portion of the property. This bedrock unit is suitable for trail alignments provided drainage is properly controlled and grading is kept to a minimum.

Unnamed Sandstone (Tss) – The Unnamed Sandstone is a sedimentary bedrock unit exposed in the eastern portion of the property, east of the historic quarry. This bedrock unit contains fine- to medium-grained, well-sorted, light colored sandstone. This bedrock unit is easily distinguishable from the Santa Clara Formation due to its very light color, and pure sandstone texture. The weathered portion of this sandstone is easily eroded and forms badlands topography where denuded of vegetation. This bedrock unit is generally suitable for trail alignments provided that drainage is strictly controlled and grading kept to a minimum. The weathered outer portion of this material is highly susceptible to erosion.

HISTORIC QUARRYING

Quarrying of the subject property began in the mid- to late- 1950s as the ‘McDonald-Dorsa’ quarry. The Santa Clara Formation bedrock materials were being mined for their resistant gravel content for use as aggregate in construction materials for the rapidly growing San Francisco bay area. Two primary haul roads were constructed to gain access to the quarry, one extended eastward from Stevens Canyon Road where a fill buttress was placed across Stevens Creek to permit access to the main portion of the quarry located south-southeast of Stevens Creek. A second primary access roadway extended from the main portion of the quarry eastward to the area now occupied by Linda Vista Park, then extended northward along the east side of what is now the deep cliff golf course. The main portion of the quarry, which can be seen in Plate 1 - Engineering Geologic Map, is located south of Stevens Creek where an east-west trending ridge was the target of quarrying activities. Quarrying proceeded west to east and resulted in a progressively larger cut face as the excavation moved eastward up the ridgeline. Once the excavation encountered the Unnamed Sandstone near the top of quarried face, quarrying ceased, likely due to the unfavorable texture of the sandstone which contains no aggregate.

Signs of active quarrying can be observed in aerial photographs spanning 1958 to 1968, and abundant minor haul roads were constructed throughout the area, which are shown on Plate 1. An earthen dam was constructed during the quarry operations along the south side of the quarry to control runoff along the north-south trending drainage channel. This dam

is approximately 15 to 20 feet in height, and contains a narrow spillway along the west edge of the dam. Alluvial deposits have nearly completely filled the basin formed by this dam, where abundant sycamores and other deciduous trees now occupy the basin. By the early 1970s, active quarrying ceased. An apparent horse rental operation is visible in the 1971 aerial photographs near Stevens Creek, in the vicinity of the old western quarry haul road. References to this horse rental operation were noted in historic newspaper articles. By 1971, the quarried limits do not appear to change relative to the 1980 aerial photographs, and the 1980 photographs show the establishment of vegetation over the quarried slopes.

BIOLOGICAL RESOURCES

HABITATS AND SPECIAL STATUS SPECIES

The 131-acre closed quarry includes six unique communities including grassland, oak woodland, chaparral, seasonal freshwater wetland, riparian forest and in-stream aquatic habitat. Rare, sensitive or listed species potentially existing in the area include steelhead trout, red-legged frog, western pond turtle and birds of prey. Stevens Creek and an unnamed tributary flow through the 131-acre site. Approximately 9 acres of the site is located to the west of Stevens Creek. An 18-home subdivision is proposed on this acreage. No work was undertaken to evaluate the acreage associated with the housing subdivision for this report.

Grassland is found at the bottom of the old quarry. This non-native grassland is growing on the highly disturbed, unconsolidated and eroding quarry floor and slopes remaining after quarrying activities ceased in the 1970s. As is often the case on mined lands, only the hardiest species can survive such disturbance. The quarry is eroding and large gullies are evident on the slopes and floor of the quarry. Other invasive, non-native species, including pampas grass and broom are interspersed through the grasslands growing on the quarry floor and lower slopes.

A small embankment dam is located in the southern portion of the old quarry. The dam fill material is placed across a prominent drainage channel that flows to Stevens Creek. The majority of the dam area is silted in and vegetated by a cottonwood dominated riparian forest. This habitat has expanded over the past decade to occupy more of the quarry floor in areas where sediments have collected to provide a substrate for growth. Water passes over the spillway and sheet flows across the quarry floor to form a channel that contributes flow and quarry sediments to Stevens Creek. There also appears to have been some attempt made to direct flows to this tributary as several smaller channels emerge from the quarry floor via corrugated culvert pipes. These may carry flow from the main channel or from seeps around the perimeter of the quarry. The disrupted tributary flow has led to the formation of wetlands in the center and along the southern side of the quarry floor at the base of steep slopes. These drainages converge to reform as the tributary that enters Stevens Creek at the mouth of the quarry. Trails across the quarry floor may impact the wetlands that have resulted from these landform changes.

Wetland species include cattails (*Typha spp.*), gray rush (*Juncus patens*), marsh baccharis (*Baccharis douglasii*) are prevalent in these areas. The larger wetland along the south edge of the quarry also supports riparian vegetation, including cottonwoods and willows. These wetlands represent potential red-legged frog habitat. Red-legged frogs are listed as threatened under the federal Endangered Species Act and are under the jurisdiction of the US Fish and Wildlife Service. Wetlands and other waters of the United States are protected by the Clean Water Act, which is administered by the U.S. Army Corps of Engineers and

California Regional Water Quality Control Board. These environmental considerations may result in regulatory permit requirements for the trails.



A view of the encroaching cottonwoods and willows along the eastern edge of the quarry floor.

The in-stream aquatic habitat of Stevens Creek is known to support adult and juvenile steelhead trout along its entire length from the reservoir in Stevens Creek County Park to Shoreline Park in Mountain View, where the creek enters San Francisco Bay. The Central California Coast steelhead (*Oncorhynchus mykiss*) is listed as threatened under the federal Endangered Species Act and is under the jurisdiction of the National Marine Fisheries Service. This anadromous form of rainbow trout returns to their place of hatching to spawn. Since 1937, Stevens Creek reservoir and dam has impounded creek flows. Stevens Creek dam operations release flow during dry months to maintain a 5.7-mile groundwater recharge area and keep water temperatures at an acceptable range for rearing steelhead.

The Fisheries and Aquatic Habitat Collaborative Effort (FACHE) was initiated to research the habitat needs of steelhead, collect information on the effects of different water releases and provide recommendations for managing in-stream habitats for steelhead populations given the constraints of this urban setting. In 2003 the Santa Clara Valley Water District signed a draft settlement agreement with the United States Department of the Interior, Fish and Wildlife Service (“FWS”), the United States Department of Commerce, National Marine Fisheries Service (“NMFS”), the California Department of Fish and Game (“DFG”), the Guadalupe-Coyote Resource Conservation District (“GCRCD”), Trout Unlimited, the Pacific Coast Federation of Fishermen’s Associations, and California Trout, Inc., to resolve disputes

regarding SCVWD's use of its water rights on Coyote, Guadalupe, and Stevens Creeks in Santa Clara County. This draft agreement was sought to improve degraded fish habitat in these three creeks. The agreement identified "Cold Water Management Zones" intended to support spawning and rearing and dam releases of sufficient volume and temperature to maintain juvenile steelhead. It also identified and prioritized fish passage barriers for removal. The quarry site is located within the important "Cold Water Management Zone" for steelhead.

The Central California Coast Steelhead was assigned a Recovery Priority Number of "3" and was based upon the high degree of threat, low-moderate recovery potential and anticipated conflict with development projects (NOAA Fisheries, 2007). The persistent population of steelhead, the preservation of much of the land around the corridor, the draft settlement agreement with the local flood control agency (SCVWD), and the inspiration of a local community (Cupertino) to restore and manage critical habitat creates a unique opportunity to recover steelhead in Stevens Creek. The federal endangered species listing, critical habitat and "Cold Water Management Zone" designations and recent efforts by Cupertino to restore steelhead habitat shines a bright light on all projects that have the potential to impact or enhance steelhead habitat along Stevens Creek. The trail alignments under consideration in this study represent such projects.

The in-stream habitat of Stevens Creek is also potential California red-legged frog and western pond turtle habitat. The red-legged frog is listed as threatened under the federal Endangered Species Act and is under the jurisdiction of the US Fish and Wildlife Service. The western pond turtle is a California Species of Special Concern. Western pond turtles are found in ponds, marshes, rivers, streams and irrigation ditches containing aquatic vegetation. They are usually seen sunning on logs, banks or rocks near banks. Individuals move up to three or four miles within a creek system, especially during "walk-about" before a female lays eggs. Eggs are laid in nest burrows that can be up to several hundred feet away from river or pond banks in woodlands, grasslands, and open forest. Eggs are laid from April-August; time varies with locality. Suitable riverine habitat for western pond turtles occurs within the project area as Stevens Creek contains escape cover such as deep pools, undercut banks, overhanging vegetation and in-stream tree roots.

Coast live oak woodland interwoven with chaparral occurs on the east and west wall of the quarry, over much of the knoll just above Linda Vista Park, and through the gulch that runs east-west from the quarry to Linda Vista Drive (along the south edge of Linda Vista Park). Coast live oak (*Quercus agrifolia*) the dominant tree, is found with a diversity of shrubs especially wild lilac (*Ceanothus thrisiflorous*), chemise (*Adenostoma fasciculatum*), manzanita (*Arctostaphylos spp.*), coyote bush (*Baccharis pilularis*) and toyon (*Heteromeles arbutifolia*), California blackberry (*Rubus ursinus*), poison oak (*Toxicodendron*



Black-tailed deer in velvet.

diversilobum, California sage (*Artemisia californica*), chaparral current (*Ribes malvaceum*), fuchsia flowered goosberry (*Ribes speciosum*), sticky monkeyflower (*Mimulus aurantiacus*), Indian warrior (*Pedicularis densiflora*) and woolly Indian paintbrush (*Castilleja foliolosa*). Black-tailed deer, bobcat, coyote, gray fox, raccoon, opossum and cottontail rabbit are typical mammal residents of this habitat. Over 125 species of birds have been identified in Stevens Creek County Park.

Deep Cliff Golf Course borders the west and north edges of Linda Vista Park. The golf course and the park land habitat of Linda Vista Park provided habitat primarily for human-habituated species, such as jays, robins, and California towhees. Herons and egrets may also frequent the golf course ponds and in-stream habitat of Stevens Creek, which flows through the golf course.

PARK OPERATIONS

STEVENS CREEK COUNTY PARK SANTA CLARA COUNTY PARKS AND RECREATION DEPARTMENT

The 1,077-acre Stevens Creek County Park adjoins the Parkside Trails property. This regional open space resource offers non-power boating on the 92-acre reservoir, picnic and trail facilities. Both group reservation and first come first serve picnic sites are available. Hikers, bicyclists and equestrians enjoy a variety of over 6 miles of single track and multi-use trails. Mountain bicycling is one of the more popular recreational activities at Stevens Creek County Park.



Indian warrior (Pedicularis densiflora) along the Coyote Ridge Trail.

The Parkside Trails property presents an opportunity to provide trail connections to the Chestnut and Villa Maria picnic areas. The Chestnut picnic area is available on a first-come first-served basis. The Villa Maria picnic area offers several first-come first-serve picnic sites and one large group reservation site. Hiking only footpaths serve these picnic areas. The Rim Trail, Coyote Ridge Trail and portions of the Stevens Creek Tony Look Trail serve as multiple use trails for hikers, mountain bicyclists and equestrians. The Rim Trail connects to the parking area serving the Chestnut Picnic area. Trails proposed through Parkside Trails property would need to be compatible with existing park and trail uses.

FREMONT OLDER OPEN SPACE PRESERVE MIDPENINSULA REGIONAL OPEN SPACE DISTRICT

The 739-acre Fremont Older Open Space Preserve also adjoins the Parkside Trails property. This regional open space resource offers 14.7 miles of trails for hikers, bicyclists and equestrians. Key destinations include the open hayfields, Seven Springs Canyon and Hunters Point, a 900-foot hilltop offering sweeping views of the Santa Clara Valley. The ridges to the west adjoin Stevens Creek County Park and drop steeply to Stevens Canyon. The multiuse Coyote Ridge Trail serves this area and can be accessed from the Stevens Creek Tony Look Trail in Stevens Creek County Park. Trails proposed through the Parkside Trails property were considered for compatibility with existing trail uses in the preserve.

