County of Santa Cruz

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR
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NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION
NOTICE OF PUBLIC REVIEW AND COMMENT PERIOD

Pursuant to the California Environmental Quality Act, the following project has been reviewed by the County Environmental Coordinator to determine if it has a potential to create significant impacts to the environment and, if so, how such impacts could be solved. A Negative Declaration is prepared in cases where the project is determined not to have any significant environmental impacts. Either a Mitigated Negative Declaration or Environmental Impact Report (EIR) is prepared for projects that may result in a significant impact to the environment.

Public review periods are provided for these Environmental Determinations according to the requirements of the County Environmental Review Guidelines. The environmental document is available for review at the County Planning Department located at 701 Ocean Street, in Santa Cruz. You may also view the environmental document on the web at www.sccoplanning.com under the Planning Department menu. If you have questions or comments about this Notice of Intent, please contact Matt Johnston of the Environmental Review staff at (831) 454-3201

The County of Santa Cruz does not discriminate on the basis of disability, and no person shall, by reason of a disability, be denied the benefits of its services, programs or activities. If you require special assistance in order to review this information, please contact Bernice Romero at (831) 454-3137 (TDD number (831) 454-2123 or (831) 763-8123) to make arrangements.

PROJECT: MT. HERMON YOUTH RECREATION CENTER
APP #: 131234
APN(S): 071-331-05, 071-331-06
PROJECT DESCRIPTION: The project is a proposal to construct an approximately 12-acre outdoor recreational/educational facility to include a ropes course, a mountain bike course, community garden, splash pool, sports field, a 6,673 square foot retail/recreation building, a 7,425 square foot day camp and classroom, and four utility structures totaling 1,492 square feet. A small bridge is also proposed to cross an existing swale. Proposed earthwork consists of 10,830 cubic yards of excavation and 17,068 cubic yards of fill. Requires a Development Permit, Soils Report Review, Biotic Report Review, Archaeological Report Review, Riparian Exception, Preliminary Grading Approval, and a Variance to allow a structure to be constructed to a height of 62 feet.
PROJECT LOCATION: Property is located on the north side of Graham Hill Road at the intersection with Conference Drive.
EXISTING ZONE DISTRICT: SU (Special Use)
APPLICANT: Dale Pollock
OWNER: Mount Hermon Association
PROJECT PLANNER: Robin Bolster-Grant, (831) 454-5357
EMAIL: Robin.Bolster-Grant@santacruzcounty.us
ACTION: Negative Declaration with Mitigations
REVIEW PERIOD: August 21, 2014 through September 19, 2014

This project will be considered at a public hearing by the Planning Commission. The date, time and location have not yet been set. When scheduling does occur, these items will be included in all public hearing notices for the project.

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MITIGATED NEGATIVE DECLARATION

Project: Mt. Hermon Youth Recreation Center **APN(S): 071-331-05, 071-331-06**

Project Description: Proposal to construct an approximately 12-acre outdoor recreational/educational facility to include a ropes course, a mountain bike course, community garden, splash pool, sports field, a 6,673 square foot retail/recreation building, a 7,425 square foot day camp and classroom, and four utililty structures totaling 1,492 square foot. A small bridge is also proposed to cross an existing swale. Proposed earthwork consists of 10,830 cubic yards of excavation and 17,068 cubic yards of fill. Requires a Development Permit, Soils Report Review, Biotic Report Review, Archaeological Report Review, Riparian Exception, Preliminary Grading Approval, and a Variance to allow a structure to be constructed to a height of 62 feet. .

Project Location: The project is located on the north side of Graham Hill Road at the intersection with Conference Drive in Scotts Valley.

Owner: Mount Hermon Association

Applicant: Dale Pollock

Staff Planner: Robin Bolster-Grant, (831) 454-5357

Email: Robin.Bolster-Grant@santacruzcounty.us

This project will be considered a public hearing by the Planning Commission. The date, time and location have not yet been set. When scheduling does occur, these items will be included in all public hearing notices for the project.

California Environmental Quality Act Mitigated Negative Declaration Findings:

Find, that this Mitigated Negative Declaration reflects the decision-making body's independent judgment and analysis, and; that the decision-making body has reviewed and considered the information contained in this Mitigated Negative Declaration and the comments received during the public review period; and, that revisions in the project plans or proposals made by or agreed to by the project applicant would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur; and, on the basis of the whole record before the decision-making body (including this Mitigated Negative Declaration) that there is no substantial evidence that the project as revised will have a significant effect on the environment. The expected environmental impacts of the project are documented in the attached Initial Study on file with the County of Santa Cruz Clerk of the Board located at 701 Ocean Street, 5th Floor, Santa Cruz, California.

Review Period Ends: September 19, 2014

Note: This Document is considered Draft until it is Adopted by the Appropriate County of Santa Cruz Decision-Making Body

Date: 8/19/14

TODD SEXAUER, Environmental Coordinator
(831) 454-3511

County of Santa Cruz

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CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ENVIRONMENTAL REVIEW INITIAL STUDY

Date: July 25, 2014 **Application Number:** 131234

Staff Planner: Robin Bolster-Grant

I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

APPLICANT: Dale Pollock c/o Mount Hermon Association **APN(s)**: 071-331-05, 071-331-06

OWNER: Mount Hermon Association **SUPERVISORAL DISTRICT**: 5th

PROJECT LOCATION: Project located on the north side of Graham Hill Road at the intersection with conference Drive.

SUMMARY PROJECT DESCRIPTION:

Proposal to construct an approximately 12-acre outdoor recreational/educational facility to include a ropes course, a mountain bike course, community garden, splash pool, sports field, a 6,673 square foot retail/recreation building, a 7,425 square foot day camp and classroom, and four utility structures totaling 1,492 square feet. A small bridge is also proposed to cross an existing swale. Proposed earthwork consists of 10,830 cubic yards of excavation and 17,068 cubic yards of fill. Requires a Development Permit, Soils Report Review, Biotic Report Review, Archaeological Report Review, Riparian Exception, Preliminary Grading Approval, and a Variance to allow a structure to be constructed to a height of 62 feet.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: All of the following potential environmental impacts are evaluated in this Initial Study. Categories that are marked have been analyzed in greater detail based on project specific information.

- ☐ Geology/Soils
- ☒ Hydrology/Water Supply/Water Quality
- ☒ Biological Resources
- ☐ Agriculture and Forestry Resources
- ☐ Mineral Resources
- ☒ Visual Resources & Aesthetics
- ☐ Noise
- ☐ Air Quality
- ☐ Greenhouse Gas Emissions
- ☐ Public Services
- ☐ Recreation
- ☐ Utilities & Service Systems

- ☐ Cultural Resources
- ☐ Hazards & Hazardous Materials
- ☐ Transportation/Traffic
- ☐ Land Use and Planning
- ☐ Population and Housing
- ☐ Mandatory Findings of Significance

DISCRETIONARY APPROVAL(S) BEING CONSIDERED:

- ☐ General Plan Amendment
- ☐ Land Division
- ☐ Rezoning
- ☒ Development Permit
- ☐ Coastal Development Permit
- ☒ Grading Permit
- ☒ Riparian Exception
- ☒ Other: Height Variance

NON-LOCAL APPROVALS: None

DETERMINATION: (To be completed by the lead agency)
On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Todd Sexauer
Environmental Coordinator

8/19/14
Date

II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS

Parcel Size: 14.8 acres (combined)
Existing Land Use: Vacant acreage
Vegetation: Non-native grassland, oak forest, and chaparral
Slope in area affected by project: ☒ 0 - 30% ☒ 31 – 100%
Nearby Watercourse: Zayante Creek; San Lorenzo River
Distance To: Approximately 100 feet east; 750 feet south

ENVIRONMENTAL RESOURCES AND CONSTRAINTS

Water Supply Watershed: Entire site mapped

Groundwater Recharge: No mapped resource

Timber or Mineral: No mapped resource

Agricultural Resource: No mapped resource

Biologically Sensitive Habitat: Riparian corridor associated with ephemeral drainage at the southwest corner of property; several mapped species: Biotic Report submitted

Fire Hazard: None mapped

Floodplain: Not mapped

Erosion: Moderate Potential (Attachment 3)

Landslide: Artificial fill slope at northwest of site; Geotechnical report submitted; low potential for slope failure (Attachment 3)

Liquefaction: Portion mapped; Geotechnical Report submitted; no identified constraint (Attachment 3)

Fault Zone: None mapped

Scenic Corridor: Mapped constraint; prominent project features located outside corridor

Historic: No mapped resource

Archaeology: Report submitted; no resources identified

Noise Constraint: No constraints

Electric Power Lines: No hazard

Solar Access: Available

Solar Orientation: Available

Hazardous Materials: Low potential

Other:

SERVICES

Fire Protection: Felton Fire Protection District

School District: San Lorenzo Valley

Sewage Disposal: Private septic system proposed

Drainage District: Zone 8

Project Access: Graham Hill Rd.

Water Supply: San Lorenzo Valley Water District

PLANNING POLICIES

Zone District: SU (Special Use)

General Plan: R-UVL (Urban Very Low Residential)

Urban Services Line: ☐ Inside ☒ Outside

Special Designation: Felton Town Plan

Coastal Zone: ☐ Inside ☒ Outside

ENVIRONMENTAL SETTING AND SURROUNDING LAND USES:

The subject property is located on a vacant parcel in Felton. The site is comprised of two adjacent parcels (APN 071-331-05 and 071-331-06). The parcels are located adjacent to and north of Conference Drive and Graham Hill Road, and adjacent to and west of East Zayante Road. The site takes access from Conference Drive. A large shopping center borders the property to the west and residential neighborhoods border the property to the north and south. Mount Hermon Christian conference Center to the east. The undeveloped parcel supports a mosaic of non-native grassland, oak forest, and chaparral habitats. In addition, the project site is located approximately 100 feet west of Zayante Creek and 750 feet north of the San Lorenzo River. Four biotic habitats occur on the project site: California annual grassland, coyote brush scrub/French broom thicket, coast live oak/box elder forest and seasonal wetlands. No development is proposed within the riparian corridor.

The southern section of the project site is relatively flat to gently sloping. The southwestern portion of the property is a meadow with scattered trees. The eastern portion is forested and a relatively shallow swale traverses the southwest section of the meadow. The northern section of the property is generally steeper. The northeast portion of the site is moderately sloping and the uphill area of the northeast portion of the site is moderate to moderately steep. There is a large fill slope at the northwestern area of the site, which support Mount Hermon Road.

PROJECT BACKGROUND:

Policy 2.3.6 of the Santa Cruz County General Plan (1994) designates the two subject parcels as a possible location for development of 100 percent affordable housing. The policy also states that all development on the parcels "...may include an appropriately sized community center or similar facility."

Application 08-0338 was submitted in July 2008 for the construction of 55 affordable housing units, and included a proposal to develop a small public water system. Based on community opposition to the affordable housing project, the application was withdrawn. Objections to the housing project were based largely on water use and sewage disposal.

The property was subsequently sold to Mount Hermon Christian Conference Center, which owns property adjacent to and east of Zayante Drive. The current application was made in August 2013. Unlike the previous residential development proposal, the current proposal does not rely on public water or sewage package treatment plant, in that water will be provided from existing sources at the Mount Hermon Center and a septic system has been designed to treat effluent from the project site.

DETAILED PROJECT DESCRIPTION:

This proposal would allow the site to be developed with recreation and educational facilities consisting of small and large bike pump tracks with hillside flow trails, an aerial adventure course, splash-park, a community garden, a retail building with concessions and welcome center and a classroom/daycamp building.

Pump tracks are manmade closed circuits with rollers in between and berms at each end. They are designed to be ridden without pedaling. The flow trails would be built trails for mountain bikes and contain linked berms and rollers. Riders would be lifted to the top of the slope via a conveyance system called a "magic carpet," similar to a lift system used on beginner slopes at ski resorts.

The aerial adventure course, or ropes course, includes platforms built on poles and interconnected by a series of aerial obstacles. One of the platforms would be constructed to a height of 62 feet, measured on the downslope side.

The zero-depth splash park is an area for water play and cooling off that has no standing water. The showers and ground nozzles will be controlled by a hand-activated motion sensor, with the water to be recycled and treated to swimming pools standards.

The proposed recreation/retail building is proposed to be 6,673 square feet in area, while the educational building would be 7,425 square feet. Four additional accessory structures are proposed: a 320 square foot storage shed, a 500 square foot target sports building, a 272 square foot aerial adventure park building, and a 400 square foot splash park pump building. The four accessory structures would contain equipment related to the associated recreational components. The total proposed building area is approximately 15,590 square feet. All structures would be single-story construction.

A pedestrian bridge is proposed to be constructed at the eastern edge of the site to provide a safe pedestrian crossing at Zayante Rd.

The total area of proposed disturbance is 12.0 acres. Grading consists of 10,830 cubic yards of excavation and 17,068 cubic yards of fill. The majority of the proposed earthwork would be to create the bike trail for the magic carpet recreational area and the sports field adjacent to the proposed pedestrian bridge. Project grading would result in a net import of 3,817 cubic yards of material.

Approximately 600 lineal feet of shotcrete retaining wall is proposed for the area south of the bike trails and would create a 125'x 230' play field. The wall would range from one to nine feet in height and would be designed with stone texturing.

The Parking for the site consists of 131 parking stalls, 5 accessible stalls and 3 loading stalls, located along the southwestern frontage and along the western boundary of the site, adjacent to the Felton Faire shopping center. The parking lot surfacing is proposed to be permeable aggregate.

Impervious surfaces on the site have been minimized to the maximum extent practicable. On-site impervious areas are only for buildings and accessory structures. Impervious improvements in the County right-of-way include a concrete sidewalk along Conference Drive, and the asphalt paved entrance at Conference Drive.

Stormwater runoff from proposed improved areas would be directed toward the well-defined swale at the southwest corner of the site, maintaining existing drainage patterns. Most of the runoff would overland flow in grass lined swales. Concentrated runoff from impervious surfaces and swales would be directed to six percolation pits to retain water and promote infiltration. Infiltration of stormwater would also be achieved in the subgrade below pervious pavers and pervious concrete. Runoff discharged from driving surfaces and parking lots would be conveyed to biofiltration swales and catch basins with silt and grease traps to provide water quality treatment. An earth embankment with outlet control is proposed at the downslope edge of the well-defined swale. An outlet control structure for the detention area would serve to discharge at predevelopment rates for a variety of design storms. The additional runoff created from larger design storms would be detained in a proposed stormwater detention area to be constructed in the well-defined swale at the southwest corner of the site. An embankment would be constructed in this area with an outlet control structure. Habitat enhancement will occur at the basin.

Stormwater runoff from the bike flow trails would be captured in swales running along the trails. The swales terminate into riprap pads or flow into culverts with riprap pads at the outlets. The majority of runoff from the bike trails discharged to infiltration trenches that also serve as level spreaders. Runoff flowing from the pedestrian bridge would be directed toward a percolation pit serving to store and infiltrate runoff. The sports field in the southeast portion of the site (formerly proposed as a paintball course) would be contained by a one-foot high earthen berm, constructed along the downstream edge of the field.

The project includes an onsite wastewater treatment and discharge system, which consists of a 15,000 gallon primary tank, a 4,000 gallon recirculation tank and 1,500 gallon dosing tank. The tanks would be located underground just west of the main entry gate at Conference Drive. The system also includes eleven 100-foot long, 4-foot deep leaching trenches to be installed at the southeast portion of the site.

Twenty one trees are proposed for removal to accommodate the trails and structures. Proposed landscaping includes the planting of canopy trees at the frontage and adjacent to the main parking lot for visual buffering. The landscape plan also includes the planting of native riparian species at the ephemeral drainage/swale at the southwestern corner of the property.

The project arborist would flag or otherwise designate the trees to remain as well as those to be removed. Protective fencing would be placed around the trees to be retained prior to the start of construction.

A small vehicular bridge, approximately 60 feet in length and 32 feet wide, is proposed to be built across the ephemeral drainage at the southwest corner of the property. The bridge would connect the front entrance to the western parking lot. The bridge would not encroach into the ephemeral channel, but would encroach into the associated riparian corridor.

III. ENVIRONMENTAL REVIEW CHECKLIST

A. GEOLOGY AND SOILS

Would the project:

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
1.	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	A. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
	B. Strong seismic ground shaking?	☐	☐	☒	☐
	C. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
	D. Landslides?	☐	☐	☒	☐

Discussion (A through D): There are no mapped faults on or adjacent to the subject property. The closest mapped fault is the Zayante-Vergeles, which is located approximately 4miles north-northeast of the subject parcels. Therefore, ground rupture of a known earthquake fault was not an area of concern in the geotechnical report submitted for the site prepared by Bauldry Engineering, Inc., dated August 1, 2013. (Attachment 3). The Ben Lomond fault, while not mapped, is thought to pass beneath the artificial fill slopes along Mount Hermon Road and the toe of the natural hillside in the northeast section of the property. No habitable structures are proposed for this portion of the site, therefore the potential impact from the Ben Lomond fault is considered less than significant.

A Geologic Report prepared by Rogers E. Johnson & Associates, dated September 28, 2007 (Attachment 5) was submitted in conjunction with the previous affordable housing project in order to evaluate the stability of the fill slope. A shallow slump, approximately 100 feet long by 40 feet wide was identified at the location of the artificial fill. Based on the field mapping and exploratory trenching, the consulting geologist determined that the source of the debris flow was drainage, which is now cut off from the property by Mount Hermon Road.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

The geotechnical report also concluded that the potential for the fill slope to fail and adversely affect the subject project would be low. Additionally, the proposed conveyor system, decks, and ropes course facilities would be founded on piers to prevent any impacts due to soil slumping. The geotechnical report identified potential instability in proximity to the pedestrian bridge. In accordance with the recommendations made in the geotechnical report, the bridge foundation would be setback a minimum of 20 feet from the face-of-slope and founded on piers embedded in bedrock. Implementation of the geotechnical report recommendations ensure that impacts due to landsliding or other instability would be less than significant.

Foundations for the proposed structures must be designed in accordance with the most recent California Building Code (CBC). The subject property will likely be subjected to strong seismic shaking from one of the local fault systems during the life of the planned structure. The Geotechnical Report submitted for the proposed project recommends that all planned improvements be designed to resist seismic shaking. Specific seismic design parameters are listed in the report and the applicant will be required to submit a plan review letter that reflects the seismic design parameters based on the 2010 California Building code requirements for review and approval by Planning Staff prior to parcel map recordation.

The southern and western sections of the site have been mapped as potentially liquefiable. According to the geotechnical report prepared for the site, the site is underlain by relatively dense to very dense soils. The report concludes that based on density of the soil and the lack of shallow groundwater table, the potential for liquefaction to occur and cause damage to the proposed structures is low.

The Geotechnical Report found that the soils on the site have a low expansion potential. To minimize the potential for building settlement, the consulting geotechnical engineer recommends overexcavation and recompaction of the upper 12 inches of the subgrade. The project conditions of approval require the proposed development to incorporate recommendations made in the geotechnical report, therefore the potential impact due to expansive soils or settlement is less than significant.

2.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐

Discussion: As stated in Section A-1, the geotechnical report (Attachment 3) submitted for the proposed development identified historical instability at the northwestern portion of the site. However, the slumping in this area was attributed to inadequate drainage, which has been alleviated by the construction of Mount Hermon Drive. The septic leachfield would be located at southern edge of the property and therefore would not negatively impact the area of the slump. No other development would be located within the area of potential instability, therefore impacts due to

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

landslide are considered less than significant.

The geotechnical report did not identify lateral spreading, or liquefaction as areas of concern based on soils types and groundwater depth. While the report indicates a mapped earthquake fault (Ben Lomond Fault) is located within the project site, the fault zone is not located in proximity to any habitable structures and therefore represents a less than significantly impact.

The geotechnical report provides recommendations for grading and foundation design and the applicant would be required to submit an update to this report that reflects the requirements of the most current California Building Code. Final building foundations and grading plans would comply with the most current California Building Code to resist seismic shaking and avoid structural collapse and shall be reviewed and approved by Environmental Planning staff prior to parcel map recordation.