STEVENS CREEK CORRIDOR PARK
CITY OF CUPERTINO

The 60-acre Stevens Creek Corridor Park includes Blackberry Farm Park, McClellan Ranch Preserve, Blackberry Farm Golf Course and the regional Stevens Creek Trail. Cupertino has undertaken significant work to upgrade park facilities, develop the Stevens Creek Trail and restore in-stream, riparian and oak woodland habitat along Stevens Creek. The corridor includes an environmental education center, reservation picnic areas, community gardens and Rolling Hills 4-H. The Stevens Creek Trail provides a multiple use, all-weather surface route serving bicyclists, joggers and walkers and offers a route to school for area students.

LINDA VISTA PARK
CITY OF CUPERTINO

The 11-acre Linda Vista Park offers a reservation picnic area, two play equipment areas for pre-school and elementary age children, a fitness station, footpaths and a large turf area. The Parkside Trails haul road property would provide a trail connection between these two parks.

TRAIL TYPES

Trail design guidelines were reviewed to assist in assessing the feasibility of constructing trails through the Parkside Trails property. Guidelines established by Caltrans and the Santa Clara County Parks and Recreation Department (County Parks) were used to determine trail requirements.

Caltrans defines three types of bikeway facilities each with specific dimensions and geometries: Bike Path, Bike Lane and Bike Route. Only the Bike Path guidelines apply to this feasibility investigation and are applied to the segment of trail between McClellan Road and Linda Vista Drive. A Bike Path (Class I Bikeway) is located off-street and serves the exclusive use of pedestrians and bicyclists. A Bike Path is defined as an exclusive right-of-way with cross flows by vehicles minimized (Caltrans, Highway Design Manual: Chapter 1000, 2012). The minimum width for a Class I Bikeway is 8 feet, 10-feet preferred, with minimum 2-foot shoulders on each side of the trail.

The 1995 *Santa Clara Countywide Trails Master Plan* defines three types of trail types: regional, sub-regional and connector trails. These definitions specify the purposes served by the various trail types. The Stevens Creek Trail is a sub-regional trail identified as Route S-2. Sub-regional trails offer regional recreation and transportation benefits by providing links for accessing rail stations, bus routes or park-and-ride facilities; continuity between cities; generally crossing a city or passing through more than one city or convenient long-distance trail loop opportunities by directly linking two or more regional trails to create an urban trail network.

Santa Clara Countywide Trail Design Guidelines are included as an appendix to the 1995 *Santa Clara Countywide Trails Master Plan*. These guidelines suggest "trail tread widths should be determined by the amount and intensity of trail use and field conditions such as topography, vegetation and sensitivity of environmental resources" (County of Santa Clara, 1995, Chapter 5, p. 70). Several of the Trail Design Guidelines have application for evaluating the feasibility of developing trails through the Parkside Trails property.

Trails proposed through the Parkside Trails quarry property would be routed through mountainous terrain that has been significantly altered by historic quarry operations. The routes would connect the more urban, all weather surface trail extending through the Stevens Creek Corridor Park to the rural, natural tread multiple use and hiking only trails in the regional park and open space lands. The character of the Stevens Creek Trail has mirrored each setting in which the trail has been developed. The Parkside Trail properties are a transition zone for the trail system.

This feasibility study considers three trail uses for connecting through the quarry property: shared-use trails serving bicyclists, equestrians and hikers; limited use trails serving bicyclists and hikers and single-use trails for hikers only. All of these trails would be constructed on natural surfaces. These three trail uses are evaluated for compatibility with existing trail uses in the park and open space lands and for constructability through the steep quarry landscape.

Shared-use Trails – Countywide Trails Master Plan Guideline G-3

Natural Tread - Double Track Trail for Equestrians, Hikers & Bicyclists recommends that a trail serving multiple uses in mountain areas meet an optimum width of 6 feet where average terrain slope is <30% and maximum trail grade is 12.5%. Trails exceeding this grade may need to augment lines of sight, add pullouts at suitable locations, use signage or may need to be reduced to 4 feet where the terrain slope is >30%.

Limited-use Trails – Countywide Trails Master Plan Guideline G-4

Natural Tread - Single Track Trail is designed, developed and managed for more than one, but not all types of users. Guideline G-4 recommends that a trail serving hiking and mountain bicycling uses in mountain areas meet an optimum width of 6 feet where the typical maximum trail grade is <12.5%. In situations where the slope is >12.5% trail tread width is narrowed to no less than 4 feet.

Single-use Trails – Countywide Trails Master Plan Guideline G-5

Natural Tread for Hikers recommends that trails in mountain areas meet an optimum width of 4 feet where the typical maximum trail grade is <12.5%.

Although these guidelines establish very specific tread width and surfacing types, they do not set a standard. They are simply one perspective for evaluating the feasibility of trail development. Ultimately, any route must be designed to accommodate the intended trail use and intensity of travel.



Stevens Creek Reservoir as viewed from a potential trail connection to the Coyote Ridge Trail.

ENGINEERED STRUCTURES

Engineered structures to reinforce trail beds and to span gullies, tributaries and narrow creek banks are proposed along the trail routes. These structures include pedestrian bridges, structural boardwalks, retaining walls and protective erosion control measures.



ACCESS POINTS

Access points provide a direct connection to the trail from neighborhoods, park and open space lands, public transportation and the roadway system. Access points accommodate users arriving at the trail under their own power.

STAGING AREAS

Staging areas are identified to accommodate trail users who wish to drive to a trailhead. Staging areas provide trail access, parking and trail amenities such as restrooms, drinking water, trail maps, etc. All of the proposed staging areas for the planned trail routes exist within city and regional parks. The proposed staging areas include Stevens Creek County Park, Fremont Older Open Space Preserve, McClellan Ranch Preserve and Linda Vista Park, which is the only staging area is proposed for expansion.

Woolly Indian paintbrush (Castilleja foliolosa).

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MCCLELLAN ROAD THROUGH LINDA VISTA PARK

The route between McClellan Road and Linda Vista Park is proposed as multi-use, all weather trail open to bicyclists, walkers, joggers and strollers. The trail is proposed as an 8 to 10-foot wide path. The trail surfacing could take several forms including asphalt paving, porous concrete or wood decking for elevated boardwalk sections or other all weather material to be specified during the development of construction drawings. The trail will extend approximately 0.70 miles from the McClellan Road to entrance of the quarry ravine trail. The distance is split equally between new trail created on the haul road and modifications to some of the Linda Vista Park pathways.

THE HAUL ROAD CONNECTION

The former quarry haul road provides a link between Linda Vista Park and McClellan Ranch Preserve. The haul road poses neighborhood privacy challenges to trail development. The haul road extends behind the backyards of homes located on Linda Vista Drive, Baxley Court, Evulich Court and Rae Lane. The abandoned road is depressed beneath the grade of these backyards. A number of design features are proposed with the trail alignment to enhance the security and privacy in this neighborhood.

The trail will extend approximately 0.35 miles between McClellan Road and Linda Vista Park through the 40-foot wide haul road property owned by Parkside Trails. The 40-foot wide haul road extends from the shared fence line downslope toward Deep Cliff Golf Course. The topography is level along the former haul road and is sloped below the haul road. The former roadbed, which currently varies from 5 to 10-feet wide, could be converted to an all-weather trail. Short retaining walls would be needed in areas to widen the haul road to accommodate the trail. Plantings could be installed on the slope between the trail and backyard fences to provide additional screening.

Residents expressed concern about privacy and security along this route during the 2002 trail feasibility study. As a result, the trail alignment proposed in 2002 was located downslope from the existing haul road toward Deep Cliff Golf Course. This alignment situated the trail approximately 20 feet from the haul road property line shared with adjacent single-family residences. This distance varies where the trail swings away from the top of the slope to protect significant, mature trees. This trail alignment option would close and revegetate the former roadbed with native shrubs and trees to create additional buffer between the trail and the homes that overlook Deep Cliff Golf Course. A trail using this slightly lower elevation alignment could be benched into the hillside with an upslope retaining wall or constructed as an elevated boardwalk along the hillside. A boardwalk would be built on drilled and cast piers or driven piles and include either a lightweight concrete or wooden deck. A trail benched into the hillside below the haul road would be constructed of an all weather trail surface.

Any of these design concepts would require a safety fence on the downslope side of the trail to prevent golf balls from reaching the trail. The boardwalk concept or use of the existing roadbed as the trail may protect more of the tree canopy located on the slope below the existing roadbed (*See Figure 1 – Haul Road Trail Alignment Options*). Costs for these four alternatives include \$1,255,000 for an asphalt trail on the former roadbed, \$1,810,000 for a concrete decked boardwalk, \$1,810,000 for asphalt trail benched below the haul road with low retaining wall and \$2,300,000 for a wooden decked boardwalk. A detailed study of this area will be required prior to design selection.

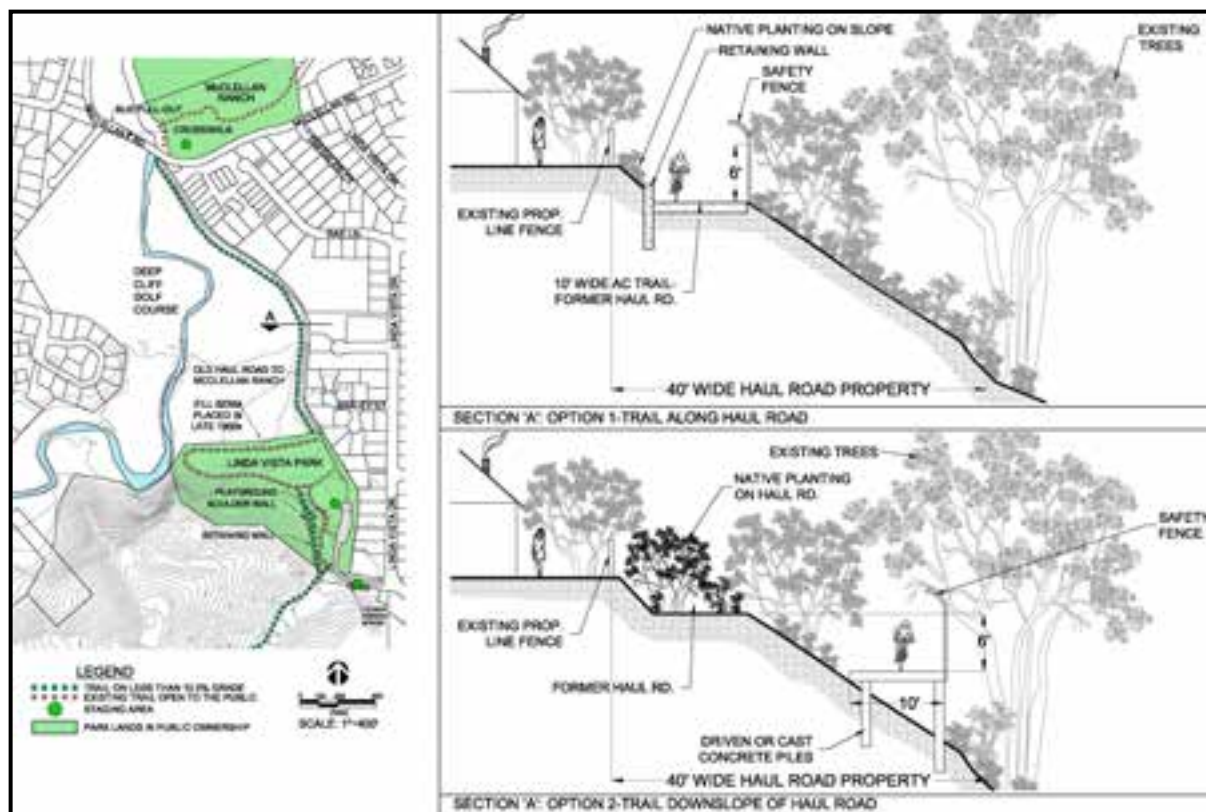


Figure 1 – Haul Road Trail Alignment Options

ROUTE THROUGH LINDA VISTA PARK

The trail alignment through Linda Vista Park would follow the southern perimeter of the park. The trail would share the existing park path adjacent to Deep Cliff Golf Course from the haul road to the picnic area. The intersection of the old haul road with Linda Vista Park will be closed and revegetated with native trees and shrubs.