3.	Develop land with a slope exceeding 30%?	☐	☐	☒	☐

Discussion: The northern portion of the subject site contains slopes in excess of 30%. The bike park is proposed to be developed in this area in order to take advantage of the changes in elevation. In addition to the bike trails in this area, three decks would be located on steep slopes. The decks would be constructed on drilled piers and no grading would be required to accommodate the structures. Grading for the conveyor lift system, which transports bikers uphill, will traverse slopes in excess of 30% slopes. In accordance with the recommendations made in the geotechnical report for the project (Attachment 3) all disturbed site soil would be compacted to a minimum of 90% of its maximum dry density, which would inhibit erosion and provide stability. Therefore the impact due to development on steep slopes is considered less than significant.

4.	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

Discussion: The surface soils within the project area are classified as moderately erodible. All finished and disturbed ground surfaces would be prepared and maintained to reduce erosion. In areas proposed for grading, the soil would be engineered and compacted to a minimum of 90% to provide stability, per the recommendations made in the geotechnical report for the project (Attachment 3). Specific measures that have been incorporated into the preliminary erosion control plan include the installation of fiber rolls along the contours of the northeastern slope and around the ephemeral drainage at the southwest, as well as protected stockpile areas for graded materials and stabilized construction entrance.

Prior to building permit approval, the applicant would be required to submit final Erosion Control Plans for review and approval by Environmental Planning Staff. The plans must specify detailed erosion and sedimentation control measures and include provisions for disturbed areas to be planted with ground cover and to be maintained to minimize surface erosion. The Erosion Control Plans would also be required to be reviewed and approved by the consulting geotechnical engineer. Therefore, the impacts of erosion resulting from construction and grading would be less than

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

significant.

5. Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007), creating substantial risks to life or property? ☐ ☐ ☐ ☒

Discussion: The geotechnical report for the project did not identify any elevated risk associated with expansive soils.

6. Place sewage disposal systems in areas dependent upon soils incapable of adequately supporting the use of septic tanks, leach fields, or alternative waste water disposal systems where sewers are not available? ☐ ☐ ☐ ☒

Discussion: The project would rely on a private wastewater treatment system. A Site Assessment (Attachment 9) was performed for the site in conjunction with the previous affordable housing proposal. According to percolation tests conducted in the vicinity of the proposed leachfield, the soils were found to have moderate percolation rates that are suitable for disposal of wastewater. Additionally, this proposal was reviewed by Environmental Health Services, which approved the preliminary onsite septic site evaluation. An approved onsite septic application would be required prior to issuance of a building permit..

7. Result in coastal cliff erosion? ☐ ☐ ☐ ☒

Discussion: The proposed project is not located in the vicinity of a coastal cliff or bluff; and therefore, would not contribute to coastal cliff erosion.

B. HYDROLOGY, WATER SUPPLY, AND WATER QUALITY

Would the project:

1. Place development within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? ☐ ☐ ☐ ☒

Discussion: According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, dated May 16, 2012, no portion of the project site lies within a 100-year flood hazard area.

2. Place within a 100-year flood hazard area structures which would impede or redirect flood flows? ☐ ☐ ☐ ☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Discussion: According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, dated May 16, 2012, no portion of the project site lies within a 100-year flood hazard area.

3.	Be inundated by a seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion: The subject property is located approximately 4.9 miles from the ocean, at an elevation of approximately 300 feet above mean sea level, therefore no impact from inundation is anticipated.

4.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐

Discussion: The project would obtain water from the existing water system owned and operated by the Mount Hermon Association, Inc. and no new wells are proposed for the site. The project is not located in a mapped groundwater recharge area and there are no existing or proposed agricultural uses on site. The project would implement Low Impact Development (LID) standards; therefore impervious surfaces on the site have been minimized to the maximum extent practicable and have been limited to the areas proposed for buildings. The site has been designed to maintain predevelopment permeability rates and percolate runoff back into the groundwater and, according to the Preliminary Drainage Report prepared for the project (Attachment 6) the proposed drainage design emphasizes surface flow conveying water. Therefore the impact to groundwater is considered to be less than significant.

5.	Substantially degrade a public or private water supply? (Including the contribution of urban contaminants, nutrient enrichments, or other agricultural chemicals or seawater intrusion).	☐	☐	☒	☐

Discussion: The project would not discharge runoff either directly or indirectly into a public or private water supply. However, runoff from this project may contain small amounts of chemicals and other household contaminants. No commercial or industrial activities are proposed that would contribute contaminants. Potential siltation from the

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

proposed project would be addressed through implementation of erosion control measures. To minimize the amount of sedimentation from the bike pump tracks, runoff leaving this area would be treated by multiple sediment traps prior to entering the stormwater management area. According to the Preliminary Drainage Report for the project (Attachment 6), the sediment traps have nearly double the capacity required by Santa Cruz County's standards for construction site management.

To protect against contamination of Zayante Creek, the originally-proposed paintball field has been eliminated from the proposal and the area would be used as a general-purpose sports field. To protect the creek from stormwater runoff from the field, a one-foot high earthen berm would be constructed along the downstream edge of the field, which would contain runoff and help to percolate the 2-year 120-minute storm back into the groundwater.

Riprap pads are proposed at each outfall along the ephemeral drainage at the southwest portion of the property, which would help disperse the energy of stormwater runoff and reduce the potential for erosion and sedimentation to significantly impact water quality.

6.	Degrade septic system functioning?	☐	☐	☐	☒

Discussion: There is no indication that existing septic systems in the vicinity would be affected by the project.

7.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding, on- or off-site?	☐	☐	☒	☐

Discussion: As stated In B-5, the project would implement Low Impact Development (LID) standards by minimizing the use of impervious surfaces. Pervious paver patios, decomposed granite walkways, pervious concrete access roads and gravel parking lots have been incorporated into the project design, with onsite impervious areas limited to the construction of the six structures. The majority of stormwater runoff would overland flow in grass lined swales to the southwest or into the six percolation pits to retain water and promote infiltration. Rock check dams are proposed in several locations along the surface swales to slow flow, settle suspended solids and allow for further infiltration.

The flow bike trails may increase runoff as they are converting native grass areas into compacted trails void of vegetation. Runoff from the bike trails would be captured in swales running along the trials. The swales terminate into riprap pads or flow into culverts with riprap pads at the outlets to help disperse energy and spread out flows. According to the Preliminary Drainage Report prepared for the project (Attachment 6)

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

the majority of the runoff from the bike trails discharges to infiltration trenches that also serve as level spreaders. Department of Public Works Drainage Section staff has reviewed and approved the proposed drainage plan. Implementation of the plan and use of Best Management Practices associated with LID, would ensure that negative impacts due to alteration of existing drainage patterns or stormwater runoff would be less than significant.

8.	Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐

Discussion: Drainage Calculations prepared by RI Engineering, Inc. dated August 22, 2013, have been reviewed for potential drainage impacts and accepted by the Department of Public Works (DPW) Drainage Section staff. The calculations show that the post development runoff rate will not exceed the pre-development rate. The runoff rate from the property would be controlled by a combination of infiltration trenches, swales and outlet control structures as discussed in B-5 and B-7 above.

Refer to response B-5 for discussion of polluting runoff.

9.	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒

Discussion: The project is not located in an area subject to flooding, therefore there is no impact.

10.	Otherwise substantially degrade water quality?	☐	☐	☒	☐

Discussion: Few pollutants would be added to the existing water supply as a result of this project. Department of Public Works Stormwater Management Staff have reviewed and approved preliminary drainage plans, which include various treatment methods prior to discharge off site including bioswales, infiltration trenches, which have been integrated into the project design. The applicant would be required to submit final drainage plans and calculations for review and approval by Department of Public Works Stormwater Management Staff, as well as plans for periodic maintenance and sediment removal prior to obtaining building permits. This condition will ensure that the impacts of runoff on water quality are less than significant. See response B-4 regarding impacts to water supply.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
C. BIOLOGICAL RESOURCES Would the project:				
1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

Discussion: A Biotic Report conducted by H.T. Harvey and Associates for the affordable housing project did not identify any significant biotic resources on the parcels with the exception of several potential isolated wetland features. In order to verify the potential wetland features and provide an updated survey of biotic resources on the site, a Biotic Report was prepared by Biotic Resources Group (Attachment 11).

Kathleen Lyons conducted an analysis of the previously-identified wetland features utilizing Army Corps of Engineers three-parameter assessment process. Following these procedures, Ms. Lyons determined that none of the isolated wetlands identified by H.T. Harvey met all three parameters particularly in soils and hydrology. The unnamed ephemeral drainage at the southwest of the parcel support riparian scrub vegetation.

Biotic Resources Group identifies riparian scrub and needlegrass grassland as recognized sensitive habitats by both the State of California and the County of Santa Cruz. The needlegrass grassland vegetation is located on the south-facing hillside on the east side of the parcel. A portion of this habitat would be directly impacted by the installation and operation of the bicycle hillside flow trails. The riparian scrub vegetation is located along the ephemeral swale on the lower southwest end of the parcel. A portion of this vegetation type would be impacted by the placement of a bridge crossing connecting the entrance with parking lots on the west side of the drainage. In addition the project would include the placement of a stormwater detention basin at the southwest portion of the swale.

To minimize impacts to the ephemeral drainage, a Riparian Restoration Monitoring and Maintenance Plan, dated July 23, 2014, was prepared by Biotic Resources Group (Attachment 16) outlining measures for revegetation and restoration of the associated riparian habitat. The riparian restoration area would be established in fall 2015 after construction of the site and installation of the bridge over the ephemeral stream. Planting of riparian trees, shrubs and groundcovers would occur in fall/winter 2015 (Year 0). Maintenance and monitoring tasks within the riparian restoration area would be initiated in 2016 (Year 1) and would continue through Year 5. The plan's long-term goals and objectives for the restoration would provide approximately 7,000 square feet of native riparian plantings within the ephemeral drainage to provide an approximately 3.5:1 restoration ratio. The plan also would require the utilization of locally-derived

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

native plant propagules in the revegetation and would maintain 100% survival of installed container stock shrubs and small trees each year during Years 1-3 and 80% survival for Years 4 and 5. Cover of invasive, non-native plant species would be controlled to less than 5% in Years 1-5. Finally, the restoration plan would achieve a minimum of 30% woody plant cover and a minimum of 50% herbaceous cover at the end of Year 5.

A final landscape/restoration plan would be required to be reviewed and approved by Environmental Planning staff prior to building permit issuance.

The Landscaping Plan (Attachment 7) depicts revegetation of hillside areas for needlegrass grassland from the bike park trails. Direct impacts to needlegrass grassland comprise approximately 12,000 square feet. The Landscape Plan shows approximately 12,000 square feet of needlegrass revegetation, thus achieving an approximately 1-to-1 impact to restoration ratio. Additional mitigation for the loss of needlegrass grassland would require an additional 12,000 square feet of revegetation along the slope south and southeast of the bike park.

No rare plants were observed and no habitat was observed for special-status wildlife species, such as red-legged frog or breeding raptors. The site was found to contain trees and groves that may support breeding opportunities for sharp shin hawk and Cooper's hawk. A variety of bat species may also roost in the trees near Zayante Creek to the east of the project site.

To prevent direct mortality of bats roosting in the trees on the project site, a bat habitat assessment must be conducted by a qualified bat biologist. Tree removal must only occur during seasonal periods of bat activity, between March 1, or when evening temperatures are above 45°F and rainfall less than one-half-inch in 24 hours occurs, and April 15, prior to parturition of pups. The next acceptable period for tree removal with suitable roosting habitat is after pups become self-sufficiently Volant – September 1 through about October 15, or prior to evening temperatures dropping below 45°F and onset of rainfall greater than ½ inch in 24 hours.

To reduce the potential impacts to nesting birds, a project condition of approval would require vegetation clearing to occur August 16 and January 31st of any given year to avoid the bird and bat nesting season for this region. Alternatively, if construction is proposed within potential nesting season, a qualified biologist would be required to conduct nesting bird surveys no more than two weeks prior to vegetation clearing. If nesting birds are observed, the biologist would establish a suitable buffer where no clearing will occur until all young have fledged the nest. A project condition would require all oak trees to be replaced at a 3:1 ratio

Implementing these measures would ensure that the negative impacts to biotic resources on the site are reduced to a less than significant level.

2.	Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations	☐	☒	☐	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
(e.g., wetland, native grassland, special forests, intertidal zone, etc.) or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				

Discussion: See C-1 above.

3. Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native or migratory wildlife nursery sites?	☐	☐	☒	☐

Discussion: The proposed project does not involve any activities that would interfere with the movements or migrations of fish or wildlife, or impede use of a known wildlife nursery site.

4. Produce nighttime lighting that would substantially illuminate wildlife habitats?	☐	☒	☐	☐

Discussion: The development area includes an ephemeral drainage channel and is located approximately 100 feet west of Zayante Creek, which could be adversely affected by a new or additional source of light that is not adequately deflected or minimized. The following mitigation measures will be added to the project, such that any potential impact will be reduced to a less than significant level: Permanent outdoor lighting shall be minimized and shall be shielded by fixture design or other means to minimize illumination of surrounding sensitive habitat areas.

5. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒

Discussion: As discussed in B-1, no wetlands have been identified within the project site.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
6. Conflict with any local policies or ordinances protecting biological resources (such as the Sensitive Habitat Ordinance, Riparian and Wetland Protection Ordinance, and the Significant Tree Protection Ordinance)?	☐	☐	☐	☒

Discussion: The project would not conflict with any local policies or ordinances, in that a Riparian Exception would be granted in accordance with Title 16 of the Santa Cruz County Code.

7. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Discussion: The proposed project would not conflict with the provisions of any adopted Habitat Conservation Plan Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, no impact would occur.

D. AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

1. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐

Discussion: The project site does not contain any lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. In addition, the project does not contain Farmland of Local Importance. Therefore, no Prime Farmland, Unique Farmland, Farmland of

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Statewide or Farmland of Local Importance would be converted to a non-agricultural use. The site is mapped as Grazing Land, however grazing activities are not principally permitted uses within the Special Use Zone District, in that the General Plan designation provides for residential uses. Because grazing activities are not compatible with the zoning and General Plan Designation and would not be allowed on this site, the proposed development would not constitute a significant impact to Grading Land.

2.	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

Discussion: The project site is zoned Special Use, which is not considered to be an agricultural zone. Additionally, the project site's land is not under a Williamson Act Contract. Therefore, the project does not conflict with existing zoning for agricultural use, or a Williamson Act Contract. No impact is anticipated.

3.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒

Discussion: The project is not located adjacent to land designated as Timber Resource.

4.	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion: No forest land occurs on the project site or in the immediate vicinity. No impact is anticipated.

5.	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion: The project site and surrounding area within radius of 4 miles does not contain any lands designated as Prime Farmland, Unique Farmland, Farmland of Statewide Importance or Farmland of Local Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Resources Agency. Therefore, no Prime Farmland, Unique Farmland, Farmland of Statewide, or Farmland of Local Importance would be converted to a non-agricultural use. In addition, the project site contains no forest land, and no forest land occurs within 0.5 miles of the proposed project site. Therefore, no impacts are anticipated.

E. MINERAL RESOURCES

Would the project:

1.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

Discussion: The site does not contain any known mineral resources that would be of value to the region and the residents of the state. Therefore, no impact is anticipated from project implementation.

2.	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion: The project site is zoned Special Use, which is not considered to be an Extractive Use Zone (M-3) nor does it have a Land Use Designation with a Quarry Designation Overlay (Q) (County of Santa Cruz 1994). Therefore, no potentially significant loss of availability of a known mineral resource of locally important mineral resource recovery (extraction) site delineated on a local general plan, specific plan or other land use plan would occur as a result of this project.

F. VISUAL RESOURCES AND AESTHETICS

Would the project:

1.	Have an adverse effect on a scenic vista?	☐	☐	☒	☐

Discussion: The project site is located within the Felton Town Plan, which designates a protected Scenic View Corridor through the project site. The Corridor was designated to protect the southern-facing view from Mount Hermon Drive. Additionally, Graham Hill Road is designated as a scenic road in the County General Plan. The project has been designed to use the existing forest and topography to shield the development from view to the greatest extent practicable.

The tallest elements of the project, the decks included in the bike park and observation landing for the aerial adventure course, have been located outside of the Scenic View Corridor and are located at the rear of the site so as to be minimally intrusive from Graham Hill Road. Additionally, the structural components of the bike trail and ropes course would make use of materials and colors that ensure that they would be largely camouflaged to match the surrounding natural environment. The aerial adventure

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

landing would be approximately 62 feet tall where the topography slopes southward, however the structure is not designed with a monolithic face, rather it would use wooden members that would blend into the backdrop of forest.

The proposed recreation/retail building and other elements of the project would be located within the Scenic View Corridor. However the distance from Mount Hermon Road, and the vegetative screening adjacent to Mount Hermon Road, serve to reduce the visual impact. Conditions of project approval would further require the proposed buildings to utilize natural materials and colors in order to reduce the visual intrusiveness of these elements. The project design and conditions of project approval would ensure that the visual impact of the development on protected scenic resources would be less than significant.

A pedestrian bridge crossing is proposed to connect the site to the property on the east side of E. Zayante Road, however because of the topography and dense tree cover, the bridge is not anticipated to be visible from Graham Hill Road. E. Zayante Road is not a designed scenic road.

The remainder of the development would be visible from portions of Graham Hill Road, however the vegetation at the southern edge of the parcel also reduce the visual impact of the proposal on this scenic road to a less than significant level.

2.	Substantially damage scenic resources, within a designated scenic corridor or public view shed area including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐

Discussion: See F-1 above.

3.	Substantially degrade the existing visual character or quality of the site and its surroundings, including substantial change in topography or ground surface relief features, and/or development on a ridgeline?	☐	☐	☒	☐

Discussion: The project site is located adjacent to a moderately-large commercial shopping center. Commercial development also exists south of the site along Graham Hill Road. Residential development exists to the north and south of the site. Given the urban-style of surrounding development, the proposal is not expected to substantially degrade the existing visual character of the surrounding development.

While the development does change the character of the existing vacant site, the components of the project are designed to use the existing topography and to maintain the vast majority of forest on the site. Additionally, the Landscaping Plan provides revegetation of the needlegrass grassland and replacement of all impacted oak trees

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

at a 3:1 ratio. Therefore, impacts would be less than significant.

4.	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion: The project would create an incremental increase in night lighting. However, this increase would be small, and would be similar in character to the lighting associated with the surrounding existing uses.

G. CULTURAL RESOURCES

Would the project:

1.	Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?	☐	☐	☐	☒

Discussion: The site is vacant and no historical resources are known to exist in the vicinity of the project site. Therefore there would be no impact to historical resources.

2.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	☐	☒	☐	☐

Discussion: According to the Cultural Resource Evaluation performed by Archaeological Resource Management, dated March 18, 2013 (Attachment 13), there is no evidence of pre-historic cultural resources. However the evaluation notes that surface visibility was limited at the time of the site visit due to vegetation throughout the property. In addition, the project area is located within the vicinity of the intersection of three water sources and such confluences are known to be highly likely locations of Native American activity. Therefore, the evaluation provides the following mitigation measures:

- A qualified archaeologist shall spot-check construction activities into native soils for the proposed project.

Additionally, pursuant to Section 16.40.040 of the Santa Cruz County Code, if archeological resources are uncovered during construction, the responsible persons would be required to immediately cease and desist from all further site excavation and comply with the notification procedures given in County Code Chapter 16.40.040.

Implementation of these measures would ensure that impacts to archaeological resources would be less than significant.

3.	Disturb any human remains, including those interred outside of formal	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

cemeteries?

Discussion: Pursuant to Section 16.40.040 of the Santa Cruz County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this project, human remains are discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the sheriff-coroner and the Planning Director. If the coroner determines that the remains are not of recent origin, a full archeological report shall be prepared and representatives of the local Native California Indian group shall be contacted. Disturbance shall not resume until the significance of the archeological resource is determined and appropriate mitigations to preserve the resource on the site are established.

4.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

Discussion: No paleontological resources or unique geologic features are known to exist on the site or in the vicinity of the project.

H. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

1.	Create a significant hazard to the public or the environment as a result of the routine transport, use or disposal of hazardous materials?	☐	☐	☐	☒

Discussion: No hazardous materials would be transported, used, or disposed as a part of the proposed outdoor recreational facility, therefore there is no impact.

2.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒

Discussion: The construction and use of the proposed recreational facility would not involve the release of hazardous materials into the environment, which would create a significant hazard to the public or environment, therefore there is no impact.