A new section of trail is proposed to extend from picnic area to the ravine near the entrance of Linda Vista Park. The new trail would extend behind the playground. This stretch of trail would climb the hillside to reach the ravine trail proposed on the Parkside Trails property. A short, boulder gravity will be used to secure the trail in this erosion prone area. A vegetated buffer will be planted between the trail and the playground. A short stretch of new trail is also proposed from the play area to the ravine. This section of trail will require a short retaining wall to meet grade requirements. This alignment would take advantage of approximately 0.35 mile of existing pathways in Linda Vista Park to connect the gate located at the bottom of the ravine near the roadway entrance to Linda Vista Park (See Figure 2 – Trail through Linda Vista Park).

The trail will also provide a direct connection to Linda Vista Drive and to a new 12-car parking area proposed at the entrance to the park. The new parking is proposed on both City of Cupertino and Parkside Trails property. This new parking area would require a lot line adjustment to add the staging area property to Linda Vista Park (See Table 2 – Trail Improvements from McClellan Road through Linda Vista Park).

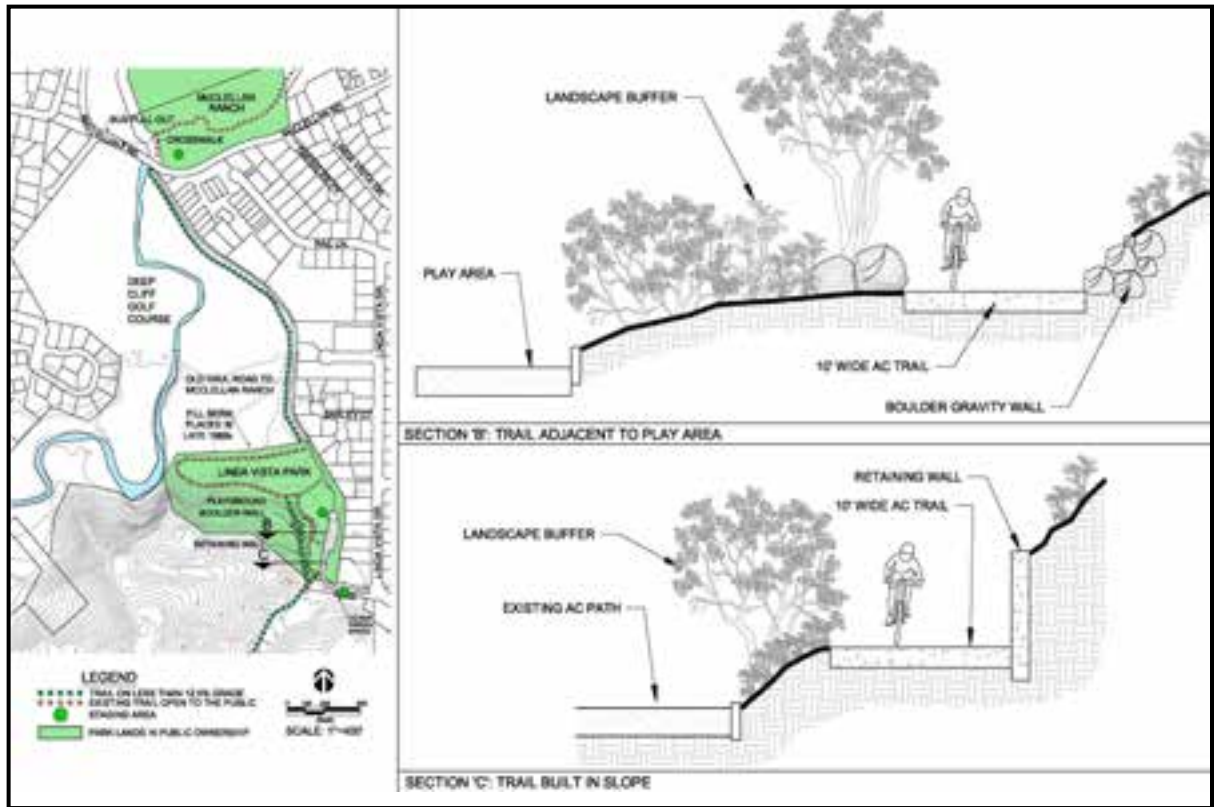


Figure 2 – Trail through Linda Vista Park

STAGING AREAS

Staging areas are planned to accommodate those who wish to drive to a trailhead. A staging area provides automobile parking, access to the trail and amenities such as restrooms, drinking fountains and signage. Linda Vista Park has 33 parking spaces and 2 handicapped accessible parking areas for a total of 35 parking stalls. The park is infrequently visited on weekdays, but can be very busy on weekends when events are scheduled at the group barbecue facility. A small staging area with 12 new parking spaces is proposed at the entrance to the park for trail users. The small parking area and trail extension would require a 4-foot high retaining wall. The footprint for the new parking is located on City of Cupertino land and property owned by Parkside Trails.

Trail Improvements from McClellan Road through Linda Vista Park	
Trail Routes	Miles
◆ All Weather 8' to 10' foot Multi-Use Path	<u>0.70</u>
Total	0.70
Access Points	Staging Areas
◆ Linda Vista Park	◆ Linda Vista Park
◆ Cupertino Swim and Racquet Club	◆ McClellan Ranch Preserve
◆ McClellan Road	
◆ McClellan Ranch Preserve	

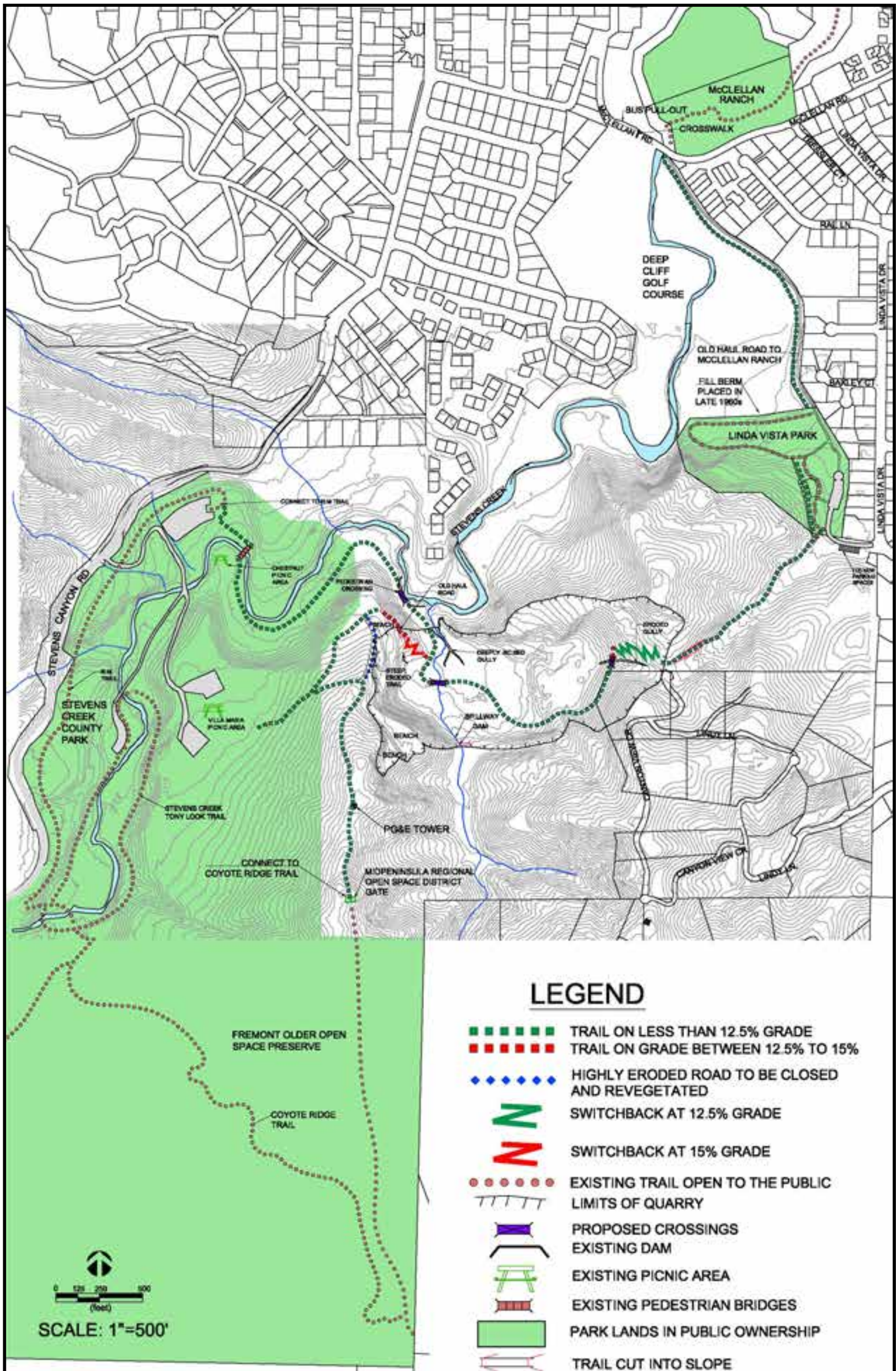
Table 2 – Trail Improvements from McClellan Road through Linda Vista Park

LINDA VISTA PARK TO REGIONAL PARK AND OPEN SPACE LANDS

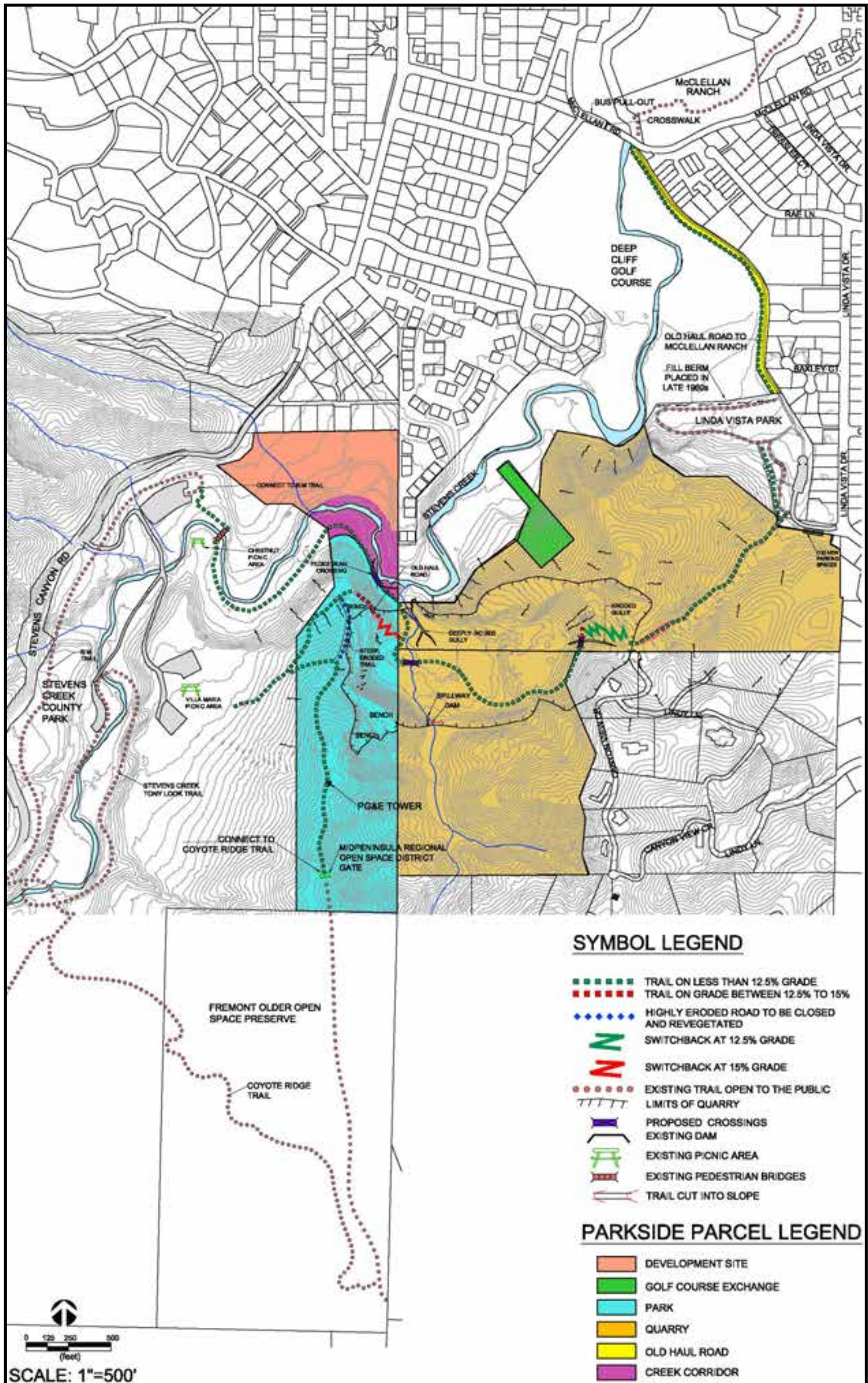
The closed quarry provides a link between Linda Vista Park and Stevens Creek County Park. There are three key challenges to trail design. The challenges include land ownership, steep topography and sensitive species and habitats. The land is privately owned by Parkside Trails. However, even with trail access through the property the site topography poses challenges to trail development. The steep, eroding quarry slopes are sparsely vegetated with native and introduced grasses and shrubs. Informal footpaths are found throughout the quarry. These footpaths do not meet trail design guidelines. The trail alignments proposed in this report encounter the same challenge in meeting accessibility guidelines due to the steepness of the quarry slopes. Unconsolidated fill remains along the eastern slope of the quarry. The edge of this fill is eroding and abruptly drops off to the floor of the quarry.