3.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

Discussion: The proposed outdoor recreational facility would not emit hazardous

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

emissions or handle hazardous substances, therefore there are no impacts from the proposal on existing or proposed school.

4.	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒

Discussion: The project site is not included on the May 21, 2014 list of hazardous sites in Santa Cruz County compiled pursuant to the specified code.

5.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

Discussion: The project site is not located within two miles of a public airport.

6.	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

Discussion: There are no private airstrips in the vicinity of the project site.

7.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

Discussion: The proposed project does not conflict with the County's adopted Emergency Management Plan (April 2002).

8.	Expose people to electro-magnetic fields associated with electrical transmission lines?	☐	☐	☐	☒

Discussion: Electric lines associated with the proposed project would not be high voltage transmission; therefore, no adverse impact would occur.

9.	Expose people or structures to a significant risk of loss, injury or death	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				

Discussion: The project design incorporates all applicable fire safety code requirements and includes fire protection devices as required by the local fire agency.

I. TRANSPORTATION/TRAFFIC

Would the project:

1.	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐

Discussion: A Traffic Impact Analysis was performed by Hatch Mott MacDonald (Attachment 10) to evaluate the impacts of the project on nearby roads and intersections. The analysis included a custom project trip generation using project operating characteristics provide by the applicant and assumptions developed by the consulting traffic engineer. The analysis concluded that during the summer months, the project would generate an estimated 1,321 weekday daily trips, with 211 trips during the weekday AM peak hour and 88 trips during weekday PM peak hour. This would represent the highest level of potential project trip activity at the project site associated with full utilization of the project.

During the school year, the site activity level would be considerably lower, thereby reducing the project trip activity accordingly.

The analysis reviewed intersection operations at Graham Hill Road/Highway 9, Graham Hill Road/Conference Drive and Graham Hill Road/Roaring Camp. The Graham Hill Road/Highway 9 intersection currently operates at LOS D during the AM peak hour and LOS F during the PM peak hour. The County of Santa Cruz has established significance criteria for signalized intersections. This criteria defines a significant impact at a signalized intersection as occurring when the project would add traffic at intersections already LOS E or F and the project traffic in a 1% increase in the volume/capacity (v/c) ratio of the sum of all critical intersection movements.

The Traffic Impact Analysis determined that the change in v/c represented by the project for the Graham Hill Road/Highway 9 intersection is .0125. Therefore, the

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

project would not represent a significant impact at the study signalized intersections.

2.	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

Discussion: The proposed project does not impact air traffic patterns, therefore there is no impact.

3.	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒

Discussion: There are no known hazards in the vicinity of the project site.

4.	Result in inadequate emergency access?	☐	☐	☐	☒

Discussion: The project's road access meets County standards and has been approved by the Felton Fire Protection District.

.	Cause an increase in parking demand which cannot be accommodated by existing parking facilities?	☐	☐	☐	☒

Discussion: The peak parking demand for both attendees and staff is 131 spaces. The project would provide 138 marked parking spaces on-site. Therefore, the project site would be able to accommodate all of its parking demand on the project site.

6.	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Discussion: The proposed project would comply with current road requirements to prevent potential hazards to motorists, bicyclists, and/or pedestrians. Additionally, the project would provide a pedestrian bridge crossing above E. Zayante Road. This feature would improve pedestrian safety and is consistent with General Plan policies.

7.	Exceed, either individually (the project alone) or cumulatively (the project combined with other development), a level of service standard established by the County General Plan for	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
designated intersections, roads or highways?				

Discussion: According to the traffic study performed by Hatch Mott MacDonald (Attachment 10), the proposed project would not reduce operations to a level of service below D.

J. NOISE

Would the project result in:

1.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐

Discussion: The project would create an incremental increase in the existing noise environment. However, this increase would be small, and would be similar in character to noise generated by the existing surrounding commercial uses. The project site is located adjacent to a small residential neighborhood to the northeast. The activities on the site would be expected to occur generally during the daytime and would be largely seasonal in nature. To further ensure that the noise attributable to the project does not negatively impact the residential neighborhood, a condition of project approval would require planting mature native trees between the aerial adventure course and the adjacent residential area. Implementation of vegetative screening, and the hours of use anticipated on the proposed site would ensure that the impacts due to the increase in ambient noise levels are less than significant.

2.	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒

Discussion: No excessive groundborne vibrations or noise levels will be created as a result of the proposed recreational development.

3.	Exposure of persons to or generation of noise levels in excess of standards established in the General Plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐

Discussion: Per County policy, average hourly noise levels shall not exceed the General Plan threshold of 50 L_{eq} during the day and 45 L_{eq} during the nighttime. Impulsive noise levels shall not exceed 65 db during the day or 60 db at night. While the site is located between two County arterial roads, given the relatively dense vegetation and size of the site, no exposure of recreational users to excessive noise levels is anticipated. Additionally, the proposed facilities are spread over a 12 –acre area and therefore any noise generated by the proposed use would be expected to attenuate substantially.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
4. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

Discussion: Noise generated during construction would increase the ambient noise levels for adjoining areas. Construction would be temporary, however, and given the limited duration of this impact it is considered to be less than significant.

5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion: The project site is not located within an airport land use plan or within two miles of a public airport, therefore there is no impact.

6. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion: The project site is not located within the vicinity of a private airstrip; therefore, there is no impact.

K. AIR QUALITY

Where available, the significance criteria established by the Monterey Bay Unified Air Pollution Control District (MBUAPCD) may be relied upon to make the following determinations. Would the project:

1. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐

Discussion: The North Central Coast Air Basin does not meet state standards for ozone and particulate matter (PM_{10}). Therefore, the regional pollutants of concern that would be emitted by the project are ozone precursors (Volatile Organic Compounds [VOCs] and nitrogen oxides [NO_x]), and dust.

Given the modest amount of new traffic that would be generated by the project there is no indication that new emissions of VOCs or NO_x would exceed MBUAPCD thresholds for these pollutants and therefore there would not be a significant contribution to an

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

existing air quality violation.

Project construction may result in a short-term, localized decrease in air quality due to generation of dust. However, standard dust control best management practices, such as periodic watering, will be implemented during construction to reduce impacts to a less than significant level.

2.	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒

Discussion: The project would not conflict with or obstruct implementation of the regional air quality plan. See K-1 above.

3.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐

Discussion: The project would not conflict with or obstruct implementation of the regional air quality plan. See K-1 above.

4.	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

Discussion: No substantial pollutant concentrations would be emitted during or as a result of the proposed minor land division, with the exception of CO_2 emissions from construction vehicles and large events, which would be temporary and not substantial

5.	Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Discussion: No objectionable odors would be created during construction or as a result of the proposed project therefore there is no impact.

L. GREENHOUSE GAS EMISSIONS

Would the project:

1.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

Discussion: The proposed project would be responsible for an incremental increase in green house gas emissions by usage of fossil fuels during the site grading and construction, as well as from vehicle traveling to and from the site during hours of

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

operation. Santa Cruz County has recently adopted a Climate Action Strategy (CAS) intended to establish specific emission reduction goals and necessary actions to reduce greenhouse gas levels to pre-1990 levels as required under AB 32 legislation. The strategy intends to reduce greenhouse gas emissions and energy consumption by implementing measures such as reducing vehicle miles traveled through the County and regional long range planning efforts and increasing energy efficiency in new and existing buildings and facilities. All project construction equipment would be required to comply with the Regional Air Quality control emissions requirements for construction equipment. As a result, impacts associated with the temporary increase in green house gas emissions are expected to be less than significant.

2.	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Discussion: See the discussion under L-1 above. No impacts are anticipated.

M. PUBLIC SERVICES

Would the project:

1.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
	a. Fire protection?	☐	☐	☐	☒
	b. Police protection?	☐	☐	☐	☒
	c. Schools?	☐	☐	☐	☒
	d. Parks or other recreational activities?	☐	☐	☐	☒
	e. Other public facilities; including the maintenance of roads?	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

***Discussion (a through e)*:** While the project represents an incremental contribution to the need for services, the increase would be minimal given the relatively small number of vehicles traveling to and from the site. Although the site is open to the public, the majority of the users would be associated with Mount Hermon, which is located in close proximity to the subject site. The site also provides recreational activities and would not increase the number of permanent residents in the area. Finally, the project meets all of the standards and requirements identified by the local fire agency.

N. RECREATION

Would the project:

1.	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒

***Discussion*:** The proposed project would provide a new recreational facility for the neighborhood and would therefore not be expected to generate an increase in the use of existing parks or recreational facilities in the project vicinity. No impact is expected.

2.	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

***Discussion*:** The project does include recreational facilities; however the proposal has been designed to minimize adverse physical effects on the environment by incorporating a number of mitigation measures including provision of a riparian restoration and maintenance plan, and required replacement of needlegrass and oak trees as discussed in Section C1. Implementation of required mitigation measures would ensure that the adverse physical effect on the environment attributable to the project is less than significant.

O. UTILITIES AND SERVICE SYSTEMS

Would the project:

1.	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

***Discussion*:** The project would not require or result in the construction of new storm water drainage facilities or the expansion of existing facilities. No impact is expected.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
2. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

Discussion: The project would rely on existing water supply sources located on the Mount Hermon property to the east. Public water delivery facilities would not be expanded.

The project would be served by an on-site sewage disposal system, which would be adequate to accommodate the relatively light demands of the project.

3. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒

Discussion: The project's wastewater flows would not violate any wastewater treatment standards.

4. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒

Discussion: The project would rely on existing water supplies from the Mount Hermon site to the east.

5. Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒

Discussion: The project would be served by an on-site sewage disposal system designed to provide adequate capacity for the proposed demand.

6. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐

Discussion: The project would not result in a substantial increase in solid waste in that

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

the required earthwork will not generate a net export of material. While the project would make a one-time contribution to the reduced capacity of regional landfills during construction, no demolition is required to accommodate the proposed recreational facility. The impacts of temporary construction debris associated with the project will be less than significant.

7.	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion: The project would comply with federal, state, and local statutes and regulations related to solid waste, therefore no impact is anticipated.

P. LAND USE AND PLANNING

Would the project:

1.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Discussion: The proposed project does not conflict with any regulations or policies adopted for the purpose of avoiding or mitigating an environmental effect.

2.	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Discussion: No habitat or community conservation plan exists on the site or on adjacent parcels. No impact is anticipated.

3.	Physically divide an established community?	☐	☐	☐	☒

Discussion: The project would not include any element that would physically divide an established community.

Q. POPULATION AND HOUSING

Would the project:

1.	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

infrastructure)?

Discussion: The proposed project would not induce significant population growth in the surrounding area, in that the proposed recreational facility does not include any physical or regulatory changes that would remove a restriction to or encourage population growth. No new or extended infrastructure or public facilities are proposed, and no residential development or regulatory changes including General Plan amendments, specific plan amendments, zone reclassifications, sewer or water annexations, or LAFCO annexation actions would occur as a part of the project. Consequently, the project is not expected to have a significant growth-inducing effect. No impact is expected.

2.	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion: The proposed project would not displace any existing housing since the site is currently vacant.

3.	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion: The proposed project would not displace a substantial number of people since the site is currently vacant.

R. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐

Discussion: The potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory were considered in the response to each question in Section III of this Initial Study. Resources that have been evaluated as significant would be potentially impacted by the project, particularly protected needlegrass grassland, oaks and riparian resources. However, mitigation has been included that clearly reduces these effects to a level below significance. This mitigation includes replacement of needlegrass grassland at a 1-to-1 impact to restoration ratio, replacement of oak trees at a 3-to-1 ratio, implementation of a 5-year Riparian Restoration Monitoring and Maintenance Plan for impacted riparian habitat and conducting preconstruction bird and bad surveys within the proposed construction area. As a result of this evaluation, there is no substantial evidence that, after mitigation, significant effects associated with this project would result. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
2. Does the project have impacts that are individually limited, but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐

Discussion: In addition to project specific impacts, this evaluation considered the projects potential for incremental effects that are cumulatively considerable. As a result of this evaluation, there is no substantial evidence that there are cumulative effects associated with this project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
3. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion: In the evaluation of environmental impacts in this Initial Study, the potential for adverse direct or indirect impacts to human beings were considered in the response to specific questions in Section III, Aesthetics, Air Quality, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Population and Housing, and Transportation and Traffic. As a result of this evaluation, there were no potentially significant effects to human beings related to the following: Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Population and Housing, and Transportation and Traffic.

There were determined to be potentially significant effects to human beings related to potential noise and aesthetics resulting from the project. However, mitigation has been included that reduces these impacts to a level below significance. These mitigations include using natural colors and materials in the construction of the aerial adventure and bike courses, and the planting of vegetative noise barriers between the project site and the adjacent residential neighborhood. As a result of this evaluation, there is no substantial evidence that, after mitigation, there are adverse effects to human beings associated with this project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

V. REFERENCES USED IN THE COMPLETION OF THIS ENVIRONMENTAL REVIEW INITIAL STUDY

County of Santa Cruz 1994.
1994 General Plan and Local Coastal Program for the County of Santa Cruz, California. Adopted by the Board of Supervisors on May 24, 1994, and certified by the California Coastal Commission on December 15, 1994.

VI. ATTACHMENTS

1. *Vicinity Map, Map of Zoning Districts; Map of General Plan Designations; and Assessors Parcel Map.*
2. *Project Plans*, prepared by Verde Design, dated 12/19/13
3. *Geotechnical Investigation (Conclusions and Recommendations)*, prepared by Bauldry Engineering, dated August 1, 2013
4. *Geotechnical Review Letter*, prepared by Carolyn Burke, Assocaite Civil Engineer, County of Santa Cruz, dated July 12, 2013
5. *Letter Report from Rogers E. Johnson & Associates, Consulting Engineering Geologist*, dated September 28, 2007
6. *Drainage Calculations* (*Summary and Conclusions*), prepared by RI Engineering, Inc. dated August 22, 2013
7. *Landscape Plan*, prepared by Herman, Verde Design, dated 12/19/13
8. *Letter from Mount Hermon Association*, dated June 28, 2013
9. *Site Assessment for Onsite Wastewater System,* prepared by Fall Creek Engineering, Inc., dated February 2008
10. *Traffic Impact Analysis (Conclusions and Recommendations)*, prepared by Hatch Mott MacDonald, dated December 9, 2013
11. *Biological Review Report* and *Review of Riparian and Needlegrass Grassland Report*, prepared by Biotic Resources Group, dated June 6, 2013 and December 5, 2013
12. *Biological Report Review Letter*, prepared by EcoSystems West, dated November 13, 2013
13. *Cultural Resource Evaluation*, prepared by Archaeological Resource Management, dated March 18, 2013
14. *Arborist Report*, prepared by Maureen Hamb, dated August 1, 2013, *Supplemental Letter*, dated November 22, 2013
15. *Arborist Report Review,* prepared by Matthew Johnston, dated November 5, 2013
16. *Riparian Restoration Monitoring and Maintenance Plan*, prepared by Biotic Resources Group, dated July 23, 2014

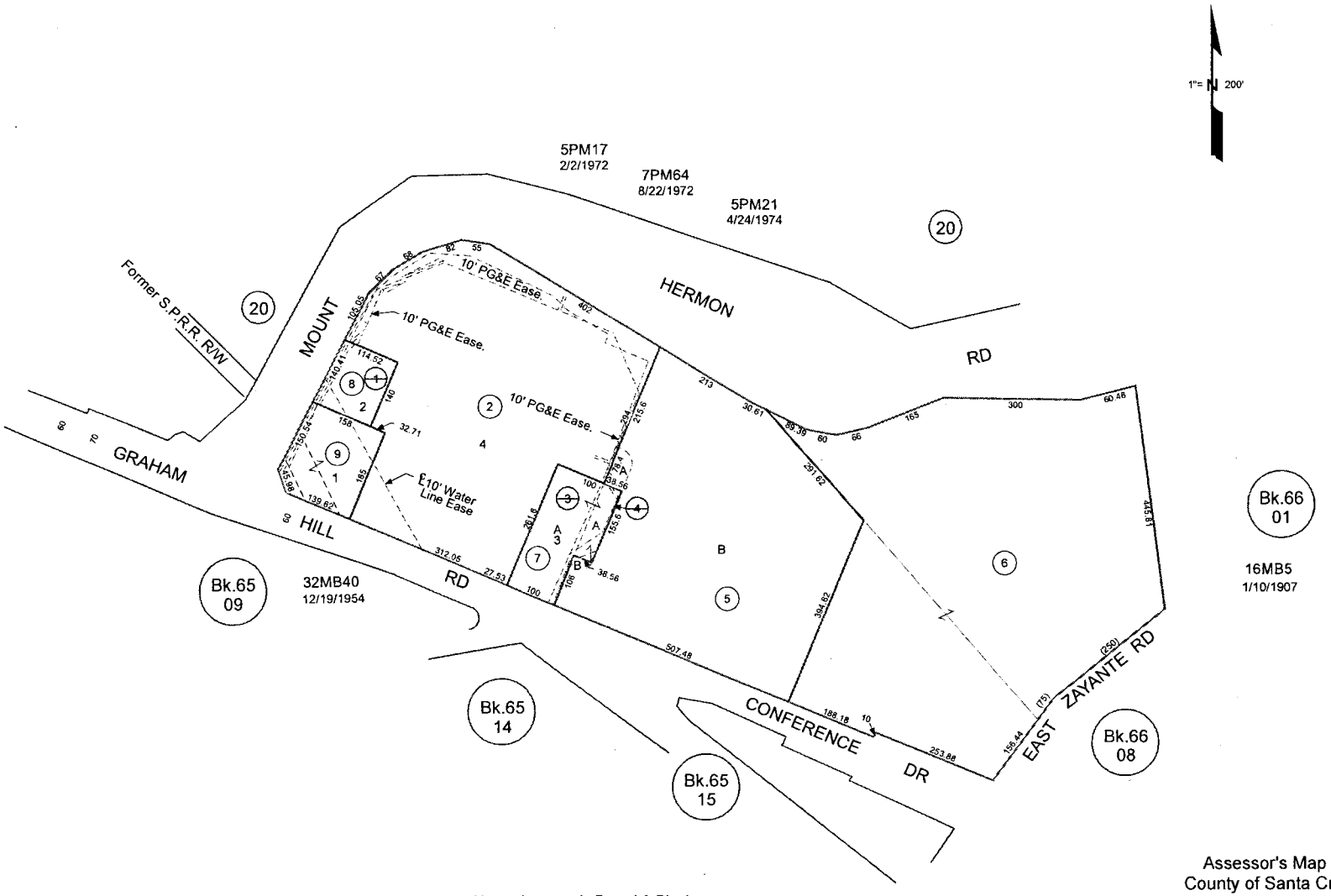
FOR TAX PURPOSES ONLY

ZAYANTE RANCHO

POR. SEC. 22, T.10S., R.2W., M.D.B. & M.