A tributary to Stevens Creek flows through the bottom of the quarry. Riparian vegetation, seasonal wetlands and grasslands dominate the quarry floor. This habitat may support the California red-legged frog (*Rana aurora draytonii*), a threatened species under the federal Endangered Species Act. Any trail grading activities must minimize sediment contribution to Stevens Creek and its tributary that flows across the quarry floor. Stevens Creek is critical habitat for the Central California Coast steelhead (*Oncorhynchus mykiss*), a threatened species under the federal Endangered Species Act.

A trail connecting Linda Vista Park to Stevens Creek County Park is proposed through the closed quarry. The route through the quarry is proposed as either a limited-use trail open to mountain bicyclists and hikers or a single-use trail for hikers only. Several shorter trail segments are also proposed to link the quarry trail to existing routes in Stevens Creek County Park and Fremont Older Open Space Preserve. These connecting trails are proposed as shared-use trails. These routes match the existing trail surfaces and use designations in these regional park and open space lands (See Map 3 – Trail Connections to Parks and Open Space Lands). Approximately 1.25 miles of a 4 to 6-foot wide natural tread, limited-use or single-use trail is proposed from Linda Vista Park to the Chestnut Picnic Area with a



Map 3 – Trail Connections to Park and Open Space Lands



Map 4 – Trail Connections by Property Parcels

connection to the shared-use Rim Trail. Approximately 0.25 mile of 4 to 6-foot wide natural surface, limited-use or single-use trail is proposed from the quarry floor up a series of switchbacks to the trail junction with the proposed route to the Coyote Ridge Trail. An approximately 0.50 mile 8 to 10-foot wide natural surface, shared-use trail is proposed to extend the Coyote Ridge Trail from the existing gate at the border of Fremont Older Open Space Preserve to Villa Maria picnic area in Stevens Creek County Park. The investigated trails are also highlighted by parcel on Map 4 (*See Map 4 – Trail Connections by Property Parcels*).

The 2002 *Stevens Creek Trail Feasibility Study* anticipated a limited-use trail through the quarry to provide recreation opportunities for mountain bicyclists and hikers. This type of trail use assumed remediation of the quarry, which was a component with the former school development proposal. There are no plans to remediate the entire quarry at this time. The steep terrain, gullied slopes and upper and lower benches of unconsolidated quarry spoils would be an attractive area for mountain bicyclists to “off-road” through the site. This type of unsanctioned use would potentially exacerbate erosion and create a land management challenge. The limited-use trail was also envisioned to connect to similar trail uses in Stevens Creek County Park and Fremont Older Open Space Preserve, which serve mountain bicyclists, hikers and equestrians. Ultimately, the type of trail use through the quarry will be dictated by a variety of factors including subsurface geotechnical investigations, opportunities to remediate the quarry and an assessment of recreation potential by future land management agencies.

LIMITED-USE TRAIL TO STEVENS CREEK COUNTY PARK

The adjacent park and open space lands owned and operated by Santa Clara County Parks and Recreation Department (Stevens Creek County Park) and Midpeninsula Regional Open Space District (Fremont Older Open Space Preserve) primarily serve hikers, mountain bicyclists and equestrians. Mountain bicycling is one of the more popular recreational activities. The segment of the Stevens Creek Tony Look Trail that extends along the east bank of creek through the county park is designated as a shared or multi-use route. Other portions of this trail that extend along the reservoir are designated as either a footpath for hiking only or as limited-use for equestrians and hikers. Access through the quarry would provide a connection to the multi-use Stevens Creek Tony Look, Coyote Ridge and Rim Trails. Trail connections could also be made to the Chestnut and Villa Maria picnic areas and associated parking areas.

The route between Linda Vista Park and Stevens Creek County Park is proposed to extend from the entrance of Linda Vista Park near Linda Vista Drive up a heavily vegetated ravine to the saddle of the quarry rim between the north and east faces of the cut quarry slopes. This saddle is located near the end of Canyon View Circle near Lindy Lane. This 4 to 6-foot wide trail alignment follows a moderately steep ravine and requires the removal of chaparral vegetation for trail construction. The route would be located below the Coast live oak trees and above the centerline of the ravine to avoid impacting the hillside drainage pattern. The trail climbs from Linda Vista Park in a southwesterly direction approximately following an existing informal path located on a former quarry haul road on the eastern slope of the ravine. The trail climbs through the Unnamed Sandstone Formation approximately 0.25 miles to the saddle of the quarry rim (*See Figure 3 – Trail from Linda Vista Park to Stevens Creek County Park*). At the rim of the quarry the trail would enter the Santa Clara Formation. Several approaches to sustaining a maximum 12.5% grade have been considered.

CHAPTER 4 – INVESTIGATED TRAIL ALIGNMENTS

Trailbed Cuts

Cuts along the route could be employed to maintain a steep trail grade of 12.5%. Potential cut locations are indicated on Figure 3 – Trail from Linda Vista Park to Stevens Creek County Park.

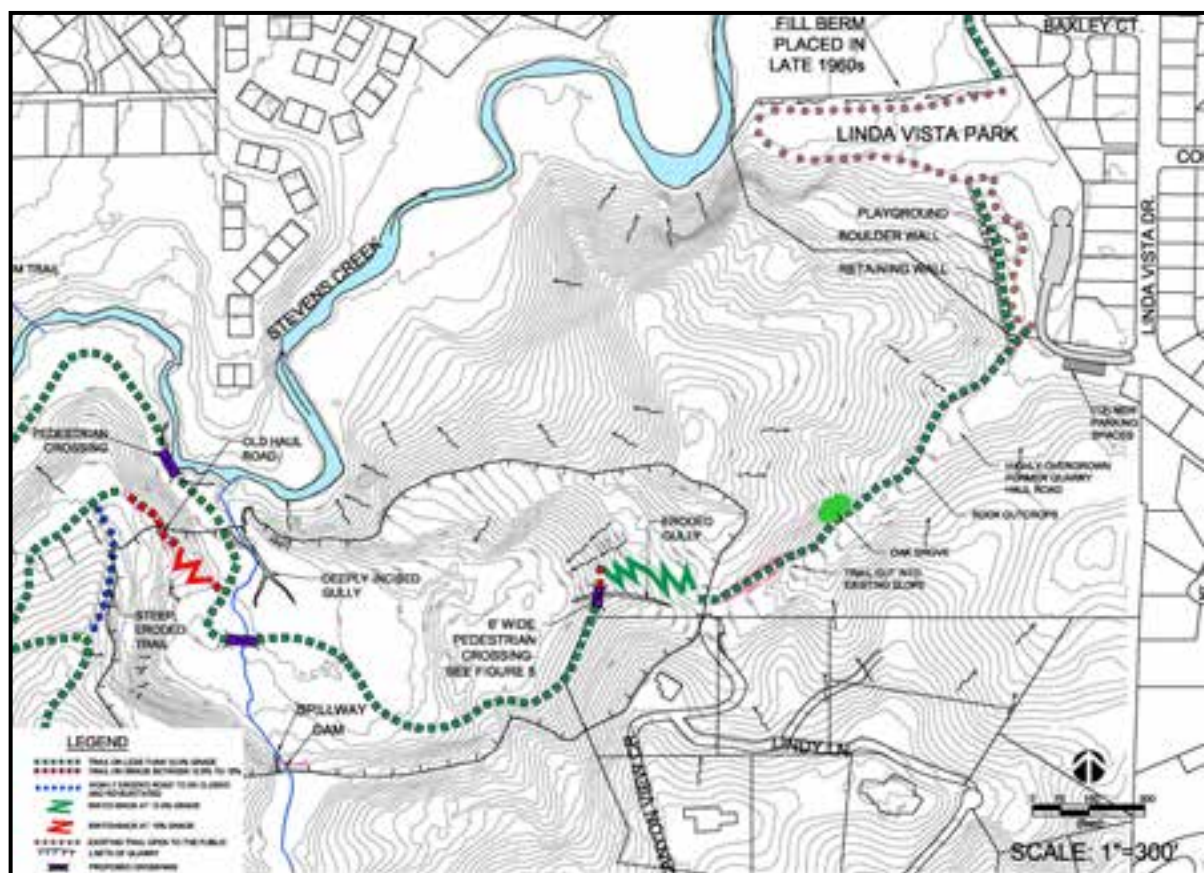
Fill Addition to Trailbed

Segments of the trail could also be raised with the addition of fill material.

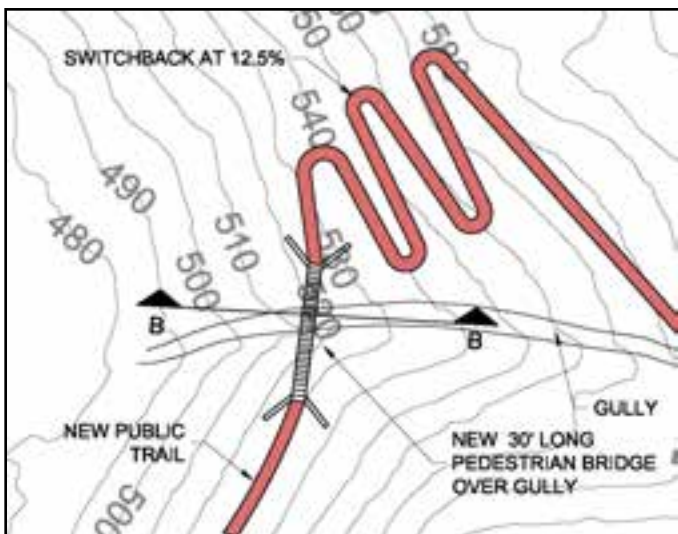
Combination Cut and Fill

The use of both cut and fill may provide opportunities to minimize the need to cut into the underlying sandstone, create rolling grade dips to reduce erosion and finesse the trail grade over the distance of the climb.

Additional geotechnical investigations will be required to determine the most appropriate design of the trail climbing the ravine (*See Chapter 5 – Implementation*).



See Figure 3 – Trail from Linda Vista Park to Stevens Creek County Park



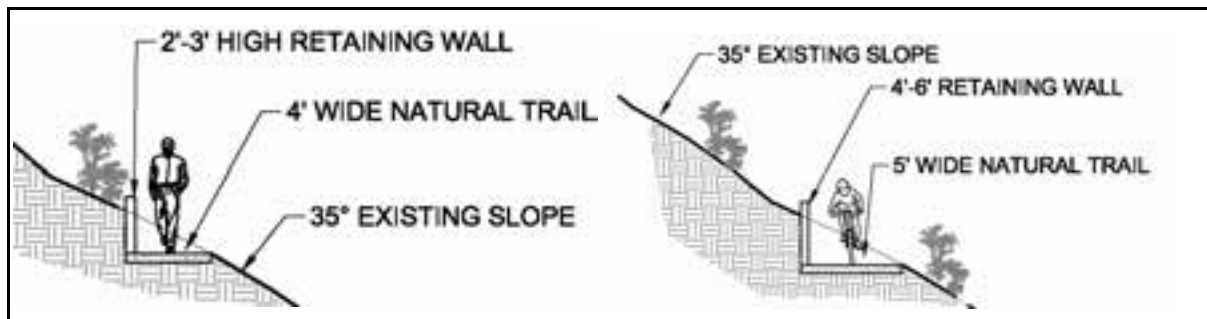
The trail descends 0.25 miles from the saddle to the quarry floor. The route descends from the ridgeline on series of switchbacks to an approximately 30-foot wide footbridge that crosses an eroded gully near the bottom of the slope (See Figure 4 – Switchbacks to Footbridge Spanning Gully). Surface water should be diverted from the switchbacks by outloping the trail tread between 2% to 3% where feasible and establishing water-bars to prevent flow along the trail alignment. The switchbacks connect to an existing footpath located along the eastern slope of the quarry.