Tax Area Code
90-117

71-33



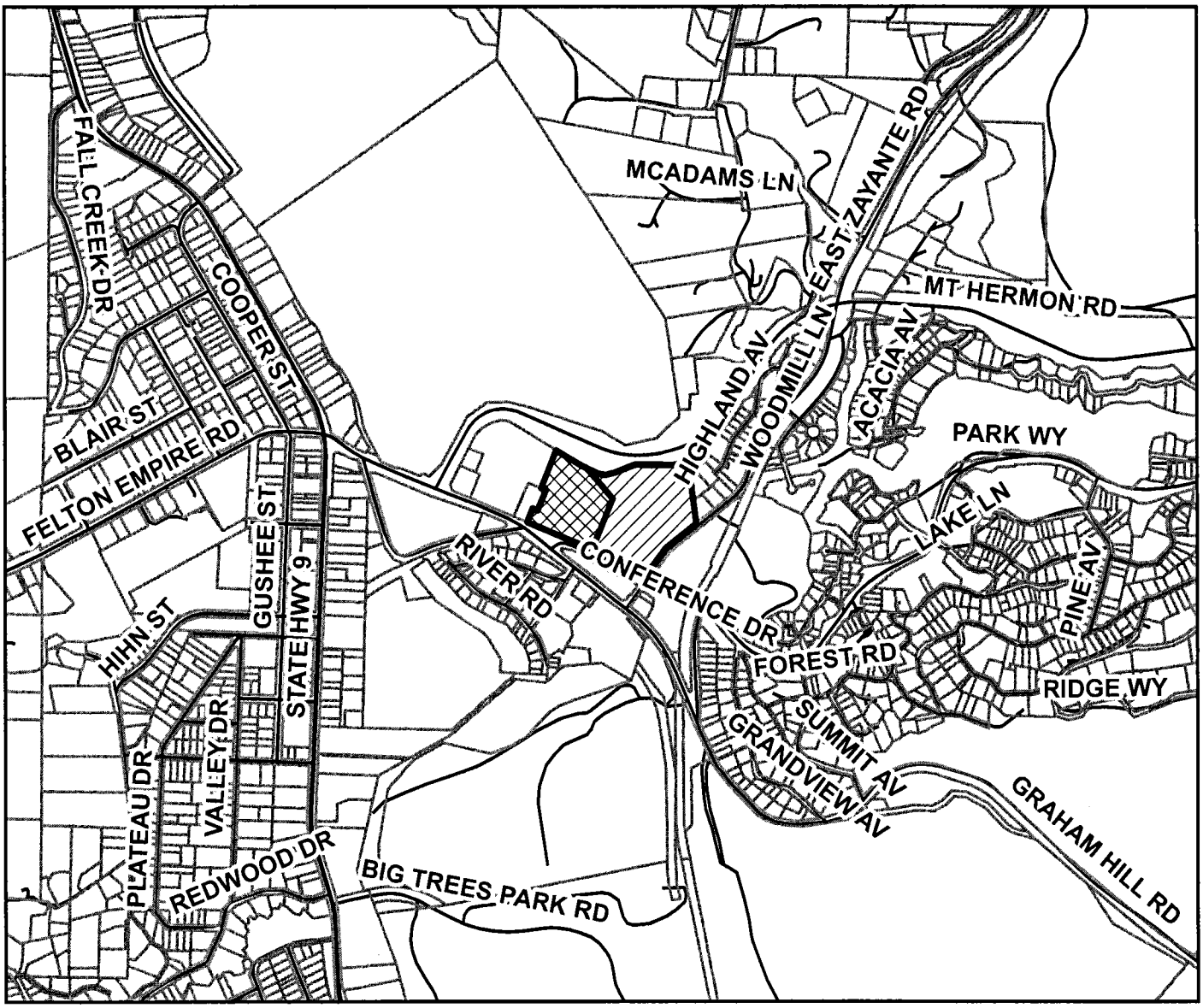
Note - Assessor's Parcel & Block Numbers Shown in Circles.

Assessor's Map No. 71-33
County of Santa Cruz, Calif.
July 2000

Electronically Redrawn 7/5/00/jbs
Rev 5/29/03 CB (Cor st name)
Rev 4/16/08 CB (TCA)

ATTACHMENT 1

Location Map



1,600 800 0 1,600 3,200 4,800 6,400 Feet

LEGEND

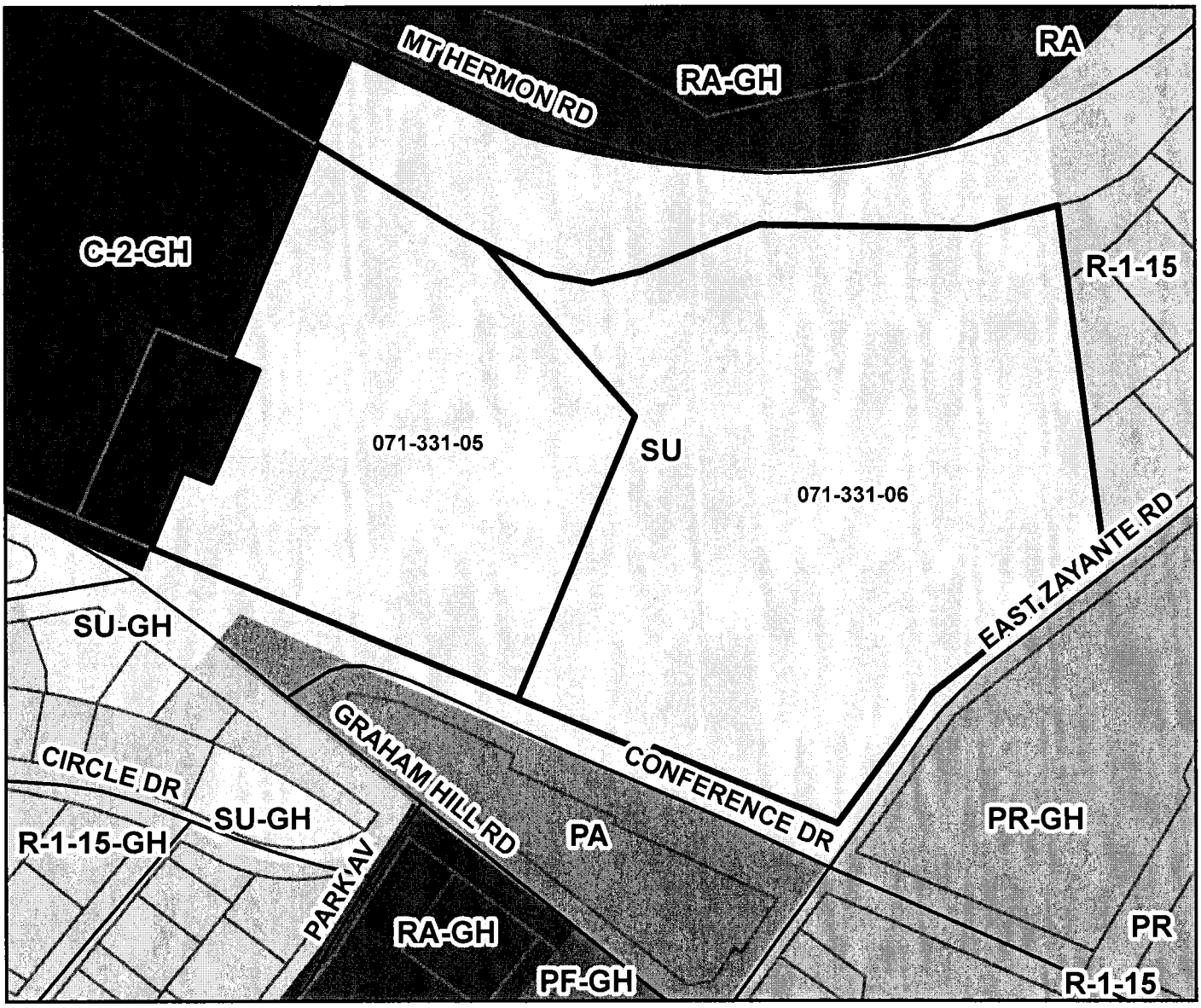
- APN: 071-331-06
- APN: 071-331-05
- Assessors Parcels
- Streets
- State Highways

N W E S

Map Created by
County of Santa Cruz
Planning Department
September 2013

ATTACHMENT 1

Zoning Map



290 145 0 290 580 870 1,160

Feet

LEGEND

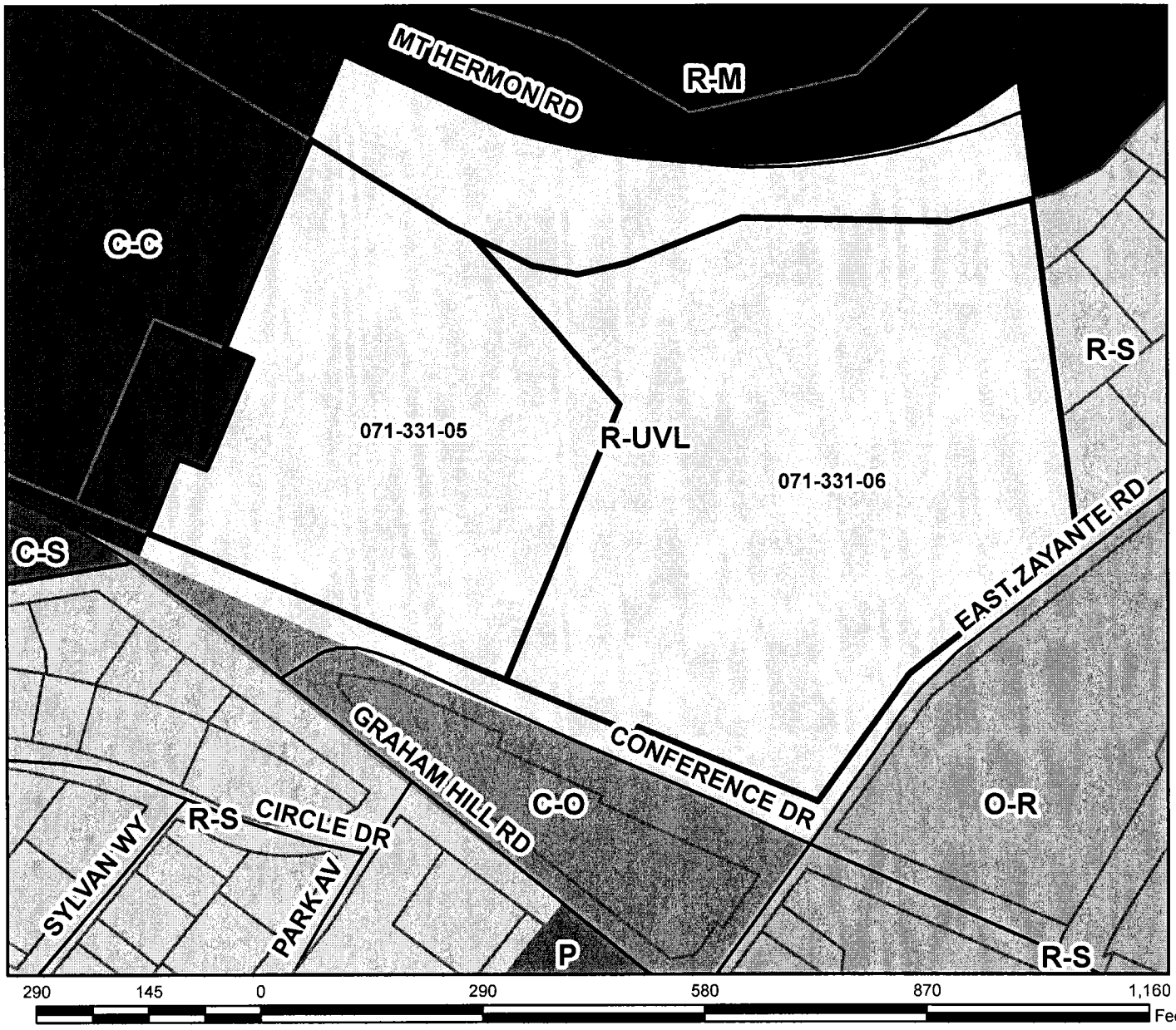
- APN: 071-331-06
- APN: 071-331-05
- Assessors Parcels
- Streets
- SPECIAL USE
- RESIDENTIAL-SINGLE FAMILY
- PARK
- COMMERCIAL-PROF OFFICE
- PUBLIC FACILITY
- AGRICULTURE RESIDENTIAL
- COMMERCIAL-COMMUNITY

N W E S

Map Created by
County of Santa Cruz
Planning Department
September 2013

ATTACHMENT 1

General Plan Designation Map



LEGEND

- APN: 071-331-06
- APN: 071-331-05
- Assessors Parcels
- Streets
- Residential - Urban Very Low Density
- Residential-Suburban
- Parks and Recreation
- Commercial-Office
- Public Facilites
- Commercial-Service
- Commercial-Community
- Residential-Mountain

N
W E
S

Map Created by
County of Santa Cruz
Planning Department
September 2013

ATTACHMENT 1

DESIGN DEVELOPMENT DRAWINGS FOR

MOUNT HERMON - NEW LAND DEVELOPMENT

FELTON, CA 95018
MOUNT HERMON CHRISTIAN CONFERENCE CENTER
ASSESSOR'S PARCEL NUMBERS: 071-331-05, 06
VERDE DESIGN, INC. PROJECT NO. 1209400-1515

PREPARED BY

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
2468 The Alameda
Santa Clara, CA 95050
ph. 408.985.7300
fax. 408.985.7360
www.VerdeDesignInc.com

REGISTERED LANDSCAPE ARCHITECT — STEVEN L. SCHNEIDER — No. 4168 — Signature — Expiration Date: DEC. 31, 2013 — STATE OF CALIFORNIA

ABBREVIATIONS

ACS	ACCESSIBLE	ELEC R	ELECTRIC RISE	SSN	ELEVATION OF DRAINAGE/STRUCTURE/SUMP/INLET
AD	AREA DRAIN	ECVC	END OF CURVE	SD	STORM DRAIN
ASLA	AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS	FG	FINISH GRADE OF PAVING	SDMH	STORM DRAIN MANHOLE
BC	BOTTOM OF CURB	FL	FLOW LINE	SS	SANITARY SEWER
BW	BOTTOM OF WALL	FCVC	FACE OF CURB	SSMH	SANITARY SEWER MANHOLE
BVC	BEGINNING OF CURVE	FS	FINISH SURFACE OF PAVEMENT	SSH	STREET SIGN/MONUMENT
CB	CATCH BASIN	HP	HIGH POINT	TC	TOP OF CURB
CL	CENTER LINE	MW	MANHOLE	TF	TOP OF FACE OF CURB
CONC	CONCRETE	MW T	MANHOLE TO WATER	TW	TOP OF WALL
CO	CLEAN OUT	LP	LOW POINT	TOW	TOP OF WALL
CONG	CLEAN OUT TO GRADE	MH	MANHOLE	TYP	TYPICAL
CP	SURVEY CONTROL POINT	PL	PROPERTY LINE	UBS	UTILITY BOX
DG	DECOMPOSED GRANITE	PVC	POLYVINYL CHLORIDE	VAL	VALVE
DI	DRAIN INLET	R	RADIUS	VD	VERTICAL DRAIN
				WM	WATER METER
				WV	WATER VALVE

GENERAL NOTES

1. PRIOR TO BIDDING, THE GENERAL CONTRACTOR SHALL VISIT & INSPECT THE SITE & THOROUGHLY FAMILIARIZE WITH EXISTING CONDITIONS AFFECTING THE NEW WORK. THE GENERAL CONTRACTOR SHALL NOT DISPUTE, COMPLAIN OR ASSERT THAT THERE IS ANY MISUNDERSTANDING IN REGARDS TO LOCATION, EXTENT, NATURE OR AMOUNT OF WORK TO BE PERFORMED UNDER THIS CONTRACT DUE TO THE CONTRACTOR'S FAILURE TO INSPECT THE SITE. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY CONDITIONS, REGARDING WORK, WHICH ARE NOT COVERED IN THE CONTRACT DOCUMENTS.
2. NO CONSTRUCTION SHALL COMMENCE WITHOUT THE OFFICIAL NOTICE TO PROCEED FROM THE OWNER.
3. THE GENERAL CONTRACTOR & SUBCONTRACTOR ARE RESPONSIBLE FOR LOCATING & VERIFYING ALL EXISTING UNDERGROUND UTILITIES IN ALL AREAS OF NEW WORK PRIOR TO COMMENCEMENT OF EXCAVATION. EXISTING UTILITIES SHOWN ON THE SURVEY/MAP ARE APPROXIMATE SOURCING LOCATIONS AS BEST DETERMINED FROM TESTING DRAWINGS AND THE RESPECTIVE OWNER, BUT SHOULD NOT BE CONSIDERED TO REPRESENT ALL OF THE EXISTING UNDERGROUND UTILITIES. THE CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITIES THAT MAY BE AFFECTED BY NEW FACILITIES IN THIS CONTRACT. VERIFY ACTUAL LOCATION AND DEPTH OF UTILITIES, AND REPORT POTENTIAL CONFLICTS TO THE OWNER REPRESENTATIVE PRIOR TO EXCAVATING FOR NEW FACILITIES.
4. CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO PROTECT ALL EXISTING UTILITIES WHETHER SHOWN OR NOT, IN THE CONTRACT DOCUMENTS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES TO EXISTING UTILITIES CAUSED BY ITS OPERATIONS.
5. THE CONTRACTOR SHALL PROTECT ALL EXISTING AREAS WITHIN SITE IMPROVEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR ALL DAMAGED AREAS TO THEIR ORIGINAL CONDITION OR BETTER AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER REPRESENTATIVE.
6. DIMENSIONS AND LOCATIONS OF EXISTING FACILITIES ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY CONTRACTOR. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER REPRESENTATIVE.
7. ALL WORK SHALL CONFORM TO THE LATEST EDITION OF THE UNIFORM BUILDING CODE, UNIFORM PLUMBING CODE, UNIFORM FIRE CODE AND ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES, AS WELL AS ADOPTED STANDARDS.
8. ALL NOTES ARE FOR GENERAL REFERENCE IN CONJUNCTION WITH, AND AS A SUPPLEMENT TO, THE WRITTEN SPECIFICATIONS AND DETAILS ASSOCIATED WITH THE CONTRACT DOCUMENTS.
9. THIS DRAWING SET SHALL BE USED IN CONSULTATION WITH THE CSI FORMAT SPECIFICATIONS PUBLISHED IN BOOK FORM, COMBINED, THEY ARE HEREIN REFERRED TO AS THE "CONTRACT DOCUMENTS".
10. DIMENSIONS ON WORKING DRAWINGS TAKE PRECEDENCE OVER MEASURED ELEMENTS. CONTRACTOR SHALL NOT SCALE DRAWINGS.
11. ALL TYPICAL DETAILS SHALL APPLY UNLESS NOTED OTHERWISE.
12. CONTRACTOR SHALL PROVIDE ADEQUATE DUST CONTROL AND KEEP AREA AND DEBRIS OFF THE PUBLIC RIGHT-OF-WAY AT ALL TIMES.
13. ALL TRENCHES AND EXCAVATIONS SHALL BE CONSTRUCTED IN STRICT COMPLIANCE WITH THE APPLICABLE SECTIONS OF CALIFORNIA AND FEDERAL O.S.H.A. REQUIREMENTS AND OTHER APPLICABLE SAFETY ORDINANCES. CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR TRENCH SHORING DESIGN AND INSTALLATION.
14. ANY ALTERATIONS OF EXISTING FACILITIES TO ACCOMMODATE THE INSTALLATION OF NEW WORK SHALL BE APPROVED BY THE OWNER REPRESENTATIVE PRIOR TO COMMENCING WORK.
15. CONTRACTOR SHALL COORDINATE ALL WORK TO AVOID DISRUPTING BUILDINGS OR TEACHERS DURING SCHOOL HOURS. ANY DISRUPTION OF THE UTILITIES MUST BE COORDINATED AND APPROVED BY THE OWNER AND INSPECTOR OF RECORD PRIOR TO COMMENCING WORK.
16. ALL TEMPORARY WORK SHALL BE CONSIDERED A PART OF THIS CONTRACT AND NO EXTRA CHARGES WILL BE ALLOWED. THIS SHALL INCLUDE MINOR ITEMS OF MATERIAL OR EQUIPMENT NECESSARY TO MEET THE REQUIREMENTS AND INTENT OF THE PROJECT.
17. THE PLANS AND SPECIFICATIONS DO NOT UNDERTAKE TO SHOW OR LIST EVERY ITEM TO BE PROVIDED, BUT INTEND TO DEFINE THE REQUIREMENTS FOR A FULL AND WORKING SYSTEM FROM THE STANDPOINT OF THE END USER. FOR THIS REASON, WHEN AN ITEM NOT SHOWN OR LISTED IS CLEARLY NECESSARY FOR PROPER COMPLETION/OPERATION OF EQUIPMENT WHICH IS SHOWN OR LISTED, THE CONTRACTOR SHALL PROVIDE AN ITEM WHICH WILL ALLOW THE SYSTEM TO FUNCTION PROPERLY AT NO INCREASE IN PRICE.
18. ALL CONTRACTORS SHALL REMOVE TRASH AND DEBRIS REMAINING FROM THEIR WORK ON A DAILY BASIS. PROJECT SITE SHALL BE MAINTAINED IN A CLEAN AND ORDERLY CONDITION.
19. THE DETAILS REFLECT THE DESIGN INTENT FOR TYPICAL CONDITIONS. THE CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND SHALL INCLUDE, IN HIS SCOPE, THE COST FOR COMPLETE FINISHED INSTALLATIONS, INCLUDING ANCHORS, OF ALL ITEMS.
20. NO WORK SHALL COMMENCE WITH UNAPPROVED MATERIALS. ANY WORK DONE WITH UNAPPROVED MATERIALS AND INSTALLATION IS AT THE CONTRACTOR'S RISK AND IS SUBJECT TO REJECTION AND REPLACEMENT. SEE SPECIFICATIONS FOR SUBMITTAL AND SUBSTITUTION REQUIREMENTS.
21. CONSTRUCTION MATERIALS STORED ON THE SITE SHALL BE PROPERLY STACKED AND PROTECTED SO AS TO PREVENT DAMAGE OR DETERIORATION WHILE USED. FAILURE IN THIS REGARD MAY BE CAUSE FOR REJECTION OF MATERIAL AND/OR WORK.
22. ALL EQUIPMENT SHALL BE FABRICATED FROM FIELD VERIFIED DIMENSIONS AND APPROVED SHOP DRAWINGS. COORDINATE MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT.
23. CONTRACTOR SHALL PERFORM THESE CONSTRUCTION AND DEMOLITION IN A MANNER WHICH WILL NOT ALLOW HARMFUL POLLUTANTS TO ENTER THE STORM DRAIN SYSTEM. TO ENSURE COMPLIANCE, THE CONTRACTOR SHALL DESIGNATE THE APPROPRIATE BEST MANAGEMENT PRACTICE (BMP) TO BE USE IN CONSTRUCTION AND ADA COMPLETION. THE CONTRACTOR SHALL PREPARE THE PROPOSED BMP AT THE PRE-CONSTRUCTION MEETING FOR DISCUSSION AND APPROVAL.
24. CONTRACTOR SHALL PROVIDE TEMPORARY CONSTRUCTION FENCING PER CONTRACT DOCUMENTS TO KEEP OUT OF WORK AREAS. FENCING MAY BE ADJUSTED DURING CONSTRUCTION BASED ON CONSTRUCTION SEQUENCE BY OWNER REPRESENTATIVE'S DIRECTION.
25. OVERNIGHT PARKING OF CONSTRUCTION EQUIPMENT IN THE STREET RIGHT-OF-WAY SHALL NOT BE PERMITTED.

APPLICABLE CODES

1. 2010 CBC CHAPTER 35, PROVIDE ALL THE APPLICABLE/ADOPTED STANDARDS. WHERE A PARTICULAR STANDARD IS REFERENCED IN THE CODE BUT DOES NOT APPEAR AS AN ADOPTED STANDARD IT MAY STILL BE USED. APPLY ONLY THE PORTION OF THE STANDARD THAT IS APPLICABLE TO THE CODE SECTION WHERE THE STANDARD IS REFERENCED, NOT THE ENTIRE STANDARD.

   2010 BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.
   CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.
   (2009 INTERNATIONAL BUILDING CODE VOLUMES 1-3 AND 2010 CALIFORNIA AMENDMENTS)
   CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.
   (2008 NATIONAL ELECTRICAL CODE AND 2010 CALIFORNIA AMENDMENTS)
   CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24 C.C.R.
   (2009 UNIFORM MECHANICAL CODE AND 2010 CALIFORNIA AMENDMENTS)
   CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.
   (2009 UNIFORM PLUMBING CODE AND 2010 CALIFORNIA AMENDMENTS)
   2010 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 C.C.R.
   2007 ELEVATOR SAFETY CONSTRUCTION CODE, PART 7, TITLE 24
   2010 CALIFORNIA FIRE CODE, PART 9, TITLE 24 C.C.R.
   (2006 INTERNATIONAL FIRE CODE AND 2048 CALIFORNIA AMENDMENTS)
   CALIFORNIA EXISTING BUILDING CODE, PART 10, TITLE 24 C.C.R.
   (2006 INTERNATIONAL EXISTING BUILDING CODE AND 2010 CALIFORNIA AMENDMENTS)
   2010 CALIFORNIA "GREEN" BUILDING REQUIREMENTS OR CAL GREEN, PART 11, TITLE 24 C.C.R.
   2010 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R.
   2010 TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.

NFPA 13	AUTOMATIC SPRINKLER SYSTEMS	2010 EDITION
NFPA 14	STANDPIPE SYSTEMS	2010 EDITION
NFPA 17	DRY CHEMICAL EXTINGUISHING SYSTEMS	2009 EDITION
NFPA 17A	WET CHEMICAL SYSTEMS	2006 EDITION
NFPA 20	STATIONARY PUMPS	2010 EDITION
NFPA 24	PRIVATE MAINS	2010 EDITION
NFPA 72	NATIONAL FIRE ALARM CODE (CALIFORNIA AMENDED) (NOTE: SEE UL 217 STANDARD, NOT FOR "ANALOG DEVICES")	2010 EDITION
NFPA 253	CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS	2011 EDITION
NFPA 2001	CLEAN AGENT FIRE EXTINGUISHING SYSTEMS	2008 EDITION

   REFERENCE CODE SECTIONS FOR APPLICABLE STANDARDS - 2010 CBC CHAPTER 35 AND 2010 CFC CHAPTER 45

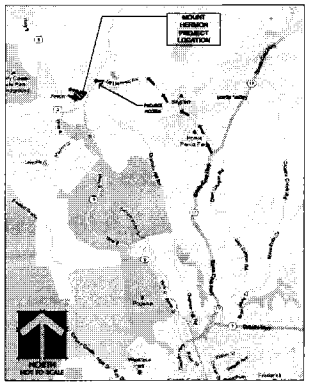
2. "THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NONCONFORMING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CHANGE ORDER OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE OWNER REPRESENTATIVE BEFORE PROCEEDING WITH THE WORK."

3. THE FOLLOWING INFORMATION FROM PART ONE, TITLE 24 CCR SHALL BE INCLUDED IN THE CONTRACT DOCUMENTS:
   A. ADDENDA AND CHANGES AS PER SECTION 4-332
   B. INSPECTOR APPROVED BY DSA
   C. INSPECTION AND CONTINUOUS INSPECTION OF WORK PER SECTION 4-333(b) AND 4-342
   D. TESTS AND TESTING LABORATORY PER SECTION 4-335 (OWNER SHALL PAY THE TESTING LABORATORY)
   E. SPECIAL INSPECTION PER SECTION 4-339 (c)
   F. CONTRACTOR SHALL SUBMIT VERIFIED REPORT PER SECTION 4-335 AND 4-343 (a)
   G. ADMINISTRATION OF CONSTRUCTION PER PART 1, TITLE 24, C.C.R.,
      1) DUTIES OF ARCHITECT, STRUCTURAL ENGINEER, OR PROFESSIONAL ENGINEER PER SECTION 4-333 (a) and 4-341
      2) DUTIES OF CONTRACTOR PER SECTION 4-335
      3) VERIFIED REPORTS PER SECTION 4-335
   H. A COPY OF PART 1 AND 2 OF TITLE 24 SHALL BE KEPT AND AVAILABLE IN THE FIELD DURING CONSTRUCTION
   I. DSA SHALL BE NOTIFIED ON START OF CONSTRUCTION PER SECTION 4-331
   J. SUPERVISION BY DSA PER SECTION 4-343
   K. DSA IS NOT SUBJECT TO ARBITRATION

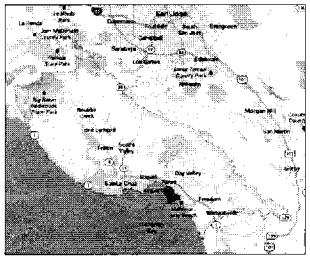
SCOPE OF WORK

TO PROVIDE DEVELOPMENT PLANS AT A LEVEL TO SECURE MASTER PLAN AMENDMENT APPROVAL. SITE IMPROVEMENTS INCLUDE: TWO BUILDINGS, PARKING LOTS, COMMUNITY GARDENS, AERIAL ADVENTURE PARK, BIKE TRAILS PARK, MOUNTAIN BIKE AREA, LARGE AND SMALL PLAYFIELDS, SPLASH PARK, OUTDOOR DAY CAMP PLAY AREA, PLAY FIELD, TARGET SPORTS AND PAINT BALL RANGES, THERE WILL INCLUDE GRADING, SANITARY SEPTIC SYSTEM, DRAINAGE, PLANTING, IRRIGATION, WALLS, PEDESTRIAN PATHS, FENCING AND BRIDGES.

VICINITY AND SITE MAP



SANTA CRUZ COUNTY MAP



CONTACT INFORMATION

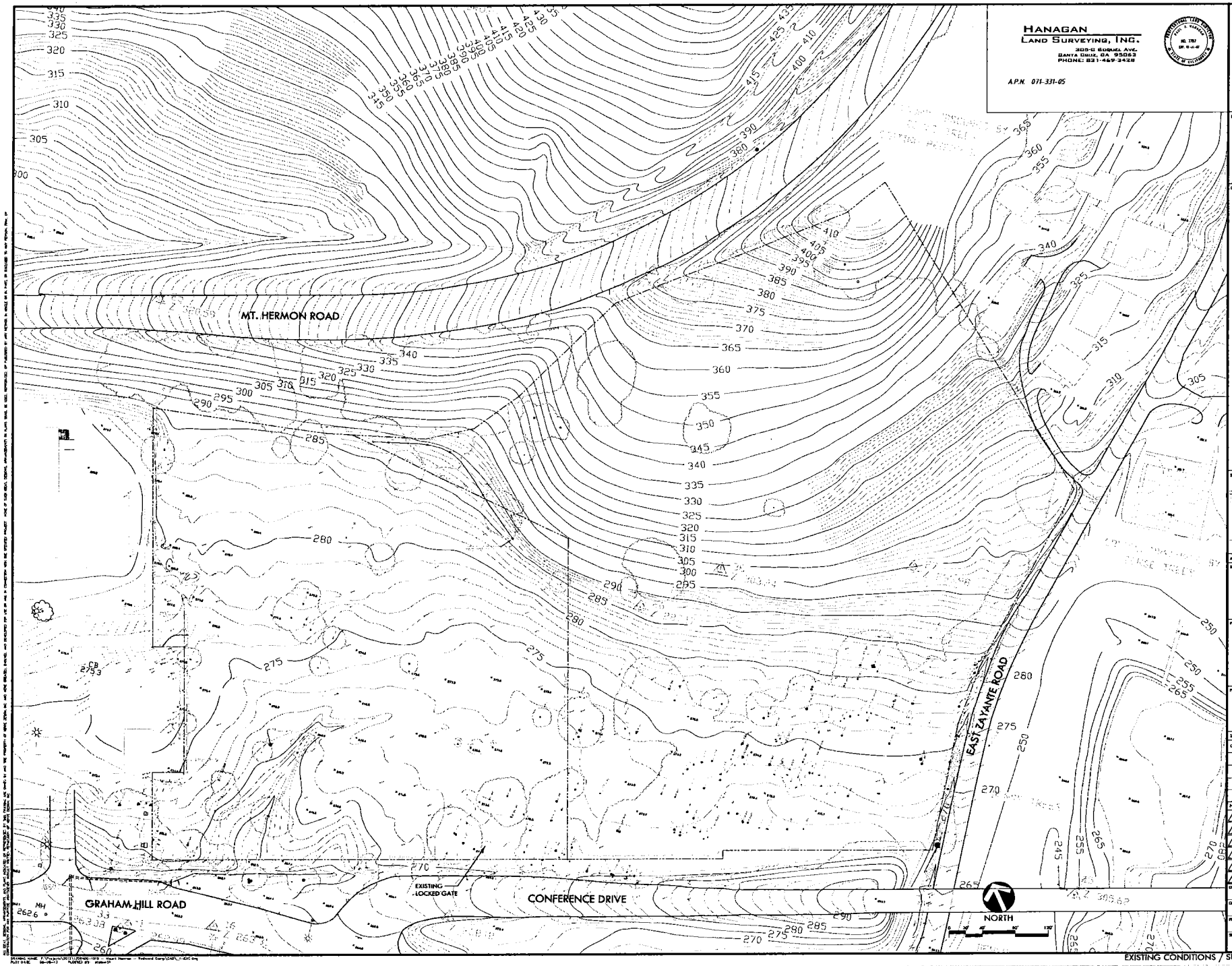
OWNER		
MOUNT HERMON P.O.BOX 413 MOUNT HERMON, CA 95041	DALE POLLOCK DALE.POLLOCK@MOUNTHERMON.ORG	(831) 430-1204 (OFFICE) (831) 335-9218 (FAX)
LANDSCAPE ARCHITECT		
VERDE DESIGN INC. 2455 THE ALAMEDA, SUITE 200 SANTA CLARA, CA 95050	CORBIN SCHNEIDER CORBIN@VERDEDESIGNINC.COM	(408) 850-3416 (OFFICE) (408) 985-7260 (FAX)
CIVIL ENGINEER		
RI ENGINEERING 303 POTRERO ST., SUITE 42-202 SANTA CRUZ, CA 95060	RICHARD IRISH RICHARD@RIENGINEERING.COM	(831) 425-3901 (OFFICE) (831) 425-1522 (FAX)
BIKE PARK DESIGN		
ALPINE BIKE PARKS 8-1050 MILLAR CREEK ROAD WHISTLER, BC V0N 1B1, CANADA	JUDD DE VALL JUDD@ALPINEBIKEPARKS.COM	(604) 962-1951 (OFFICE) (604) 962-8951 (FAX)
AERIAL ADVENTURE DESIGN		
SWELL EXPLORATIONS 44 PARK WAY, P.O.BOX 6 MOUNT HERMON, CA 95041	NICK REDINGER NICK@SWELLEXPLORATIONS.COM	(740) 296-4850 (OFFICE)
ARCHITECTURAL		
WAKE ARCHITECTS 20 PLAZA / PO BOX 340 MOUNT HERMON, CA 95041	WILLIE MAYFIELD W@MAYFIELDARCHITECTS.COM	(831) 335-0211 (OFFICE)
ELECTRICAL ENGINEER		
PRIME DESIGN GROUP 849 ALMAR AVE, SUITE C299 SANTA CRUZ, CA 95060	DAVE AUBLE DAVE@PRIMEDSGN.COM	(831) 430-3600 (OFFICE) (831) 430-9490 (FAX)
SEWER / SEPTIC		
BIO-SPHERE CONSULTING 1315 IONG ST., SANTA CRUZ, CA 95061	ANDREW BROWNSTONE ANDREW@BIOSPHERE-CONSULTING.COM	(831) 420-1287 (OFFICE) (800) 515-8685 (FAX)

SHEET INDEX

ATTACHMENT 2

MOUNT HERMON - NEW LAND DEVELOPMENT

COUNTY PLANNING SUBMITTAL - 08/15/13



HANAGAN
LAND SURVEYING, INC.
205-G Soquel Ave.
Santa Cruz, CA 95062
PHONE: 831-469-2428

A.P.N. 071-331-05

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
2455 The Alameda
Santa Clara, CA 95050
tel: 408.983.7200
fax: 408.983.7260
www.VerdeDesign.com

STAMP

CONSULTANT

ATTACHMENT 2

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE
EXISTING CONDITIONS / SURVEY AND MAPPING PLAN

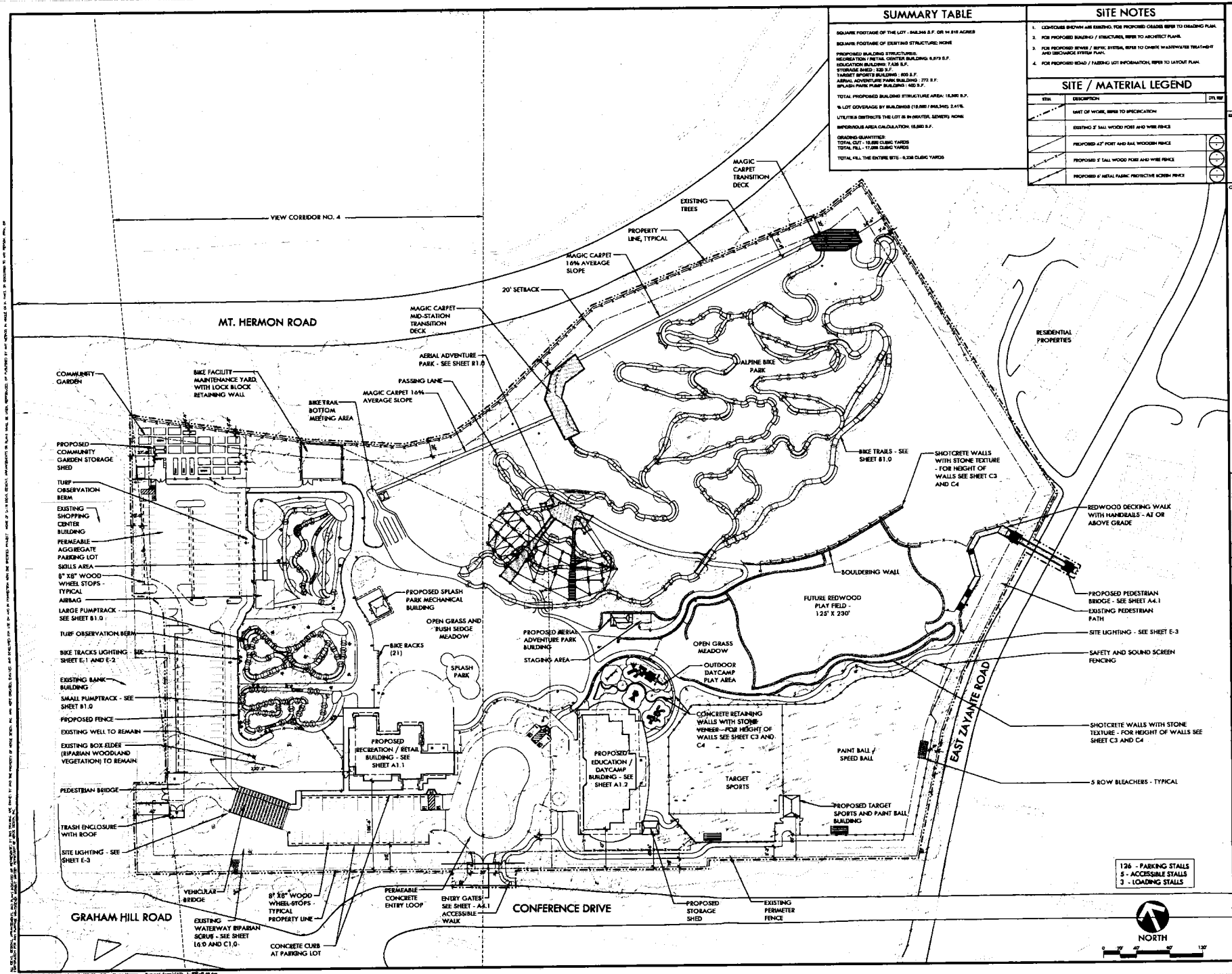
PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	08/06/13

NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

DRAWN BY: P. HANAGAN
CHECKED BY: DM / CMS
DATE ISSUED: 08/06/13
SCALE: 1"=40'-0"
PROJ. NO.: 1209400-1515
SHEET NO.: L1.0



SUMMARY TABLE

SQUARE FOOTAGE OF THE LOT - 845,345 S.F. OR ± 19.515 ACRES

SQUARE FOOTAGE OF EXISTING STRUCTURE: NONE

PROPOSED BUILDING STRUCTURES:
RECREATION / RETAIL CENTER BUILDING: 6,873 S.F.
EDUCATION BUILDING: 7,436 S.F.
STORAGE SHED : 320 S.F.
TARGET SPORTS BUILDING : 800 S.F.
AERIAL ADVENTURE PARK BUILDING : 272 S.F.
SPLASH PARK PUMP BUILDING : 400 S.F.

TOTAL PROPOSED BUILDING STRUCTURE AREA: 18,580 S.F.

% LOT COVERAGE BY BUILDINGS (18,580 / 845,345): 2.41%

UTILITIES DISTRICTS THE LOT IS IN (WATER, SEWER): NONE

IMPERVIOUS AREA CALCULATION: 18,580 S.F.