Figure 4 – Switchbacks to Footbridge Spanning Gully



Location of switchbacks descending from saddle on eastern ridge.

After crossing the gully the trail continues down the eastern slope of the quarry descending to the floor of the quarry (See Figure 5 – Retaining Wall Options along Steep Eastern Quarry Slope). The preferred design alternative utilizes a short, retaining wall along the upslope side of the trail to create an approximate 4 to 6 foot wide trail. A higher retaining wall will provide for additional trail width to accommodate both hiking and mountain bicycling.



See Figure 5 – Retaining Wall Options along Steep Eastern Quarry Slope

The trail along the quarry floor has been aligned to minimize impacts to potential wetlands and to avoid the eroding cut slope and resulting debris fan on the southwest corner of the quarry. A wetland delineation will be required to more accurately site the trail alignment across the quarry floor (See Chapter 5 – Implementation).



This 35% cut slope requires the use of a retaining wall to minimize trail grading.

The Narrow Creek Bank Constraint and Trail Design Options

Upon reaching the quarry floor the trail is routed in two directions. The route across the quarry floor requires a short footbridge over a drainage that flows to Stevens Creek. One route from the quarry floor exits the mouth of quarry and parallels the stream until reaching an existing footbridge to cross the Stevens Creek at the Chestnut picnic area in Stevens Creek County Park. This approximately 0.75 mile trail would connect with the multi-use Rim Trail and parking lot serving the Chestnut picnic area.

This 4 to 6-foot wide trail alignment passes by an overly steepened eroding creek bank. Geologic Cross Section B-B' illustrates a highly constrained portion of the trail alignment located on a narrow remaining portion of an alluvial terrace (Qt2) with a precipitous native slope to the west and a precipitous creek embankment to the east (*See Appendix A – Plate 1: Engineering Geologic Map*). The local creek bank is located along the outside bend of a meander and erosional scour is anticipated to result in additional bank retreat toward the desired trail alignment in the future. A variety of trail design options were evaluated for this constrained location. Cost estimates for each of the options are provided. These estimates do not capture the regulatory environment complexity, but do provide a general sense of the level of effort associated with construction.



Limited Lifespan Trail

The proposed trail could be shifted to the western side of the terrace surface and may survive for several years in this position. Eventually winter storm conditions will result in significant flows within the Stevens Creek channel resulting in oversteepening of the creek bank and consequent bank failures that will encroach towards and beneath the trail. At that point, specific mitigation could be evaluated and implemented to re-establish the trail. The time period that the trail alignment would remain intact would be entirely weather dependent. This option is not recommended.

The narrow, undercut bank is approximately 20 feet above Stevens Creek. This constrained area requires an engineered solution to the trail crossing.

Westward Shifted Trail Alignment

Approximate 1:1 (horizontal:vertical) slopes are present to the west of the trail. The trail alignment could be shifted to the west approximately 8 feet with construction of an 8-foot high retaining wall along the western side of the trail. Considering that the local precipitous creek bank is greater than 25 feet in height, and could be subject to large bank failures over a single wet winter season, the benefit of constructing significant retaining walls to gain an incremental increase in trail life does not appear desirable or cost effective. The provided cost estimate of \$85,000 is based on installation of an 8-foot wall of 48 feet in length and off-haul of graded earth materials from the site.

Creek Bank Scour Mitigation

Creek scour near the pinch point could be reduced by modifications along the edge of the creek channel. A combination of logs anchored by cables and strategically placed large rock could help to armor the meander bend that is currently prone to scour. However, to avoid significant damage to local riparian habitat, construction of bank protective measures should avoid access along the creek corridor. It should be possible to crane construction supplies into the creek channel and assemble bank-armoring measures with reduced disturbance. While armoring measures will reduce ongoing scour, these measures will not improve the stability of the existing oversteepened bank. It is anticipated that the bank will fail back towards the trail over time to achieve a more stable slope profile. This mitigation measure to minimize creek bank scour would require the involvement of all regulatory and resource agencies. The cost estimate of \$60,000 is based on 175 feet of bank scour protection.

Stitch Pier Protection

Deep reinforced concrete cassions could be installed between the edge of the trail and the creek bank. Proper spacing of the cassions (stitch piers) would allow development of soil arching between these structural elements. Cassions would need to be embedded a significant depth below the creek channel. Over time, ongoing scour would expose the upper portions of the concrete cassions (above the level of the creek). Such engineering design measures may not achieve approval from regulatory agencies and would present construction challenges in mobilizing required large drilling equipment, cranes, and concrete to the site. This design measure would require the involvement of all regulatory and resource agencies. The provided cost estimate of \$150,000 is based on a stitch pier structure of 60 feet in length. This option is not recommended.

Structural Boardwalk

A structural boardwalk could be constructed over a length of approximately 70 feet centered on the pinch point location. The boardwalk could be supported approximately 1 foot above grade like a bridge with foundation abutments at each end. Surface flow would thereby not be impeded by the boardwalk. Over time, ongoing creek scour and bank retreat could advance beneath the center of the boardwalk without impacting the viability of the trail alignment. Essentially the boardwalk would become a bridge and side railings could be added for safety. The provided cost estimate of \$160,000 is based on a 6-foot wide structure with pier-support abutments and free-span of 70 feet.

Combination Design

The most effective mitigation for the trail pinch point would be combined use of a moderate Westward Shifted Trail Alignment, a reduced length Structural Boardwalk and Creek Scour Mitigation. These combined methods would likely provide a trail lifespan near the pinch point exceeding 75 years. The lengths of the retaining wall and structural boardwalk could both be reduced when used in combination. The provided cost estimate of \$235,000 is based on 175 lineal feet of bank scour protection, a 6-foot tall retaining wall of 30 feet in length, and a structural boardwalk of 50 feet in length (*See Figure 6 – Combined Design Structural Boardwalk Spanning Narrow Bank between Stevens Creek and Slumping Canyon Wall*).

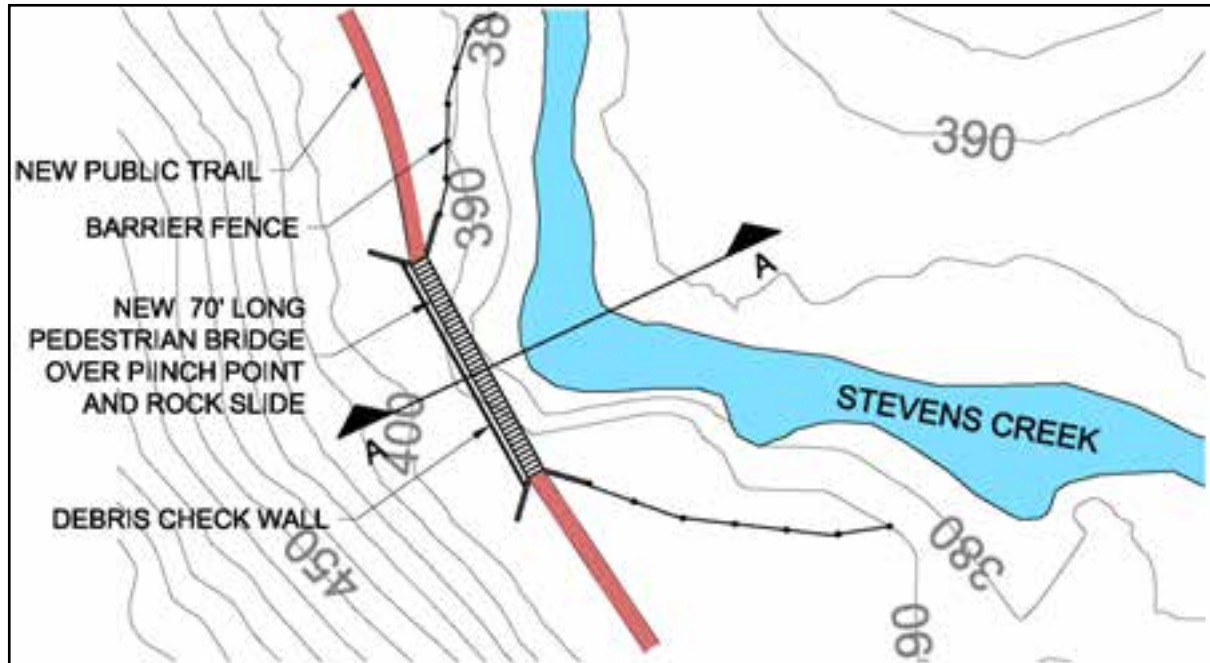


Figure 6 – Combined Design with Structural Boardwalk Spanning Narrow Bank between Stevens Creek and Slumping Canyon Wall.

A westward shifted trail with check wall and a rustic, structural boardwalk at a minimum is recommended in this location. The abutments for this 6-foot wide bridge would be generously spaced to provide a longer than necessary bridge span. The longer span would allow the canyon wall to naturally continue to slump and contribute sediment to Stevens Creek. The boardwalk would be sized at the time of trail development but would range between 50 and 70 feet in length. The boardwalk will provide views into the creek corridor and the area surrounding the approaches will be fenced and signed to keep park visitors from the edge of the creek bank (See Figure 7 – Cross-section at Narrow Creek Bank).

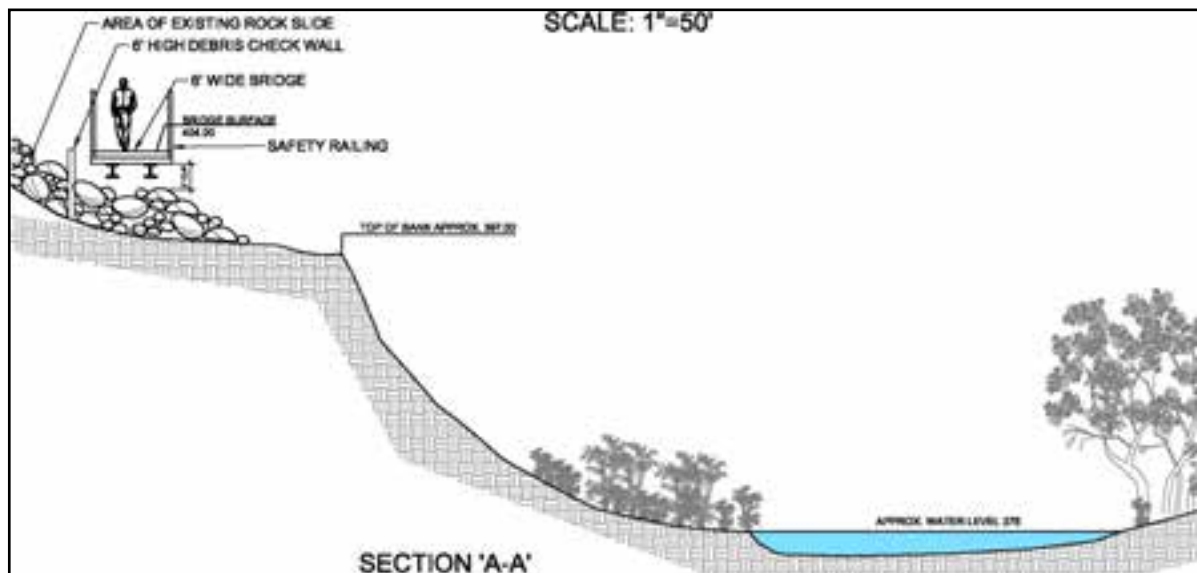


Figure 7 – Cross-Section at Narrow Creek Bank.

LIMITED-USE TRAIL TO VILLA MARIA PICNIC AREA

The second route proposed across the quarry floor is also a 4 to 6-foot wide limited-use trail. This trail climbs the west slope of the quarry on series of steep switchbacks using portions of a former haul road to reach the edge of the quarry at approximately the 500-foot contour. This route requires recontouring the approach and adding fill to the outslope of the former haul road. These combined measures will improve trail grades. The approximately 0.25 mile trail then climbs using an existing volunteer path and wraps around the ridgeline to join a wider volunteer path at the 560-foot contour that extends from the Villa Maria picnic area to the Coyote Ridge Trail.

SHARED-USE TRAIL TO FREMONT OLDER OPEN SPACE PRESERVE

An 8 to 10-foot wide volunteer path that extends from Villa Maria picnic area to the ridgeline would serve as a shared-use trail connection to the Coyote Ridge Trail. The shared-use trail connection is approximately 0.50 miles and would extend from Villa Maria picnic area to the existing MROSD gate on the ridgeline at the edge of Fremont Older Open Space Preserve. Trail users could also descend the trail to reach the Villa Maria picnic area. The Coyote Ridge Trail provides access to Fremont Older Open Space Preserve.



The area of volunteer footpath on the left would be recontoured to provide trail switchbacks.

The extension of the shared-use Coyote Ridge Trail to the Villa Maria picnic area will require some trailbed work to modify grades and capture and redirect water flow. Water is sheeting down the existing roadbed from approximately the PG&E tower to the large bench on the southwestern face of the quarry. The water flows is scouring the road and results in

concentrated discharge across precipitous quarry slopes that can trigger debris flow type slope failures. Water should be redirected off the upper roadbed at multiple locations to minimize development of concentrated channelized flow. There is opportunity for the addition of rolling grade dips near the beginning of this descent. The remainder of the route will need additional measures possibly including knicks and waterbars.



Erosion of the existing ridgeline road must be addressed to secure the trail and reduce the potential for slumping and shallow landslides off the southwestern quarry slopes.

TRAIL ABANDONMENT AND TRAILBED RESTORATION

The road along the ridgeline that serves as the Coyote Ridge Trail extends past the MROSD gate, PG&E power tower and then curves along the ridgeline to descend to Villa Maria picnic area. At this curve, a volunteer footpath abruptly descends off the nose of the ridge. This footpath is overly steep and has been eroded by the uncontrolled flow coming off the roadbed above. Several large flat cut quarry benches are located in this area. Steep eroding cut slopes drop precipitously from these benches to the bottom of the quarry floor. Erosion in these areas is exacerbated by runoff eroding this roadbed and flowing across the benches and riling down the cut quarry faces. This directed water flow is eroding the slopes and causing deeper gullies on the quarry floor. The sediment from this erosion is eventually entering Stevens Creek at the mouth of the quarry.

Closure and revegetation of the steep, volunteer footpath should be a component of trail development. This will help to reduce slope failures and minimize sediment contributions to

Stevens Creek. Work in this area will include modest grading to redirect water flows and the placement of natural woody debris to discourage visitor access and support revegetation activities. The entire trail bed and shoulders should be replanted using watershed specific native vegetation.

Eliminating visitor access to the cut quarry benches should also be a priority. The area adjacent to the access road should be recontoured to minimize erosion and provide substrate for revegetation plantings intended to deter visitor access. This area may also require fencing depending upon the design. Closure of this entire area will minimize this attractive nuisance.

The trailbed abandonment, erosion control and elimination of visitor access to the cut quarry benches should be undertaken several years prior to opening the site to allow the newly planted vegetation to establish and grow (See Table 3 – Trail Improvements from Linda Vista Park to Regional Park and Open Space Lands).

Trail Improvements from Linda Vista Park to Regional Park and Open Space Lands	
Trail Routes	Miles
◆ Natural Surface 4' to 6' Hiking/Mountain Biking Trail	0.50
◆ Natural Surface 4' to 6' Hiking/Mountain Biking Trail	0.75
◆ Natural Surface 4' to 6' Hiking/Mountain Biking Trail	0.25
◆ Natural Surface 8' to 10' Multi-Use Trail	<u>0.50</u>
Total	2.00
Access Points	Staging Areas
◆ Linda Vista Drive	◆ Linda Vista Park
◆ Linda Vista Park	◆ Villa Maria Picnic Area in
◆ Villa Maria Picnic Area in County Park	Stevens Creek County Park
◆ Chestnut Picnic Area in County Park	◆ Chestnut Picnic Area in
◆ Coyote Ridge Trail	Stevens Creek County Park

Table 3 – Trail Improvements from Linda Vista Park to Regional Park and Open Space Lands

STAGING AREAS

Staging Areas are planned to accommodate those who wish to drive to a trailhead. A staging area provides automobile parking, access to the trail and amenities such as restrooms, drinking fountains and signage. Several of the staging areas are located at existing parks situated along the trail route.

Linda Vista Park has 33 parking spaces and 2 handicapped accessible parking areas for a total of 35 parking stalls. The park is infrequently visited on weekdays, but can be very busy on weekends when events are scheduled at the group barbecue facility. A small staging area

with 12 new parking spaces is proposed at the entrance to the park for trail users. The small parking area and trail extension would require a 4-foot retaining wall.

Staging areas are also located at the Chestnut and Villa Maria picnic areas in Stevens Creek County Park. These parking areas will serve as staging areas for trail users wishing to access the new routes proposed through the quarry. A \$6.00 per vehicle entrance fee is collected by the Santa Clara County Parks and Recreation Department for parking. No fee is collected for individuals who walk or bicycle into the park.

REJECTED ALTERNATIVES

Two alternatives for reaching the quarry floor from Linda Vista Park were rejected from further consideration. A knoll route was proposed from the upper picnic area in Linda Vista Park to the top of the eastern side of the quarry using two long switchbacks. This route was abandoned due to a longer climb and close proximity to steep drops both into the quarry and off the escarpment above Deep Cliff Golf Course. A trail route that skirted the edge of Deep Cliff Golf Course was evaluated, but eliminated from further consideration due to lack of land and impact to habitat.

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FUTURE TECHNICAL STUDIES FOR TRAIL DEVELOPMENT

The trail alignments presented in this report have been developed to a schematic level to assess feasibility and develop budget estimates for trail development through the altered landscape of the quarry and connecting haul road. Detailed design studies will be required to further assess many of the issues daylighted in this report. These studies will likely to include:

US ARMY CORPS OF ENGINEERS WETLAND DELINEATION

A jurisdictional delineation depicting the extent and location of wetlands and other waters of the United States must be undertaken to determine if the proposed trail alignments within the quarry will fall under the jurisdiction of the U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act.

GEOTECHNICAL INVESTIGATIONS

Geotechnical investigations including subsurface testing will be needed at specific locations including the saddle on the eastern ridge, the gully below the saddle, the narrow bank along Stevens Creek, crossing the southeastern quarry slope, grading design of the widened ramp ascending the western quarry wall and other minor grading designs for steep slope transitions. These investigations are needed to fully assess the design parameters and determine the best geotechnical design approach for footbridges, structural boardwalks and retaining walls and areas of engineered fill placement.

BIOLOGICAL SURVEYS

Sensitive Species

Selected biological surveys for sensitive species should be conducted in advance of trail development to guide trail placement and design. Baseline surveys for California red-legged frog (*Rana draytonii*), Western pond turtle (*Actinemys marmorata*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), bat roosts and nesting raptors should be undertaken within the project area. San Francisco dusky-footed woodrat were observed on the site walks. A number of raptors within the Stevens Creek watershed are California Species of Special Concern including the Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), white-tailed kite (*Elanus leucurus*) and long-eared owl (*Asio otus*). Stevens Creek is considered critical habitat for the federally threatened Central California Coast steelhead (*Oncorhynchus mykiss*). The species is known to spawn and rear in Stevens Creek. The creek corridor adjacent to the site is designated as both critical habitat and a coldwater management zone.

Surveys should also explore the potential for nesting yellow warblers (*Dendroica petechial*), a California Species of Special Concern, in the willow thickets colonizing the quarry floor. Western leatherwood (*Dirca occidentalis*), a California Native Plant Society List 1B-2 species, is known to occur in Stevens Creek County Park. Surveys for this plant should be undertaken in the appropriate habitat for this rare species.

Biological Assessment

In addition to conducting baseline biological surveys for sensitive species, the trail projects may trigger the need for a Biological Assessment to determine whether trail construction and use may affect listed or proposed species and designated and proposed critical habitat. A Biological Assessment may be needed for either the federally threatened California red-legged

frog (*Rana draytonii*) or federally threatened Central California Coast steelhead (*Oncorhynchus mykiss*). A Biological Assessment would be required to support regulatory permitting.

Tree Survey

A tree survey should be conducted in any areas where tree removal is anticipated. The tree survey should be undertaken in advance of design to provide an opportunity to protect trees in place and determine trees that must be removed and mitigated. Many the species along the trail alignments are identified as “protected trees” in the City of Cupertino’s Protected Tree Ordinance.

SURFACE MINING CONTROL AND RECLAMATION ACT (SMCRA) JURISDICTIONAL ISSUES

Our review of historic stereo-pair aerial photographs and other background research materials reveals that active quarrying of the McDonald-Dorsa quarry began in the late-1950s and ended by 1971. In 1975, the State of California enacted the *Surface Mining and Reclamation Act of 1975 (SMARA)*, which sought to help regulate surface mine disturbance and require appropriate reclamation of surface mining activities during and after quarrying. In August 1977, a federal law was passed to help regulate surface mining and reclamation of surface mines, and is referred to as the *Surface Mining Control and Reclamation Act of 1977 (SMCRA)*. It is our understanding that the California Department of Conservation and Office of Mine Reclamation (OMR) have jurisdiction over surface mining activities and are responsible for implementing SMARA. Based upon our review of SMARA, and discussions with members of the OMR, provided that mining at the McDonald-Dorsa Quarry ended prior to implementation of the law in January 1976, SMARA does not apply. Specifically, Public Resources Code Section 2776 of the law states:

“The reclamation plan is required to be filed under subdivision (b) of Section 2770, shall apply to operations conducted after January 1, 1976. Nothing in this chapter shall be construed as requiring the filing of a reclamation plan for, or the reclamation of, mined lands on which surface mining operations were conducted prior to January 1, 1976.”

Prior to a stakeholder assuming responsibility for this property, SMARA and SMCRA jurisdictional issues should be reviewed by legal council to assure that these laws do not apply, or that other environmental or water quality issues stemming from past mining are evaluated.

ENVIRONMENTAL SITE ASSESSMENT

In 2013 Cornerstone Earth Group conducted a Phase 1 Environmental Site Assessment for the Parkside Trails properties. This report concluded that quarry uses are not typically associated with the use and storage of hazardous materials, with the exception of fuel for machinery. No hazardous material were observed on-site or found within available records. This report noted considerable unconsolidated fill on the quarry floor that could potentially contain buried structures, wells or debris that may require special handling and disposal. Cupertino may wish to further explore the fill material on the quarry floor with special emphasis on areas planned for construction.



Staff exploring the quarry.

INTERAGENCY COLLABORATION

Cupertino has actively engaged Santa Clara County Parks and Recreation Department and Midpeninsula Regional Open Space District in discussions regarding the potential to provide public access through the Parkside Trails property. Any access through the property would logically connect to lands managed by one or both of these agencies. Staff from both agencies provided guidance on the content of the feasibility study and potential uses of the property both informally during site visits and through written communications. Continued collaboration is critical to the implementation, operation and management of any future trails.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REVIEW, REGULATORY REVIEW AND PERMITTING

Any trail plan through the former quarry will require review under the California Environmental Quality Act (CEQA), a review process intended to provide the public and both trustee and responsible agencies with an opportunity to provide comment on the project. Trustee agencies are state agencies that have authority by law for the protection of natural resources held in trust for the public. Responsible agencies are those that have some responsibility or authority for carrying out or approving a project. In many instances, these public agencies must make a discretionary decision to issue a local permit or provide right-of-way, funding or resources that are necessary for the trail project to proceed. In this instance, the California Department of Fish and Wildlife (CDFW) and Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) may be considered responsible agencies.

Parts of the project may occur in a “waters of the United States” and have the potential to affect both regulated wetland areas under the federal Clean Water Act (CWA) and special-status species under the federal Endangered Species Act (ESA). Specifically, if the project requires a dredge and fill permit (CWA §404) the United States Army Corps of Engineers (USACE) will have the responsibility to determine the conditions of issuance. This federal action under the CWA cannot be taken until USACE receives certification from the Regional Board (CWA §401) and has consulted with the United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) as to whether its action or the project could impact a federally protected endangered species.

On a state level, the RWQCB has regulatory authority over wetlands and waterways under both the federal Clean Water Act (CWA) and the State of California’s Porter-Cologne Water Quality Control Act (California Water Code, Division 7). Under the CWA, the RWQCB has regulatory authority over actions in waters of the United States, through the issuance of water quality certifications (certifications) under Section 401 of the CWA, which are issued in combination with permits issued by the Army Corps of Engineers (ACOE), under Section 404 of the CWA. Activities that lie outside of ACOE jurisdiction may also require the issuance of either individual or general waste discharge requirements (WDRs) from the RWQCB.