GRADING QUANTITIES
TOTAL CUT - 18,000 CUBIC YARDS
TOTAL FILL - 17,088 CUBIC YARDS

TOTAL FILL THE ENTIRE SITE - 9,258 CUBIC YARDS

SITE NOTES

1. CONTOURS SHOWN ARE EXISTING. FOR PROPOSED GRADES REFER TO GRADING PLAN.
2. FOR PROPOSED BUILDING / STRUCTURES, REFER TO ARCHITECT PLANS.
3. FOR PROPOSED SEWER / SEPTIC SYSTEM, REFER TO ONSITE WASTEWATER TREATMENT AND DISCHARGE SYSTEM PLAN.
4. FOR PROPOSED ROAD / PARKING LOT INFORMATION, REFER TO LAYOUT PLAN.

SITE / MATERIAL LEGEND

SYM.	DESCRIPTION	QTY.	UNIT
	LIMIT OF WORK, REFER TO SPECIFICATION		
	EXISTING 3' TALL WOOD POST AND WIRE FENCE		
	PROPOSED 42" POST AND RAIL WOODEN FENCE		
	PROPOSED 5' TALL WOOD POST AND WIRE FENCE		
	PROPOSED 6' METAL FABRIC PROTECTIVE SCREEN FENCE		

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www.VerdeDesignInc.com

STAMP

REGISTERED LANDSCAPE ARCHITECT
ROBERT RIECK
No. 4148
RENEWAL 08/31/2013
STATE OF CALIFORNIA

CONSULTANT

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-05, 09

SHEET TITLE
SITE PLAN

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	08/06/13

NO.	REVISIONS	DATE

DRAWN BY: RK
CHECKED BY: DM / CMS
DATE ISSUED: 08/06/13
SCALE: 1"=40'-0"
PROJ. NO.: 1209400-1515
SHEET NO.: L2.0 OF SHEETS
SITE PLAN

ATTACHMENT 2

ATTACHMENT 2

BUILDING OCCUPANCY

BLDG. TYPE	OCCUPANCY	CONSTRUCTION TYPE	BUILDING AREA
RECREATION / RETAIL CENTER BUILDING	M	TYPE V-A	6,930 SF MAIN LEVEL 1,040 SF BASEMENT STORAGE
EDUCATION BUILDING	E	TYPE V-A	7,444 (SINGLE STORY)

GUEST PARKING REQUIRED FOR OUTDOOR ACTIVITIES (OTHER REQUIRES RATIO OF 1:3)
MAX NUMBER OF OUTDOOR ACTIVITY GUESTS AT ANY ONE TIME IS 150 (3 = 52 SPACES
COMMUNITY GARDEN = 30 SPACES (PER TRAFFIC ENGINEERS REPORT)

GUEST PARKING REQUIRED FOR EDUCATIONAL BUILDING USES (OTHER REQUIRES RATIO OF 1:3)
MAX NUMBER OF GUESTS AT ANY ONE TIME IS 540/3 = 20 SPACES

MAX NUMBER OF STAFF ON SITE AT ANY ONE TIME IS 30 = 30 SPACES

TOTAL SPACES REQUIRED = 52, OF THOSE 5 TO BE ADA.

TOTAL PROVIDED
120 ON THE PLAN PLUS 3 INC. FOR A TOTAL OF 134

ACCESSIBILITY PLAN NOTES

1. ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLAN IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/4" BEVELED AT 1:2 MAX. SLOPE, OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/8" MAX. AND A LEAST 48" WIDE. SURFACE IS SLIP RESISTANT, STABLE, FIRM, AND SMOOTH. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED (CBC 11A&B.1.2).
2. FOR EGRESS PLAN SHOWING MANEUVERING CLEARANCES AT ALL DOORWAYS, PASSAGEWAYS, LANDING (CBC 1133B) AND ACCESSIBLE RESTROOM (CBC 1115B), REFER TO PRELIMINARY BUILDING PLAN.

ACCESSIBILITY PLAN LEGEND

STYLE	DESCRIPTION	DTL REF
	LIMIT OF WORK	
	PERMEABLE CONCRETE PAVING, FIRE LANE RATED AND ACCESSIBLE PARKING	
	PERMEABLE ASPHALT PAVING - FIRE LANE RATED	
	CLASS II GRAVEL WITH CRUSHED PERMEABLE TOPPING STONE - PARKING LOT	
	DECOMPOSED GRANITE WITH BINDER - PEDESTRIAN PATHS	
	PERVIOUS PAVERS ON SAND AND PERMEABLE ROCK BASE	
	OPEN CELL CONCRETE PAVERS ON PERMEABLE ROCK BASE	
	SPLASH PLAY AREA WITH ACCESSIBLE RESILIENT SURFACING	
	CHILDREN'S PLAY STRUCTURE AREA WITH ACCESSIBLE RESILIENT SURFACING	
	WOOD DECK OVER EXISTING SOIL	
	ACCESSIBLE PATH OF TRAVEL (CBC 11A&B.1.2)	
	VEHICULAR AND FIRE ACCESS / CIRCULATION PATH	

MT. HERMON ROAD

(3) ACCESSIBLE / RAISED GARDEN BEDS

COMMUNITY GARDEN STORAGE SHED

ACCESSIBLE PARKING (CBC 1129B) ON PERMEABLE CONCRETE PAVING

EXISTING EMERGENCY ACCESS

EXISTING BUS STOP LOCATION

PROPOSED SPLASH PARK MECHANICAL BUILDING

ACCESSIBLE RESTROOMS (CBC 1115B)

SPLASH PARK

ACCESSIBLE PARKING (CBC 1129B)

PROPOSED AERIAL ADVENTURE PARK BUILDING

ACCESSIBLE PLAY STRUCTURE AREA

PROPOSED RECREATION / RETAIL BUILDING

ACCESSIBLE RESTROOMS (CBC 1115B)

PROPOSED EDUCATION / DAY CAMP BUILDING

PROPOSED TARGET SPORTS AND PAINT BALL BUILDING

PROPOSED STORAGE SHED

ACCESSIBLE PARKING (CBC 1129B) ON PERMEABLE CONCRETE PAVING

EAST ZAYANTE ROAD

126 - PARKING STALLS
5 - ACCESSIBLE STALLS
3 - LOADING STALLS

GRAHAM HILL ROAD

EXISTING PATHWAY

MAIN ENTRANCE

PEDESTRIAN ENTRANCE

CONFERENCE DRIVE

NORTH

0 20' 40' 80' 120'

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fax: 925.962.7260
www.VerdeDesign.com

REGISTERED LANDSCAPE ARCHITECT
ROBERT KERR
No. 4148
Signature
Expiration Date
DEC. 2013
STATE OF CALIFORNIA

STAMP

CONSULTANTS

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-301-05, 06

SHEET TITLE
ACCESSIBILITY / CIRCULATION PLAN

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

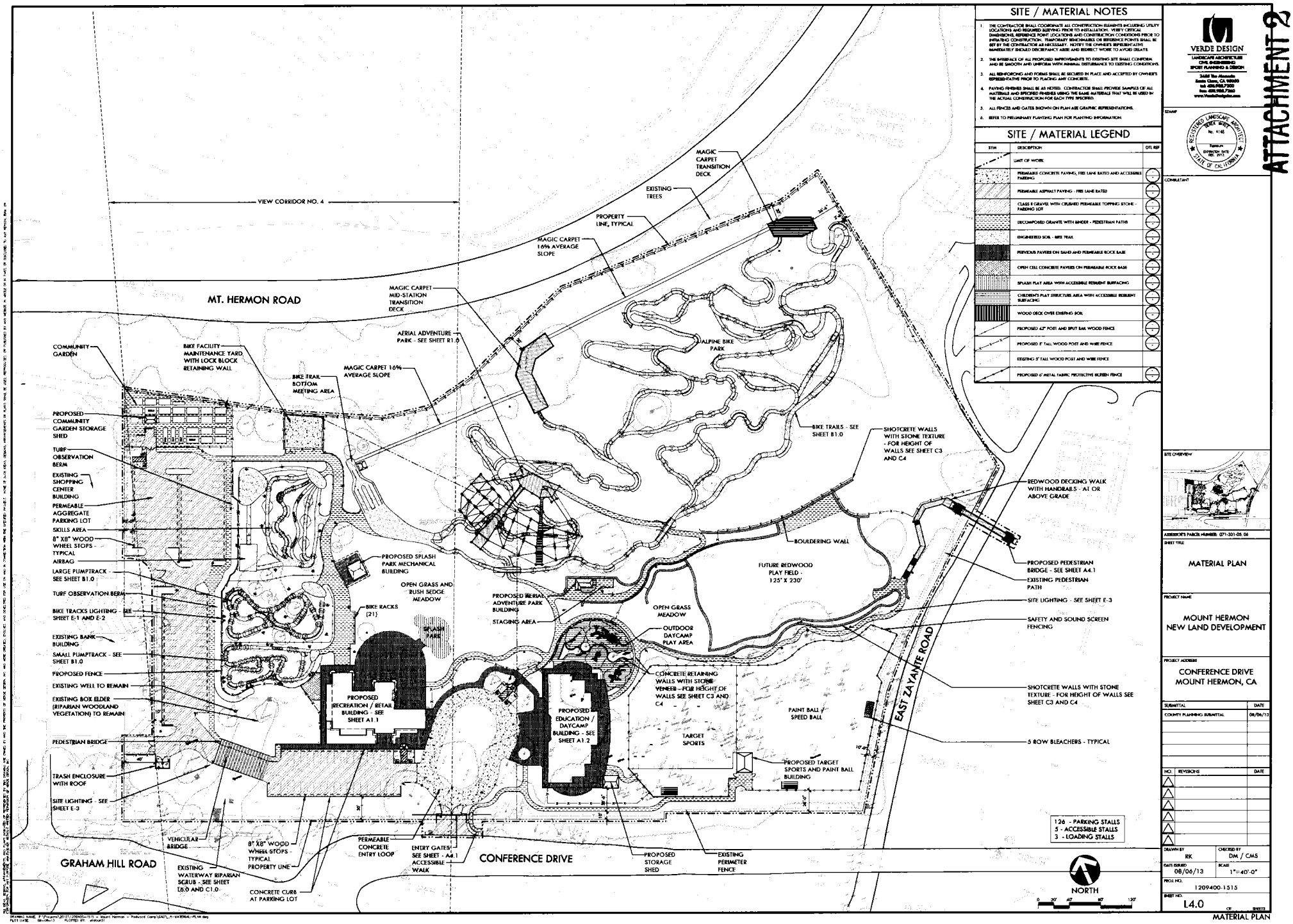
PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	08/06/13

NO.	REVISIONS	DATE

DRAWN BY	CHECKED BY
RK	DM / CMS
DATE ISSUED: 08/06/13	SCALE: 1"=40'-0"
PROJ. NO. 1209400-1515	
SHEET NO. L3.0	OF SHEETS

ACCESSIBILITY / CIRCULATION PLAN



SITE / MATERIAL NOTES

1. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ELEMENTS INCLUDING UTILITY LOCATIONS AND REQUIRED SURVEYING PRIOR TO INSTALLATION. VERIFY CRITICAL DIMENSIONS, REFERENCE POINT LOCATIONS AND CONSTRUCTION CONDITIONS PRIOR TO INITIATING CONSTRUCTION. TEMPORARY BENCHMARKS OR REFERENCE POINTS SHALL BE SET BY THE CONTRACTOR AS NECESSARY. NOTIFY THE OWNER'S REPRESENTATIVE IMMEDIATELY SHOULD DISCREPANCY ARISE AND REDIRECT WORK TO AVOID DELAYS.
2. THE INTERFACE OF ALL PROPOSED IMPROVEMENTS TO EXISTING SITE SHALL CONFORM AND BE SMOOTH AND UNIFORM WITH MINIMAL DISTURBANCE TO EXISTING CONDITIONS.
3. ALL REINFORCING AND FORMS SHALL BE SECURED IN PLACE AND ACCEPTED BY OWNER'S REPRESENTATIVE PRIOR TO PLACING ANY CONCRETE.
4. PAVING FINISHES SHALL BE AS NOTED. CONTRACTOR SHALL PROVIDE SAMPLES OF ALL MATERIALS AND SPECIFIED FINISHES USING THE SAME MATERIALS THAT WILL BE USED IN THE ACTUAL CONSTRUCTION FOR EACH TYPE SPECIFIED.
5. ALL FENCES AND GATES SHOWN ON PLAN ARE GRAPHIC REPRESENTATIONS.
6. REFER TO PRELIMINARY PLANTING PLAN FOR PLANTING INFORMATION.

SITE / MATERIAL LEGEND

SYM	DESCRIPTION	QTY. REF
	LIMIT OF WORK	
	PERMEABLE CONCRETE PAVING, FIRE LANE RATED AND ACCESSIBLE PARKING	
	PERMEABLE ASPHALT PAVING - FIRE LANE RATED	
	CLASS II GRAVEL WITH CRUSHED PERMEABLE TOPPING STONE - PARKING LOT	
	DECOMPOSED GRANITE WITH BINDER - PEDESTRIAN PATHS	
	ENGINEERED SOIL - BIKE TRAIL	
	PERVIOUS PAVERS ON SAND AND PERMEABLE ROCK BASE	
	OPEN CELL CONCRETE PAVERS ON PERMEABLE ROCK BASE	
	SPLASH PLAY AREA WITH ACCESSIBLE RESILIENT SURFACING	
	CHILDREN'S PLAY STRUCTURE AREA WITH ACCESSIBLE RESILIENT SURFACING	
	WOOD DECK OVER EXISTING SOIL	
	PROPOSED 42" POST AND SPLIT RAIL WOOD FENCE	
	PROPOSED 3' TALL WOOD POST AND WIRE FENCE	
	EXISTING 3' TALL WOOD POST AND WIRE FENCE	
	PROPOSED 6' METAL FABRIC PROTECTIVE SCREEN FENCE	

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tel: 408.984.7900
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www.VerdeDesign.com

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REGISTERED LANDSCAPE ARCHITECT — RENEE MEIER — No. 4145 — Expiration DATE: DEC. 2013 — STATE OF CALIFORNIA

CONSULTANT

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-301-05, 06

SHEET TITLE

MATERIAL PLAN

PROJECT NAME

MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	06/06/13

NO.	REVISIONS	DATE

DRAWN BY	CHECKED BY
RK	DM / CMS

DATE ISSUED	SCALE
06/06/13	1"=40'-0"

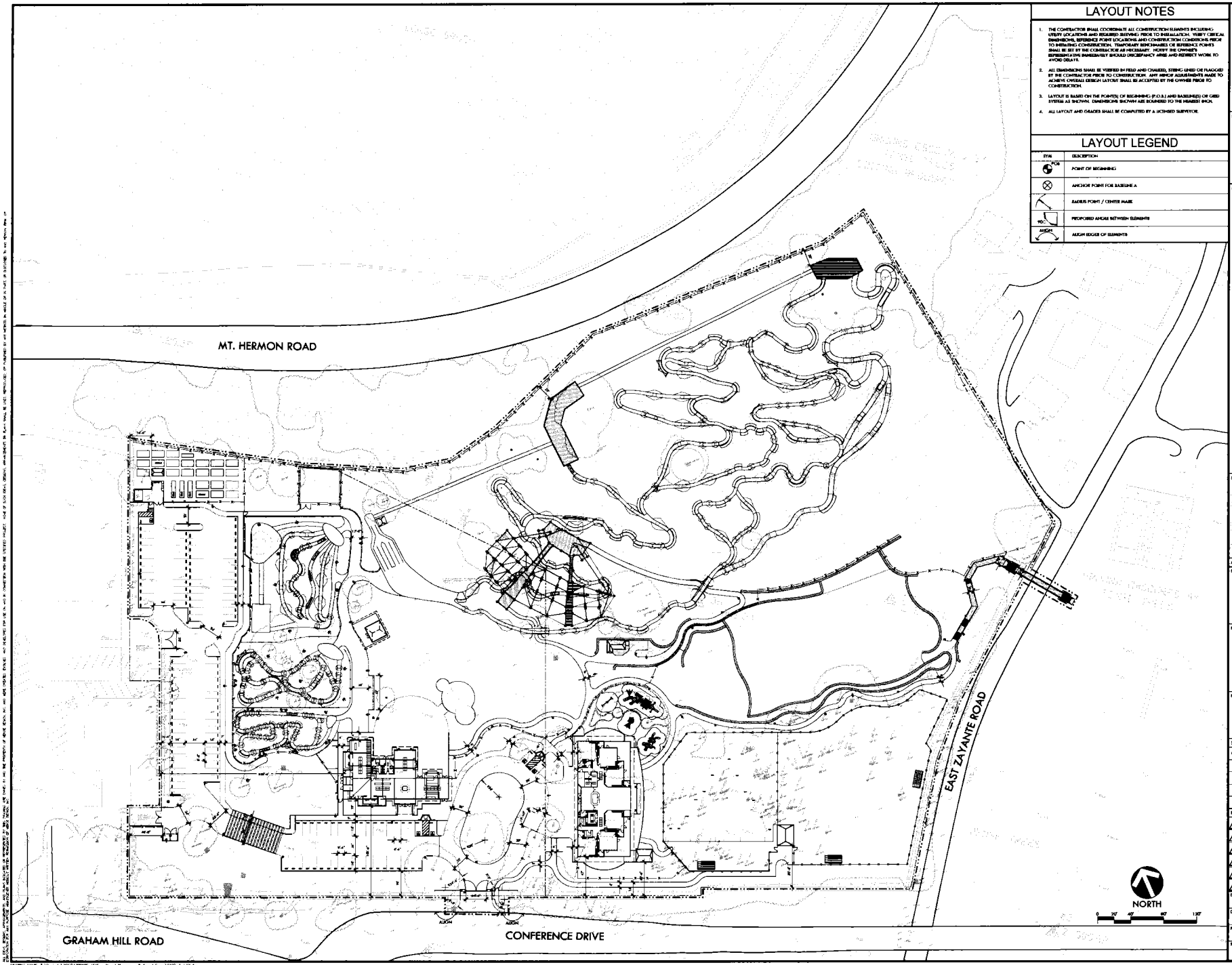
PROJ. NO.: 1209400-1515

SHEET NO.: L4.0 OF SHEETS

MATERIAL PLAN

ATTACHMENT 2

ATTACHMENT 2



LAYOUT NOTES

1. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ELEMENTS INCLUDING UTILITY LOCATIONS AND REQUIRED SURVEYING PRIOR TO INSTALLATION. VERIFY CRITICAL DIMENSIONS, REFERENCE POINT LOCATIONS AND CONSTRUCTION CONDITIONS PRIOR TO INITIATING CONSTRUCTION. TEMPORARY BENCHMARKS OR REFERENCE POINTS SHALL BE SET BY THE CONTRACTOR AS NECESSARY. NOTIFY THE OWNER'S REPRESENTATIVE IMMEDIATELY SHOULD DISCREPANCY ARISE AND REFRAIN FROM WORK TO AVOID DELAYS.
2. ALL DIMENSIONS SHALL BE VERIFIED IN FIELD AND CHALKED, STRING LINED OR FLAGGED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY MINOR ADJUSTMENTS MADE TO ACHIEVE OVERALL DESIGN LAYOUT SHALL BE ACCEPTED BY THE OWNER PRIOR TO CONSTRUCTION.
3. LAYOUT IS BASED ON THE POINT(S) OF BEGINNING (P.O.B.) AND BASELINE(S) OR GRID SYSTEM AS SHOWN. DIMENSIONS SHOWN ARE BOUNDED TO THE NEAREST INCH.
4. ALL LAYOUT AND GRADES SHALL BE COMPLETED BY A LICENSED SURVEYOR.

LAYOUT LEGEND

SYM.	DESCRIPTION
POB	POINT OF BEGINNING
	ANCHOR POINT FOR BASELINE A
	RADIUS POINT / CENTER MARK
90°	PROPOSED ANGLE BETWEEN ELEMENTS
ALIGN	ALIGN EDGES OF ELEMENTS

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www.VerdeDesign.com

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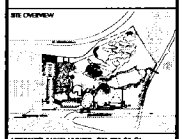
REGISTERED LANDSCAPE ARCHITECT
No. 4148
Signature
EXPIRATION DATE
DEC. 31, 2013
STATE OF CALIFORNIA

CONSULTANTS

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 071-201-02, 06

SHEET TITLE
PRELIMINARY LAYOUT PLAN

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	08/08/13

NO.	REVISIONS	DATE

DRAWN BY	CHECKED BY
EK	DM / CMS
DATE ISSUED	SCALE
08/06/13	1"=40'-0"

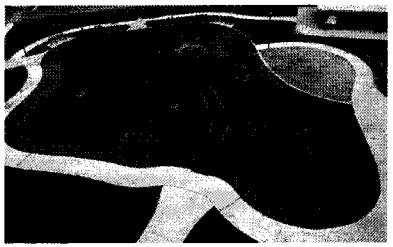
PROJ. NO.
1209400-1515

SHEET NO.
L5.0 OF SHEETS

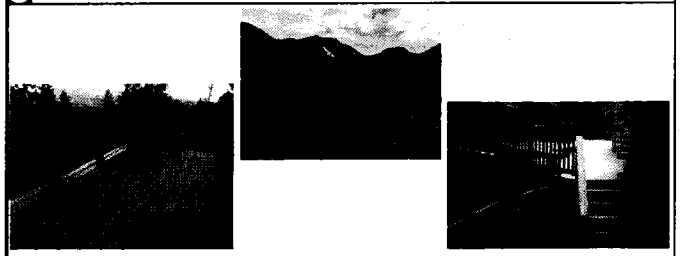
PRELIMINARY LAYOUT PLAN

ATTACHMENT 2

Q SPLASH PARK CONCEPT



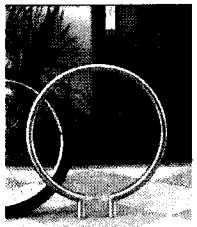
F POURED IN PLACE RESILIENT RUBBER SURFACING FOR SPLASH PARK AND PLAY STRUCTURE AREA



P REDWOOD DECKING, STAIRS AND HANDRAIL

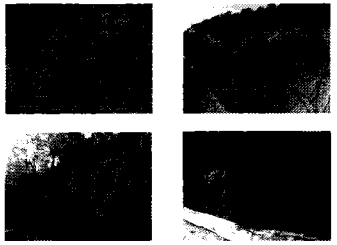
I VEHICULAR BRIDE WITH PEDESTRIAN WALK

B 5 ROW ALUMINUM BLEACHERS

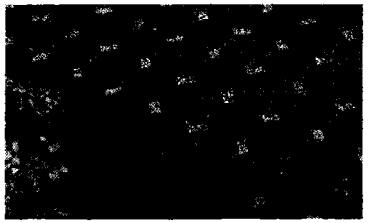


O STAINLESS STEEL BIKE RACKS

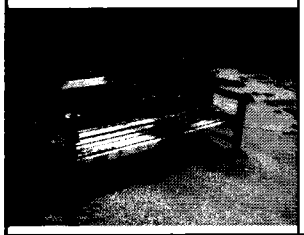
L STONE VENEER RETAINING WALL



H SHOTCRETE WALL WITH STONE TEXTURE



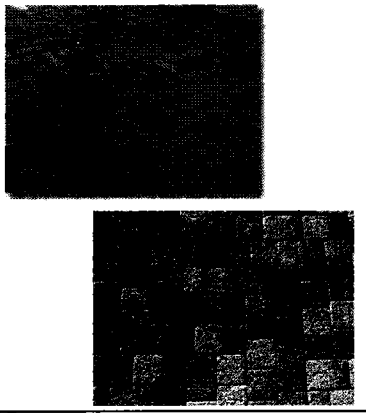
C OPEN CELL PAVERS AT BIKE WASH AREA



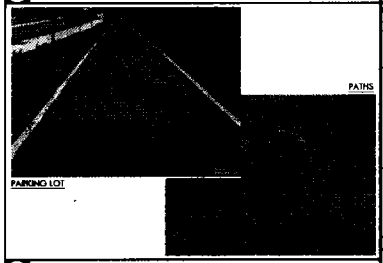
N TEAK BENCHES

K POST AND SPLIT RAIL FENCING

G COMMUNITY GARDEN - STANDARD AND ACCESSIBLE BEDS



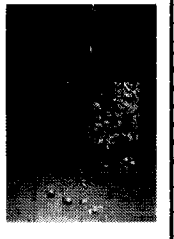
D PAVERS WITH PERMEABLE JOINTS



B DECOMPOSED GRANITE PAVING

M TRASH AND RECYCLE RECEPTACLES

J POST AND WIRE FENCING AT PROPERTY LINE



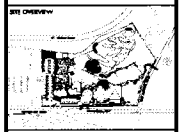
A PERMEABLE CONCRETE PAVING

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN

REGISTERED LANDSCAPE ARCHITECT
STATE OF CALIFORNIA

CONSULTANT

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE
MATERIAL AND SAMPLE PLAN

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	08/06/13

NO.	REVISIONS	DATE

DRAWN BY	CHECKED BY
RK	DM / CMS
DATE ISSUED	SCALE
08/06/13	NTS

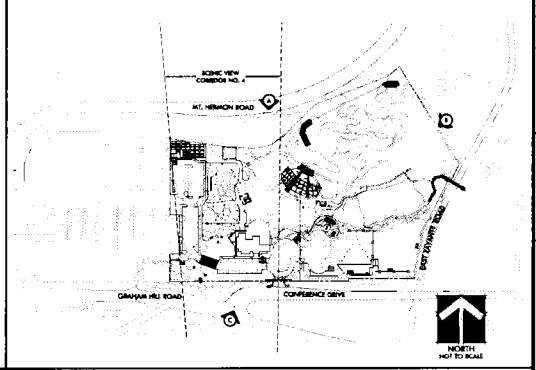
PROJ. NO.
1209400-1515

SHEET NO.
L7.0
OF SHEETS

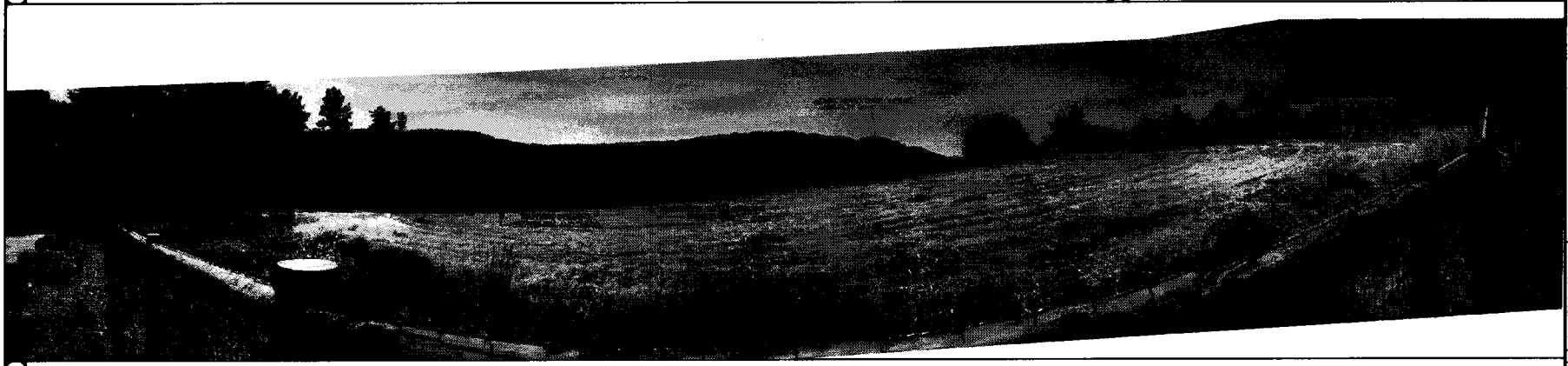
MATERIAL AND SAMPLE PLAN

ATTACHMENT 23

A PROJECT SITE VIEW FROM MOUNT HERMON ROAD



D MAP - PHOTO VIEW LOCATION



B PROJECT SITE VIEW FROM NEIGHBORHOOD TO THE EAST

C STREET VIEW FROM GRAHAM HILL ROAD AT CONFERENCE DRIVE

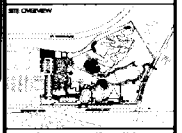
VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN

STAMP

REGISTERED LANDSCAPE ARCHITECT
STEVEN WORLEY
No. 4148
STATE OF CALIFORNIA

CONSULTANT

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 077-331-09, 06

SHEET TITLE
3D PHOTO RENDERING OF PROPOSED IMPROVEMENTS

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	08/06/13

NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

DRAWN BY	CHECKED BY
RK	DM / CMS
DATE ISSUED	SCALE
08/06/13	NTS

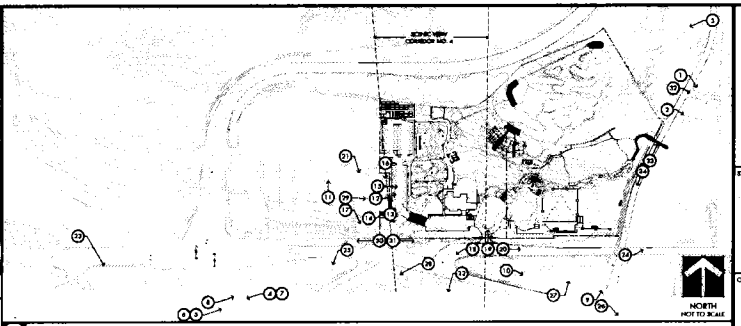
PROJ. NO.
1209400-1315

SHEET NO.
L8.0
OF
SHEETS

3D PHOTO RENDERING OF PROPOSED IMPROVEMENTS

ATTACHMENT 2

J SITE SURROUNDING AREA



D MAP - PHOTO VIEW LOCATION

I PATH FROM GRAHAM HILL ROAD

CONFERENCE DRIVE TO THE WEST

CENTER OF ENTRANCE DRIVEWAY

CONFERENCE DRIVE TO THE EAST

H PROJECT ENTRANCE AT CONFERENCE DRIVE

B EAST ZAYANTE ROAD

LOOKING NORTHEAST

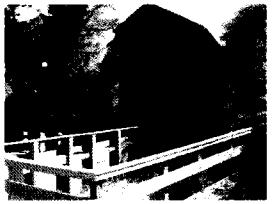
LOOKING NORTH

LOOKING EAST

G SITE VIEW FROM BACK OF THE EXISTING BANK BUILDING

F SAFEWAY / CVS SHOPPING CENTER PARKING LOT

E BUILDING



C COVERED BRIDGE

3 REDWOOD FENCE

4 REDWOOD HAND RAIL

2 POST AND SPLIT RAIL

5 POST AND WIRE

1 POST AND WIRE

A EXISTING FENCES AROUND SITE

VERDE DESIGN

LANDSCAPE ARCHITECTURE
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Santa Clara, CA 95050
tel: 408.985.7900
fax: 408.985.7901
www.VerdeDesign.com

REGISTERED LANDSCAPE ARCHITECT
JAMES VERDE
No. 4140
Signature
Expiration Date
DEC. 31, 13
STATE OF CALIFORNIA

CONSULTANT

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE

PHOTOGRAPHS OF PROJECT SITE AND NEIGHBORHOOD CONTEXT

PROJECT NAME

MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	08/06/13

NO.	REVISIONS	DATE
1		
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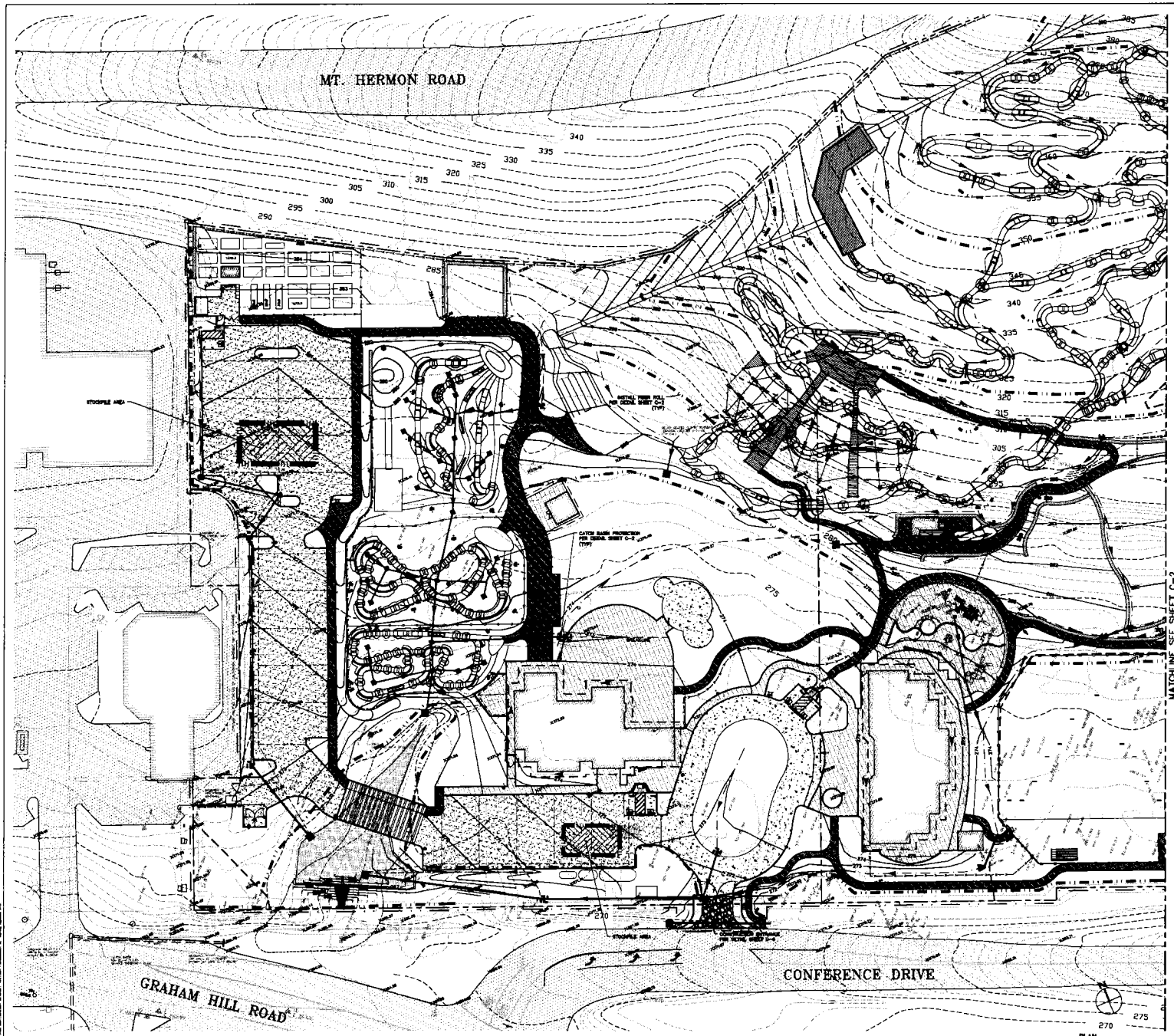
DATE ISSUED	SCALE
08/06/13	NTS

PROJ. NO.
1209400-1515

SHEET NO.
L9.0

PHOTOGRAPHS OF PROJECT SITE AND NEIGHBORHOOD CONTEXT

ATTACHMENT 2



TOTAL AREA OF DISTURBANCE = 12.0 ACRES

TOTAL LIMIT OF WORK = 15.0 ACRES

SITE HOUSEKEEPING REQUIREMENTS

CONSTRUCTION MATERIALS

1. ALL LOOSE ENGINEERED CONSTRUCTION MATERIALS THAT ARE NOT ACTUALLY BEING USED (I.E. SOILS, AGGREGATE, ALPHALT, STUCCO, HYDRATED LIME, ETC.) SHALL BE COVERED AND BERMED.
2. ALL CHEMICALS SHALL BE STORED IN WATER TIGHT CONTAINERS (WITH APPROPRIATE SECONDARY CONTAINMENT TO PREVENT ANY SPILLAGE OR LEAKAGE) OR IN A STORAGE SHED (COMPLETELY ENCLOSED).
3. DISPOSAL OF CONSTRUCTION MATERIALS TO PERMITTED SITES SHALL BE MAINTAINED. SITE SHALL NOT ACCEPT MATERIALS (SOIL, CONCRETE) THAT ARE CONTAMINATED OR EXPOSED TO ENVIRONMENTAL CONDITIONS (I.E. FUELS, EQUIPMENT FLUIDS, CONCRETE, ASPHALT, GRAVEL, ETC.).
4. ALL CONTRACTORS SHALL TAKE PRECAUTIONS TO PREVENT OFF-SITE TRACKING OF LOOSE CONSTRUCTION AND LANDSCAPE MATERIALS SHALL BE IMPLEMENTED.

LANDSCAPE MATERIALS

1. CONTACT RETAILERS FOR MATERIALS SUCH AS MULCHES AND TOPSOIL WHEN THEY ARE NOT ACTIVELY BEING USED.
2. CONTAIN FERTILIZERS AND OTHER LANDSCAPE MATERIALS WHEN THEY ARE NOT ACTIVELY BEING USED.
3. DISCONTINUE THE APPLICATION OF ANY ERODABLE LANDSCAPE MATERIAL WITHIN 2 DAYS BEFORE A FORECASTED RAIN EVENT OR DURING PERIOD OF PRECIPITATION.
4. APPLY ERODABLE LANDSCAPE MATERIAL AT QUANTITIES AND APPLICATION RATES ACCORDING TO MANUFACTURER RECOMMENDATIONS OR LOCAL RECOMMENDATIONS BY KNOWLEDGEABLE AND EXPERIENCED FIELD PERSONNEL.
5. STACK ERODABLE LANDSCAPE MATERIAL ON PALLETS AND COVERING OR STORING SUCH MATERIALS WHEN NOT BEING USED OR APPLIED.

VEHICLE STORAGE AND MAINTENANCE

1. VEHICLES SHALL BE PARKED TO PREVENT OIL, GREASE, OR FUEL TO LEAK IN TO THE GROUND, STORM DRAINS OR SURFACE WATERS.
2. ALL EQUIPMENT OR VEHICLES, WHICH ARE TO BE FUELED, MAINTAINED AND STORED ONSITE SHALL BE IN A DESIGNATED AREA FITTED WITH APPROPRIATE BMPS.
3. LEAKS SHALL BE IMMEDIATELY CLEANED AND LEAKED MATERIALS SHALL BE DISPOSED OF PROPERLY.

MATERIAL USE

1. USE ONLY THE MINIMUM AMOUNT OF SOAPS, SOLVENTS OR DETERGENTS NECESSARY TO ACCOMPLISH THE TASK.
2. SANITARY/SEPTIC FACILITIES SHALL BE CONSIDERED (E.G., PORTABLE TOILETS) TO PREVENT DISCHARGES OF POLLUTANTS TO THE STORM WATER DRAINAGE SYSTEM OR RECEIVING WATERS, AND SHALL BE LOCATED A MINIMUM OF 50 FEET AWAY FROM ANY INLET, STREET OR DRAINAGE, STREAM, SURFACE WATER OR OTHER RECEIVING WATERS.
3. SANITARY/SEPTIC FACILITIES SHALL BE INSPECTED REGULARLY FOR LEAKS AND SPILLS AND CLEANED OR REPLACED AS NECESSARY.
4. COVER TRASH DUMPSTERS DURING RAIN AT THE END OF EVERY BUSINESS DAY AND DURING WINDY CONDITIONS.
5. CLEAN OR REPLACE PORTABLE TOILETS, ACCORDING TO THE STORM WATER ORDINANCE ENTITY OR RECEIVING WATER SHALL BE PROHIBITED.
6. ALL TRASH AND CONSTRUCTION DEBRIS SHALL BE CONTAINED AND SECURELY PROTECTED FROM WIND AND RAIN AT ALL TIMES UNLESS ACTIVELY BEING USED.
7. PROCEDURES THAT EFFECTIVELY ADDRESS HAZARDOUS AND NON-HAZARDOUS SPILLS SHALL BE IMPLEMENTED.
8. EQUIPMENT AND MATERIALS FOR CLEANUP OF SPILLS SHALL BE MAINTAINED. ALL SPILLS AND LEAKS SHALL BE CLEANED UP IMMEDIATELY AND DISPOSED OF PROPERLY.
9. CONCRETE WASHOUT AREAS AND OTHER WASHOUT AREAS THAT MAY CONTAIN ADDITIONAL POLLUTANTS SHALL BE CONTAINED SO THERE IS NO DISCHARGE INTO THE UNDERLYING SOIL AND/OR SURROUNDING AREAS.