Any one of these environmental review actions could potentially trigger a wider review of

the quarry property. The quarry is known to contribute sediments to Stevens Creek, which is designated as critical habitat for steelhead under the federal Endangered Species Act. Stevens Creek exceeds the total maximum daily load (TMDL) for sediment and this may be cause for regulatory agencies to more closely examine any project proposed in the quarry. These are areas of inquiry that may require further discussion prior to the assuming trail easements or land dedications.

The development of trails between McClellan Road and Stevens Creek County Park may require project-specific permitting (*See Table 4 – Summary of Agency Permits*).

Summary of Agency Permits	
Agency	Permit Required
U.S. Army Corps of Engineers	CWA §404 (33 U.S.C. 1344) Permit if wetlands or other waters of the US are dredged or filled
U.S. Fish & Wildlife Service	ESA §7 (50 CFR part 402) consultation, as determined by USACE for possible red-legged frog or other ESA species
National Oceanic and Atmospheric Administration National Marine Fisheries Service	ESA §7 consultation, as determined by USACE for Central California Coast steelhead
California Regional Water Quality Control Board, San Francisco Bay Region	CWA §401 (33 U.S.C. 1341) Water Quality Certification; and CWA §402(p) (33 U.S.C. 1342) General Permit for Construction
California Department of Fish and Wildlife	Streambed Alteration Agreement (Code §1602), and compliance with the State Endangered Species Act (Fish and Game Code §2080) and Nesting Bird Protection Codes (Fish and Game Code §3503)
Santa Clara Valley Water District	Encroachment Permit for Creek Bank Measures if SCVWD assumes ownership of the “creek corridor” parcel
City of Cupertino	Building Permits, Tree Removal Permit

Table 4 – Summary of Agency Permits

BUDGET ESTIMATES OVERVIEW

The preliminary budget estimates for developing the trails through the Parkside Trails property are based upon the alignments and conceptual engineering options. The estimates were determined by calculating quantities and applying unit costs to these quantities. The unit costs were developed by looking at range of recently awarded trail construction costs that included clear span pedestrian bridges, trail paving in asphalt, boardwalks, retaining walls, native plant landscaping and revegetation, mitigation and restoration, erosion control measures and typical trailside amenities.

The figures should be viewed as rough budget estimates based upon conceptual level design without the benefit subsurface investigations, biological surveys or a wetland delineation. These trail construction budget estimates include some costs for addressing erosion associated with the proposed trail alignments and future trail construction activities. These costs do not address remediation of the entire quarry property. These estimates are for standard materials that fulfill the functional requirements of the design. Different construction materials may be selected during design. The selection of unique materials may alter budget estimates. Costs for technical investigations associated with each of the trails are identified as line items in the budget estimates. The construction budget estimates assume favorable site conditions based upon a preliminary assessment of conditions along the haul road and within the quarry.

Due to the preliminary nature of a trail feasibility study a 20% design contingency and a 15% construction contingency are applied to the construction subtotals to capture the uncertainties associated with the conceptual alignments and engineering options. Annual cost escalations have not been included in the budget estimates.

CONSTRUCTION BUDGET ASSUMPTIONS

The budget estimates reflect current trail design standards including Caltrans Highway Manual, Americans with Disabilities Act (ADA) Standards for Accessible Design and Santa Clara County Uniform Inter-jurisdictional Trail Design, Use and Management Guidelines. The budget estimates are based on various types of trail uses, tread widths and surfacing materials. These estimates include design fees, engineered structures, trailbed development, native plant restoration and basic trail amenities including gates, fencing and signage.

The trail along the haul road and through Linda Vista Park is based upon a 10-foot wide all weather trail that meets ADA guidelines. Trails through the quarry are assumed to be 6 feet wide. Structural boardwalks and footbridges through the quarry site are based on a 6-foot wide trail. In some instances, the steep quarry slopes may limit these structures to a 4-foot width. The widest potential trail width is used to provide more accurate cost estimating. The extension of the Coyote Ridge Trail is assumed to be 8 feet wide. Trails are assumed to meet grade guidelines for mountainous terrain of <12.5%. Areas that may not meet these grades are identified on the alignment maps. Costs throughout the quarry are driven in large part by attempting to meet grade guidelines. Steeper trails would require less engineering and result in lower costs.

CONSTRUCTION BUDGET UNCERTAINTIES

The budget estimates do not include costs for a large-scale remediation of prior quarry activities such as restoration of the quarry slopes and drainages to more natural landform conditions. Trail development within the quarry may trigger other requirements to restore natural resources and reduce sediment flowing into Stevens Creek. These items are not addressed within the trail feasibility study, but could include significant modifications to

the quarry slopes, management of existing unconsolidated fill on the quarry floor and restoration of the tributary creek that flows through the quarry.

The budget estimates do not address potential mitigation measures associated with trail development that may be determined in the course of conducting the environmental review under California Environmental Quality Act (CEQA). The assumptions include no impact to archeological or cultural resources, no need to dewater Stevens Creek and relocate aquatic resources, no other special measures to protect wildlife and no discovery of hazardous materials within the quarry.

The trail budgets do not assume any grant funding although many grant sources are available for trail development and have been successfully secured by Cupertino for other projects. Grant funds offset construction costs but also require staff time for administration and auditing.

PROJECT DELIVERY BUDGET ESTIMATES

The budget estimates include estimates for internal costs associated with delivering construction projects. These costs include technical studies, environmental review under CEQA, permitting, project management, design and engineering, construction management and project testing and inspections.

BUDGET FOR FUTURE TECHNICAL STUDIES

A number of additional investigations are needed to inform the trail design. These include:

Geotechnical Investigations	\$80,000-\$90,000
Wetland Delineation	\$15,000-\$20,000
Sensitive Species Surveys	\$20,000-\$30,000
Tree Survey	\$10,000-\$30,000
Estimated Technical Studies Costs	\$125,000-\$170,000

These studies would guide the design of the trails and engineering features and provide background material for CEQA documents. The estimated cost identified above reflects the budget for future technical studies if all trail segments were developed at the same time. The estimated cost for future technical studies would increase if the trail segments were developed separately, as reflected in each trail budget summary table.

BUDGET FOR CEQA DOCUMENT PREPARATION AND REGULATORY PERMITTING

The most cost effective approach for the preparation of the CEQA document would be the development of a single document that addresses all the trails within the Parkside Trails properties. The budgets prepared for this report assume a single document. Regulatory permitting is likely only needed for the trail extending across the quarry floor.

Initial Study/Mitigated Negative Declaration	\$105,000-\$125,000
Biological Assessment Report for Permitting	\$15,000-\$20,000
Permit Application Preparation/Consultations	\$20,000-\$30,000
Estimated CEQA and Permitting Costs	\$140,000-\$175,000

The estimated cost identified above reflects the budget for CEQA document preparation and regulatory permitting if all trail segments were developed at the same time. The estimated cost for CEQA document preparation and regulatory permitting would increase if the trail segments were developed separately, as reflected in each trail budget summary table.

BUDGET ESTIMATE SUMMARIES**McClellan Road through Linda Vista Park**

The construction cost for completing the trail along the haul road is estimated between \$3,555,000 and \$5,270,000 depending upon the location within the 40-foot wide property and choice of construction materials (*See Table 5 – Trail Segment A: Haul Road Construction Budget Estimates*). Construction budget estimates are provided for a trail along the existing haul road and downslope of the haul road. Costs for haul road trail construction have been primarily driven by elements to enhance privacy of nearby residences and protect trail users from golf balls from Deep Cliff Golf Course. Four different design alternatives and associated costs are provided for consideration. Construction materials range from asphalt paving along the haul road, asphalt paving on a benched trail below the haul road and an elevated, lightweight concrete or wood decked trail structure weaving through the trees on the slope below the haul road. Wood decking would require more long-term maintenance. This estimate also includes the addition of 12 new parking spaces near the entrance to Linda Vista Park. The haul road route would require geotechnical investigations, but no regulatory permits are anticipated.

The cost for park and trail improvements through Linda Vista Park to the entry gate at the ravine which leads to the quarry is estimated at \$980,000 (*See Table 6 – Trail Segment B: Linda Vista Park and Trail Improvements Construction Budget Estimates*). Improvements to existing pathways and new trails behind the playground are included in the budget estimates.

Linda Vista Park through the Quarry to the Chestnut Picnic Area and Rim Trail

The design and construction estimate for completing the trail from the entry gate at the ravine through the quarry to the Chestnut picnic area in Stevens Creek County Park is estimated to be \$3,925,000. These costs include trail grading, switchbacks, trailbed improvements, retaining walls, a bridge spanning a pinch point near Stevens Creek and trail amenities. Costs for trail development through the quarry are driven in large part by attempts to meet to trail guidelines for mountainous terrain in the highly altered landscape of the unremediated quarry. Long switchbacks supported by retaining walls, recontouring of some quarry fill and boardwalks spanning gullies were evaluated to meet maximum trail grades. The efforts to meet trail grade guidelines and the existing conditions within the quarry drive the costs associated with these routes. Steeper, more challenging trail grades would require less engineering and result in lower costs. The route across the quarry would require numerous geotechnical investigations and likely require regulatory permitting associated with wetlands and proximity to Stevens Creek (*See Table 7 – Trail Segments C and D: Ravine and Quarry Floor Trails Construction Budget Estimates*).

Spur Trail to the Coyote Ridge Trail Extension

The design and construction estimates for extending a trail up the west slope of the quarry to connect to the Coyote Ridge Trail is estimated to be \$1,105,000. This route would require geotechnical investigations and likely require regulatory permitting associated with wetlands (*See Table 8 – Trail Segment E: Spur Trail Construction Budget Estimates*).

Coyote Ridge Trail Extension to Villa Maria Picnic Area

The design and construction estimates for extending the Coyote Ridge Trail from the existing gate at Fremont Older Open Space Preserve to the Villa Maria picnic area is estimated to be \$475,000. This estimate includes grading and drainage improvements, water management and areas of trail closure and restoration to eliminate visitor access to the quarry cut benches perched above the steep quarry slopes (*See Table 9 – Trail Segment F: Coyote Ridge Trail Extension Construction Budget Estimates*).

Trail Segment A: Summary of Haul Road Construction Budget Estimates

HAUL ROAD OPTION 1 – TRAIL ALONG HAUL ROAD	
AC Trail (1,800 feet)	\$ 400,000
Upslope Check Walls (spot locations)	\$ 50,000
Golf Ball Protection Fence (1,800 feet)	\$ 400,000
Slope Plantings (8,000 SF)	\$ 50,000
New Parking Area – 12-spaces	\$ 165,000
Clear and Grub	\$ 70,000
Mobilization 10%	\$ 120,000
Subtotal Haul Road Option 1	\$1,255,000
HAUL ROAD OPTION 2 – TRAIL DOWNSLOPE – BENCHED TRAIL WITH RETAINING WALL	
Benched AC Trail with Retaining Wall (1,800 feet)	\$ 800,000
Golf Ball Protection Fence (1,800 feet)	\$ 400,000
Haul Road Restoration and Plantings (18,000 SF)	\$ 100,000
New Parking Area – 12-spaces	\$ 165,000
Clear and Grub	\$ 180,000
Mobilization 10%	\$ 165,000
Subtotal Haul Road Option 2	\$1,810,000
HAUL ROAD OPTION 3 – TRAIL DOWNSLOPE – LIGHTWEIGHT CONCRETE DECK BOARDWALK*	
Lightweight Concrete Decked Boardwalk (1,800 feet)	\$ 975,000
Golf Ball Protection Fence (1,800 feet)	\$ 400,000
Haul Road Restoration and Plantings (18,000 SF)	\$ 100,000
New Parking Area – 12-spaces	\$ 165,000
Clear and Grub	\$ 180,000
Mobilization 10%	\$ 165,000
Subtotal Haul Road Option 3	\$1,985,000
*Use of wood decking would increase boardwalk cost to \$1,245,000.	
Subtotal Range of Construction Options	\$1,255,000-\$1,985,000
Habitat Restoration, Irrigation and Tree Replacement	\$ 150,000
Trail Amenities and Signage	\$ 50,000
Construction Subtotal	\$1,455,000-\$2,185,000
Design Contingency 20%	\$ 290,000-\$435,000
Design and Construction Subtotal	\$1,745,000-\$2,620,000
Construction Contingency 15%	\$ 260,000-\$395,000
Construction Subtotal	\$2,005,000-\$3,015,000
Technical Studies	\$ 70,000
CEQA and Permitting	\$ 80,000
Project Management 20%	\$ 400,000-\$600,000
Design and Engineering 30%	\$ 600,000-\$905,000
Construction Management 15%	\$ 300,000-\$450,000
Testing and Inspections 5%	\$ 100,000-\$150,000
Project Delivery Subtotal	\$1,550,000-\$2,255,000
Total Haul Road	\$3,555,000-\$5,270,000

Table 5 – Trail Segment A: Haul Road Construction Budget Estimates

Trail Segment B: Summary of Linda Vista Park and Trail Improvements Construction Budget Estimates	
LINDA VISTA PARK AND TRAIL IMPROVEMENTS	
Improvements to Linda Vista Pathways (1,935 feet)	\$ 40,000
Boulder Gravity Wall < 2 feet High (100 feet)	\$ 10,000
Retaining Wall <4 feet High (115 feet)	\$ 30,000
Trail Paving along Walls behind Play Area (350 feet)	\$ 175,000
Clear and Grub	\$ 50,000
Mobilization 10%	\$ 30,000
Habitat Restoration, Irrigation and Tree Replacement	\$ 40,000
Trail Amenities and Signage	<u>\$ 20,000</u>
Improvements Subtotal	\$ 395,000
Design Contingency 20%	\$ 80,000
Design and Construction Subtotal	\$ 475,000
Construction Contingency 15%	<u>\$ 70,000</u>
Construction Subtotal	\$ 545,000
Technical Studies	\$ 30,000
CEQA and Permitting	\$ 20,000
Project Management 20%	\$ 110,000
Design and Engineering 30%	\$ 165,000
Construction Management 15%	\$ 82,000
Testing and Inspections 5%	<u>\$ 28,000</u>
Project Delivery Subtotal	\$ 435,000
Total Linda Vista Park and Trail Improvements	\$ 980,000

Table 6 – Trail Segment B: Linda Vista Park and Trail Improvements Construction Budget Estimates

Trail Segments C and D: Summary of Ravine and Quarry Floor Trails Construction Budget Estimates	
RAVINE TRAIL TO QUARRY FLOOR BUDGET ESTIMATE	
Trail Bed Grading and Offhaul Sandstone Cut (1,340 feet)	\$ 50,000
Trail Bed Improvement – Place 12" Quarry Material On Trailbed in Unknown Sandstone Formation	\$ 20,000
Switchbacks (700 feet)	\$ 20,000
Water Management at Eroded Gully	\$ 50,000
Trail Retaining Wall (150 feet x 3 feet)	\$ 100,000
Footbridge (30 feet)	\$ 60,000
Trail Grading (400 feet)	\$ 10,000
Trail Retaining Wall (400 feet x 4 feet)	\$ 360,000
Clear and Grub	\$ 80,000
Mobilization 10%	<u>\$ 70,000</u>
Subtotal Ravine to Quarry Floor	\$ 820,000
QUARRY FLOOR TO CHESTNUT PICNIC AREA BUDGET ESTIMATE	
Trail Bed Grading Quarry Floor (1,500 feet)	\$ 25,000
Footbridge (8 feet)	\$ 25,000
Combination Design at Narrow Creek Bank	\$ 235,000
Trail Bed Grading Chestnut Area (1,960 feet)	\$ 30,000
Puncheon approaching Chestnut Picnic Area	\$ 15,000
Clear and Grub	\$ 35,000
Mobilization 10%	<u>\$ 40,000</u>
Subtotal Quarry Floor to Picnic Area	\$ 405,000
Subtotal Construction	\$1,225,000
Erosion Control, Habitat Restoration and Tree Replacement	\$ 300,000
Trail Amenities and Signage	<u>\$ 60,000</u>
Construction Subtotal	\$1,585,000
Design Contingency 20%	\$ 320,000
Design and Construction Subtotal	\$1,905,000
Construction Contingency 15%	<u>\$ 285,000</u>
Construction Subtotal	\$2,190,000
Technical Studies	\$ 70,000
CEQA and Permitting (Wetland Delineation, Biological Surveys and Biological Assessment)	\$ 130,000
Project Management 20%	\$ 440,000
Design and Engineering 30%	\$ 655,000
Construction Management 15%	\$ 330,000
Testing and Inspections 5%	<u>\$ 110,000</u>
Project Delivery Subtotal	\$1,735,000
Total Ravine and Quarry Floor Trails	\$3,925,000

Table 7 – Trail Segments C and D: Ravine and Quarry Floor Trails Construction Budget Estimates

TRAIL SEGMENT E: SUMMARY OF SPUR TRAIL CONSTRUCTION BUDGET ESTIMATES

SPUR TRAIL WITH SWITCHBACKS	
Recontour Haul Road using On-site Quarry Materials	\$ 300,000
Switchbacks (700 feet)	\$ 20,000
Trail Bed Grading to Trail Junction (675 feet)	\$ 20,000
Clear and Grub	\$ 20,000
Mobilization 10%	\$ 35,000
Habitat Restoration and Tree Replacement	\$ 40,000
Trail Amenities and Signage	\$ 20,000
Improvements Subtotal	\$ 455,000
Design Contingency 20%	\$ 90,000
Design and Construction Subtotal	\$ 545,000
Construction Contingency 15%	\$ 80,000
Construction Subtotal	\$ 625,000
Technical Studies	\$ 20,000
CEQA and Permitting	\$ 25,000
Project Management 20%	\$ 125,000
Design and Engineering 30%	\$ 185,000
Construction Management 15%	\$ 95,000
Testing and Inspections 5%	\$ 30,000
Project Delivery Subtotal	\$ 480,000
Total Spur Trail	\$1,105,000

Table 8 – Trail Segment E: Spur Trail Construction Budget Estimates

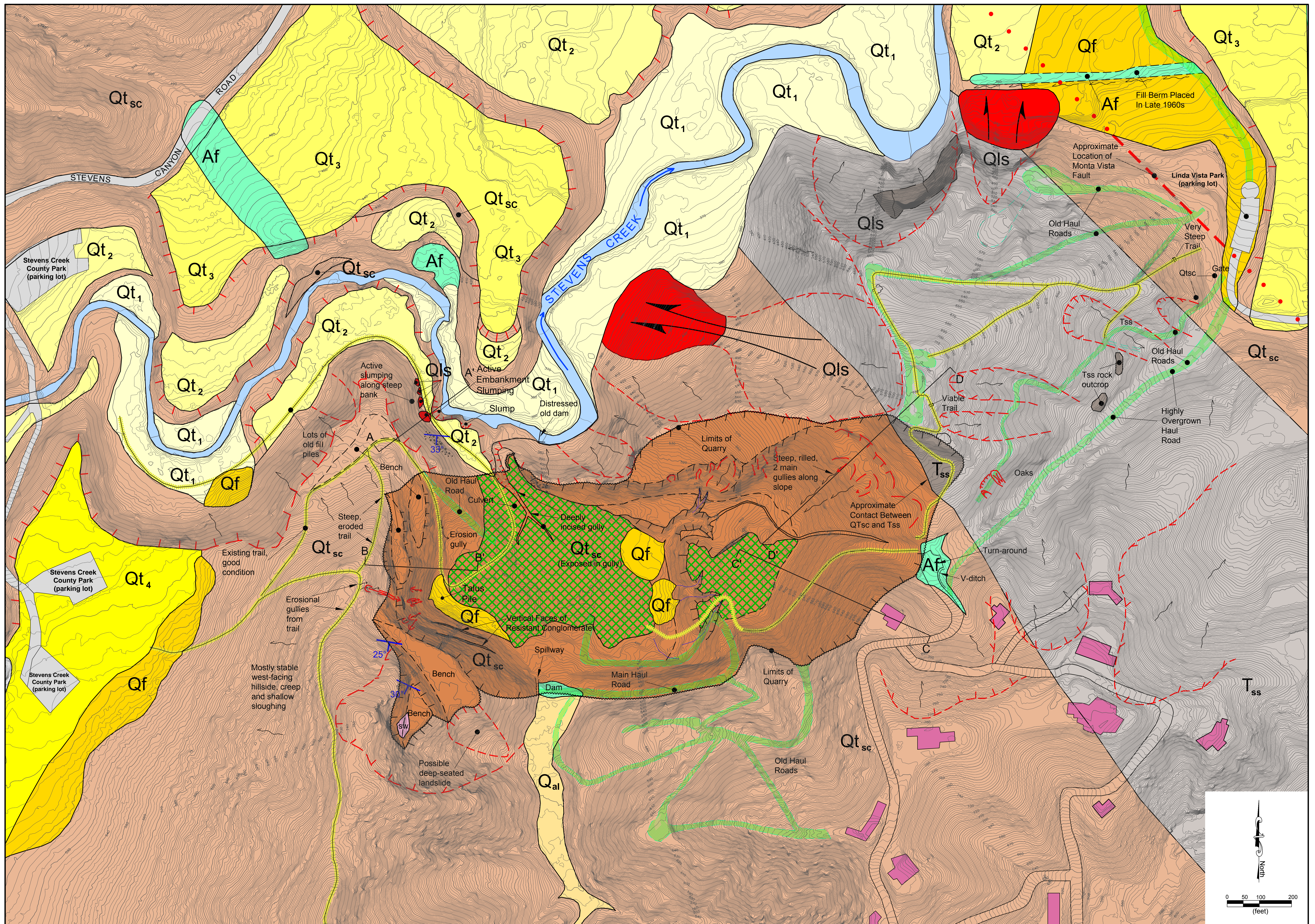
TRAIL SEGMENT F: SUMMARY OF COYOTE RIDGE TRAIL EXTENSION CONSTRUCTION BUDGET ESTIMATES	
COYOTE RIDGE TRAIL EXTENSION	
Grading and Drainage Improvements to Trail (2,270 feet)	\$ 35,000
Water Management (1,340 feet)	\$ 30,000
Trail Closure and Restoration (410 feet)	\$ 25,000
Trail Brushing	\$ 5,000
Mobilization 10%	\$ 10,000
Habitat Restoration and Tree Replacement	\$ 40,000
Trail Amenities and Signage	<u>\$ 20,000</u>
Improvements Subtotal	\$ 175,000
Design Contingency 20%	\$ 35,000
Design and Construction Subtotal	\$ 210,000
Construction Contingency 15%	<u>\$ 30,000</u>
Construction Subtotal	\$ 240,000
Technical Studies	\$ 20,000
CEQA and Permitting	\$ 20,000
Project Management 20%	\$ 50,000
Design and Engineering 30%	\$ 70,000
Construction Management 15%	\$ 35,000
Testing and Inspections 5%	<u>\$ 10,000</u>
Project Delivery Subtotal	\$ 235,000
Total Coyote Ridge Trail Extension	\$ 475,000

Table 9 – Trail Segment F: Coyote Ridge Trail Extension Construction Budget Estimates

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Plate 1 – Engineering Geologic Map



Surficial Materials

- Af** Artificial Fill
- Qf** Slope Wash and Alluvial Fan Deposits
- Qls** Landslide Deposits
- Qal** Alluvium
- Qt₁** Younger Terrace Deposits, subscript denotes relative age of terrace
- Qt₂**
- Qt₃**
- Qt₄** Older

Bedrock Materials

- Qt_{sc}** Santa Clara Formation Mostly Concealed by Shallow Soil
- Qt_{sc}** Santa Clara Formation Bedrock Exposed in Old Quarry
- T_{ss}** Unnamed Sandstone Mostly Concealed by Shallow Soil
- T_{ss}** Unnamed Sandstone Bedrock Exposure

EXPLANATION

Map Symbols

- Geologic Contact
- Limits of Quarry
- Fault
- Topographic Scarp
- Landslide, and Landslide Scarp

- Existing Residence
- Surficial Creep & Shallow Soughing
- Bedrock Stratification Orientation
- Cross Section Location
- Old Quarry Floor
- Existing Trail
- Old Haul Roads

COTTON, SHIRES AND ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

ENGINEERING GEOLOGIC MAP
Parkside Trail
CUPERTINO, CALIFORNIA

GEO/ENG BY AM/MD/JW	SCALE 1"=100'	PROJECT NO. C0338
APPROVED BY JW	DATE MARCH 2014	PLATE NO. 1