EROSION CONTROL MEASURES

1. EROSION IS TO BE CONTROLLED AT ALL TIMES ALTHOUGH SPECIFIC MEASURES ARE TO BE IMPLEMENTED AT A MINIMUM BY OCTOBER 15.
2. UNLESS SPECIFIC MEASURES ARE SHOWN OR NOTED ON THIS PLAN, ALL COLLECTED RUNOFF SHALL BE CARRIED TO DRAINAGE COURSES IN LINED CONDUITS. DRAINAGE SHALL BE IN THE LOCATIONS SHOWN ON THE PLANS.
3. THE WINDING END AND/OR AT THOSE MEASURES IS TO CONTROL SITE EROSION AND PREVENT SEDIMENT TRANSPORT OFF THE SITE. IT SHALL BE THE DEVELOPER'S RESPONSIBILITY TO DO WHAT ANY ADDITIONAL MEASURES NECESSARY TO MEET THIS GOAL ARE IMPLEMENTED. IF FAILED INSPECTIONS BY COUNTY STAFF SHOW THAT MORE WORK IS NOT BEING MET, MEASURES MAY BE REQUIRED.
4. ALL DISTURBED AREAS NOT CURRENTLY BEING USED FOR CONSTRUCTION SHALL BE SEEDED WITH THE FOLLOWING SEED MIXTURE:

WHITE BARLEY	20#/ACRE

5. WHEN SEEDING, STRAW MULCH WILL BE APPLIED IN 4" (MIN.) LAYER.
6. AMMONIUM PHOSPHATE FERTILIZER, 0-20-0, SHALL BE APPLIED AT A RATE OF 20 LBS PER ACRE ON SLOPES GREATER THAN 20% (EROSION CONTROL BLANKET OR FIBER MATTING) SHALL BE APPLIED.
7. SILT BARRIERS SHALL BE PLACED END TO END AND STAKED DOWN ALONG THE BOTTOM OF ALL GRADED SLOPES.

ALL EROSION CONTROL MEASURES INCLUDING BUT NOT LIMITED TO SILT FENCES, FIBER ROLLS AND GRAVEL BAGS PROTECTING INLETS AT PLACE BY OCTOBER 15TH. THE ENGINEER OF RECORD SHALL INSPECT SINCE EROSION CONTROL MEASURES AFTER EACH STORM EVENT.

EXPOSED SLOPE MEASURES

1. COVER ALL EXPOSED SLOPES
2. STRAW 3 TONS/ACRE ON SLOPES ≤ 20% WITH SOIL BINDER
3. USE NORTH AMERICAN GREEN C125 OR EQUAL ON SLOPES >20%

EROSION CONTROL LEGEND

- PROPOSED LIMIT OF WORK
- INSTALL FIBER ROLL PER DETAILS SHEET C-2
- INSTALL CATCH BASIN PROTECTION PER DETAIL SHEET C-2
- INSTALL STABILIZED CONSTRUCTION ENTRANCE PER DETAIL SHEET C-2
- PROPOSED STOCKPILE AREA
- (E) AC
- (E) CONCRETE
- PROPOSED AC
- PROPOSED TIMBER DECKING
- PROPOSED CRUSHED DG WALKWAY
- PROPOSED DG OVER AB PARKING LOT
- PROPOSED PERVIOUS CONCRETE
- PROPOSED PERMEABLE SURFACE
- PROPOSED STORMWATER DETENTION BASIN

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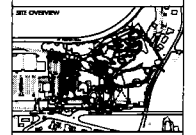
RICHARD J. REED
No. 45850
Exp. 12-31-14
CIVIL
STATE OF CALIFORNIA

CONSULTANT
R.I. Engineering, Inc.
303 Potrero St., Suite 42-202, Santa Cruz, CA 95060
831-425-3801 www.riengineering.com



ASSESSOR'S PARCEL NUMBER: 077-321-02, 06

SHEET TITLE
STORMWATER POLLUTION CONTROL PLAN 1

PROJECT NAME
MOUNT HERMON NEW PROPERTY DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

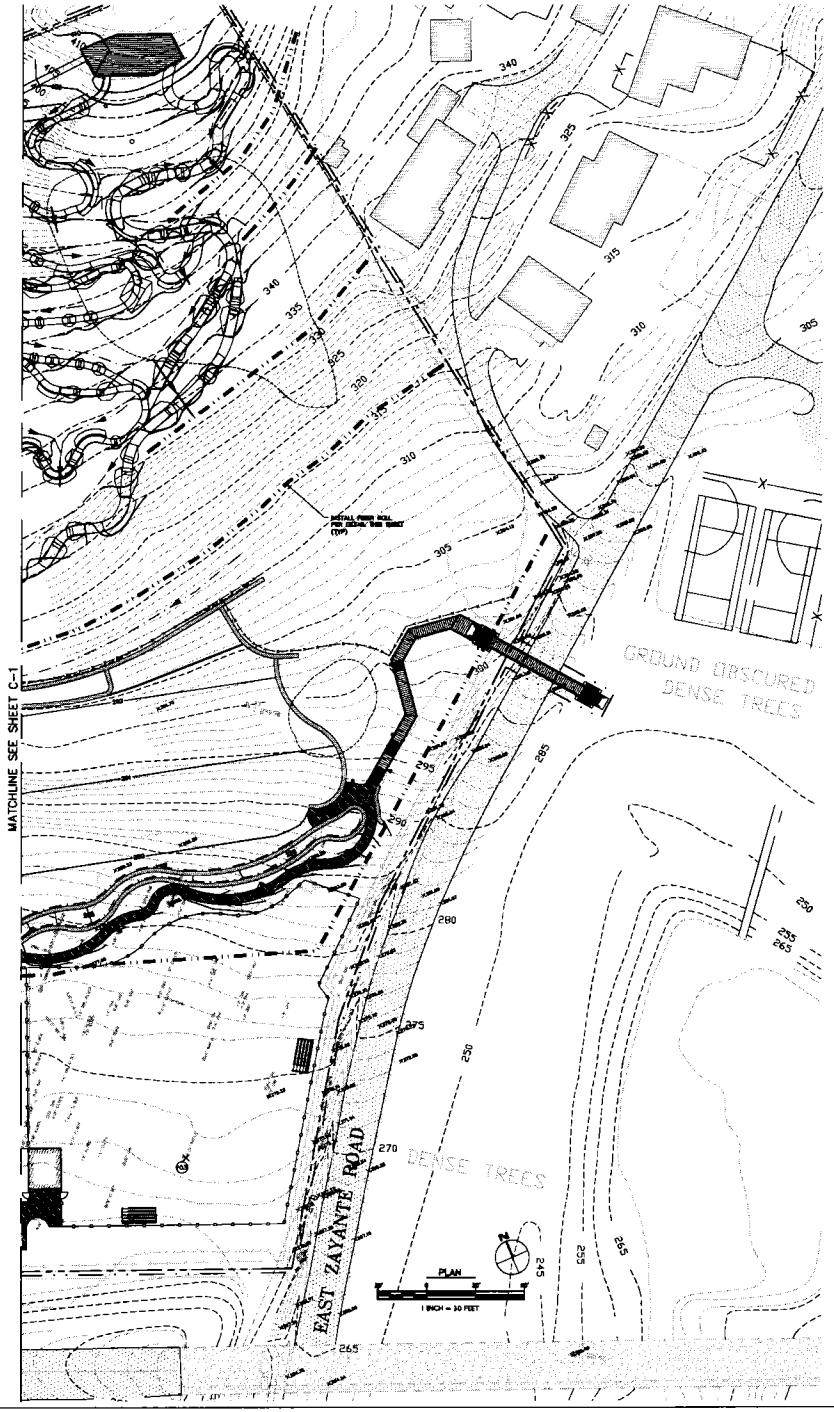
SUBMITTAL	DATE
COUNTY PRELIMINARY REVIEW	8/6/13

NO.	REVISIONS	DATE

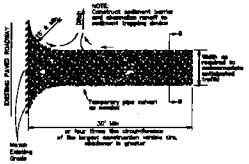
DRAWN BY	CHECKED BY
MMG	DM/CS
DATE ISSUED	SCALE
8/6/13	1" = 30'

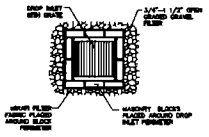
PROJ. NO.
1209400-1515

SHEET NO.
C-1
OF 6 SHEETS

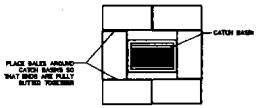


CONSTRUCTION ENTRANCE DETAIL
NTS

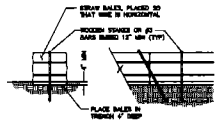




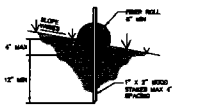
BLOCK AND GRAVEL FILTER DETAIL
NTS



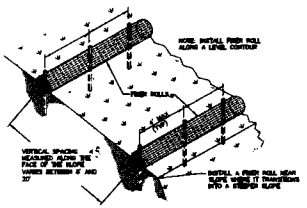
STRAW BALE PLACEMENT AT CATCH BASINS



STRAW BALE PLACEMENT DETAILS
NTS



FIBER ROLL DETAIL IN SLOPE AREA
NTS



TYPICAL FIBER ROLL INSTALLATION
NTS

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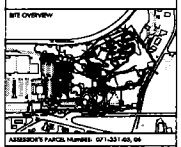
831-425-3901 www.rieng.com



SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-03, 04

SHEET TITLE

STORMWATER POLLUTION CONTROL PLAN 2

PROJECT NAME

MOUNT HERMON NEW PROPERTY DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PRELIMINARY REVIEW	8/6/13

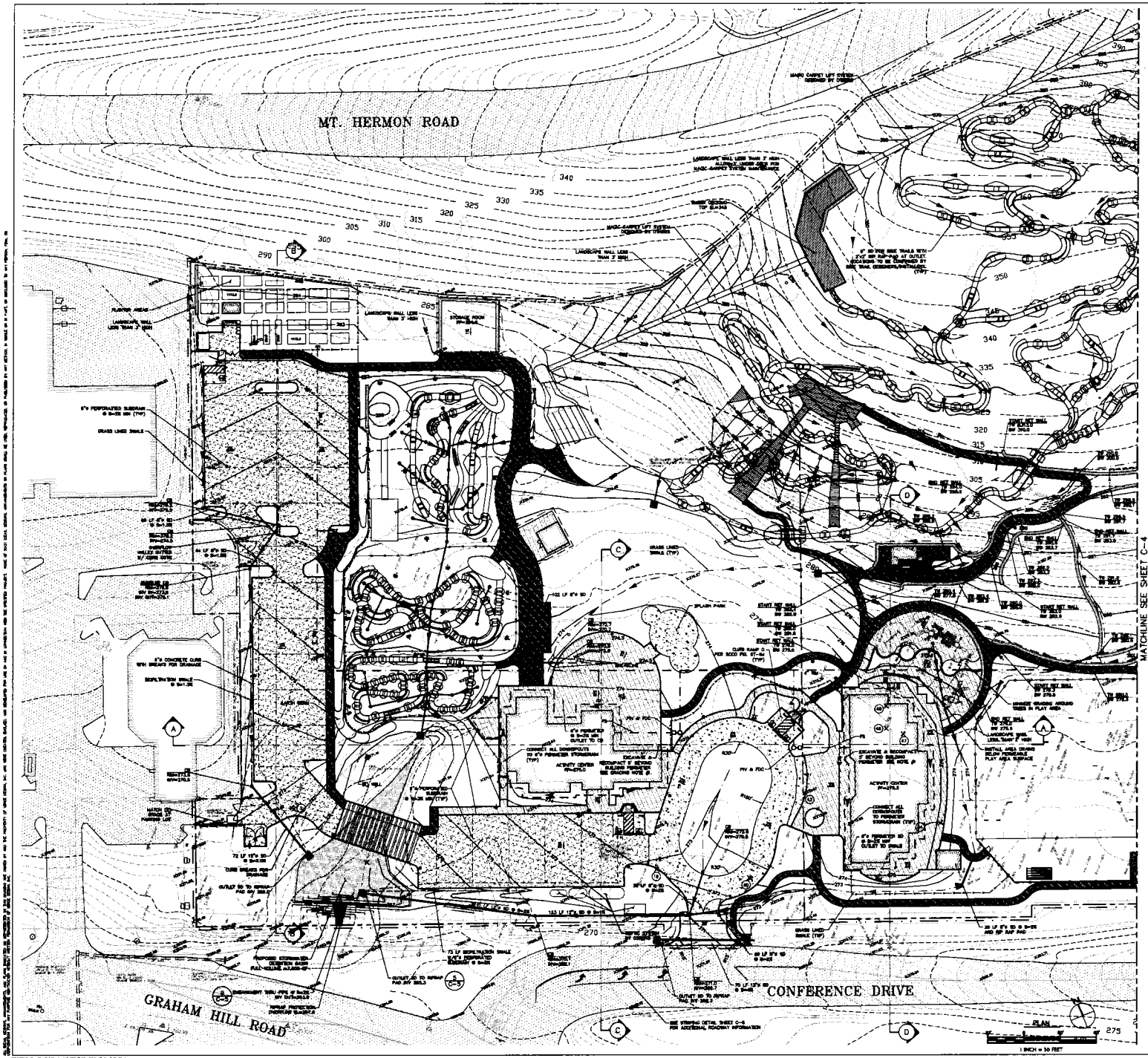
NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

DRAWN BY	CHECKED BY
MMG	DM/CS
DATE ISSUED	SCALE
8/6/13	1" = 30'

PROJ. NO.
1209400-1515

SHEET NO.
C-2
OF 6 SHEETS

ATTACHMENT 2



LEGEND

- (E) AC
- (E) CONCRETE
- (E) FLOWLINE
- (E) RETAINING WALL
- PROPERTY LINE
- PROPOSED LIMIT OF WORK
- PROPOSED RETAINING WALL
- PROPOSED AC BERM
- PROPOSED SWALE
- PROPOSED BIOFILTRATION SWALE
- PROPOSED SD
- PROPOSED PERIMETER SD
- PROPOSED PAVEMENT/PAVERS SUBGRADE
- PROPOSED RIP RAP PAD
- PROPOSED AREA DRAIN
- PROPOSED CATCH BASIN (CB)
- PROPOSED AC
- PROPOSED TIMBER DECKING
- PROPOSED CRUSHED DG WALKWAY
- PROPOSED DG OVER AB PARKING LOT
- PROPOSED PERVIOUS CONCRETE
- PROPOSED PERMEABLE SURFACE
- PROPOSED STORMWATER RETENTION BASIN
- PROPOSED TREE REMOVAL
- TREE NUMBER, SEE ARBORIST REPORT
- PROPOSED FH
- LIMIT OF DISTURBANCE/RESTORATION
- SITE CUT SECTIONS SEE SHEET C-5

EARTHWORK AND GRADING

1. EXCAVATE BUILDING SUBGRADE NEEDED TO A MINIMUM DEPTH OF 24". EXCAVATED MATERIALS SHALL BE STOCKPILED, MOISTURE CONDITIONED AND COMPACTED AS ENGINEERED FILL. REPLACE EXCAVATED SOIL IN SIX (6") LIFTS (MAXIMUM) AND TO WITHIN 12" OF SUBGRADE BELOW CONCRETE SLABS TO BE CLASS 2 AGGREGATE BASE COMPACTED AT 95% MINIMUM.

2. WORK SHALL CONSIST OF ALL CLEARING, GRUBBING, STRIPPING, PREPARATION OF LAND TO BE FILLED, EXCAVATION, SPREADING, CONSTRUCTION AND CONTROL OF FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING OF THE AREAS TO THE LINES, GRADES, AND SLOPES, AS SHOWN ON THE APPROVED PLANS.

3. ALL GRADING OPERATIONS SHALL CONFORM TO SECTION 16 OF THE UNIFORM BUILDING CODE, AND ALL GRADING SHALL BE DONE IN CONFORMANCE WITH THE REQUIREMENTS OF THE COUNTY OF SANTA CRUZ. SEE SHEET C-5 FOR FINAL GRADES.

4. REFERENCE IS MADE TO THE GEOTECHNICAL INVESTIGATIONS BY BAILEY'S GEOLOGICAL SERVICES, INC., SOILS ENGINEERING SPECIFICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT, CONFERENCE DRIVE PROPERTY (DATED 11/1/2012) AND BY HAYS SOILS ENGINEERING, INC. (DATED 5/1/2013). THE CONTRACTOR SHALL MAKE A THOROUGH REVIEW OF SAID REPORT AND SHALL FOLLOW ALL RECOMMENDATIONS CONTAINED THEREIN. HE CONTRACTOR SHALL CONTACT BAILEY'S ENGINEERING, INC. FOR ANY CLARIFICATIONS NECESSARY PRIOR TO PROCEEDING WITH THE WORK.

5. THE CONTRACTOR SHALL GRADE TO THE LINE AND ELEVATIONS SHOWN ON THE PLAN AND SHALL ESTABLISH THE SERVICES OF A LICENSED LAND SURVEYOR OR CIVIL ENGINEER TO PROVIDE SURVEY FOR LINE AND GRADE.

6. THE GEOTECHNICAL ENGINEER SHOULD BE NOTIFIED AT LEAST FOUR (4) DAYS PRIOR TO ANY SITE CLEARING AND GRADING OPERATIONS.

7. ENGINEERED FILL SHOULD BE PLACED IN THIN LIFTS NOT EXCEEDING 6" IN LOOSE THICKNESS, MOISTURE CONDITIONED, AND COMPACTED TO AT LEAST 95% RELATIVE COMPACTION.

8. MATERIAL USED FOR ENGINEERED FILL SHALL MEET THE REQUIREMENTS OF THE APPROVED REPORTS BY BAILEY'S ENGINEERING, INC.

9. IMPORTED FILL MATERIAL USED AS ENGINEERED FILL FOR THE PROJECT SHALL MEET THE REQUIREMENTS OF THE APPROVED GEOTECHNICAL INVESTIGATION.

10. ALL FILL MATERIAL SHALL BE APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER PRIOR TO IMPORT DELIVERY AND PLACEMENT. NO EARTHWORK OPERATIONS SHALL BE PERFORMED WITHOUT THE DIRECT OBSERVATION AND APPROVAL OF THE GEOTECHNICAL ENGINEER.

11. BARE GROUND WITHIN 10' OF FOUNDATIONS SHALL BE SLOPED AWAY @ 5% MINIMUM OR 2% MINIMUM FOR PAVED SURFACES.

12. PROPOSED GRADES SHALL MEET EXISTING GRADES WITH A SMOOTH AND CONTINUOUS TRANSITION SO AS TO AVOID TRAPPING WATER. CONTRACTOR TO NOTIFY OWNER'S REPRESENTATIVE IF SURFACE DRAINAGE IS DIRECTED AWAY FROM SD AS TO AVOID DELAY WHILE WAITING FOR A RESPONSE.

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No. C 43630
Exp. 12-31-14
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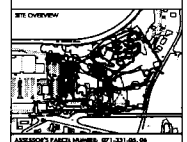
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

CONSULTANT

R.I Engineering, Inc.
303 Potrero St., Suite 42-202, Santa Cruz, CA 95060
831-425-3901 www.rieng.com

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE

GRADING & DRAINAGE PLAN 1

PROJECT NAME

MOUNT HERMON NEW LAND DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PRELIMINARY REVIEW	8/6/13

NO.	REVISIONS	DATE

DRAWN BY	CHECKED BY
MMG	DM/CS
DATE ISSUED	SCALE
8/6/13	1" = 30'

PROJ. NO.
1209400-1515

SHEET NO.
C-3
OF 6 SHEETS

ATTACHMENT 2

ATTACHMENT 2

ABBREVIATIONS

BM	BOTTOM OF WALL
CB	CATCH BASIN
CONST	CONSTRUCT
DIA, ø	DIAMETER
DO	DOWNSPOUT
FH	FIRE HYDRANT
GRAV	GRAVITY
ID	IDENTIFY
(E)	EXISTING
ELEV	ELEVATION
EOP	EDGE OF PAVEMENT
FF	FINISH FLOOR
FG	FINISH GRADE
FL	FLOW LINE
GALV	GALVANIZED
LF	LINEAR FEET
LP	LOW POINT
MAX	MAXIMUM
N.T.S.	NOT TO SCALE
RW	RETAINING WALL
TW	NEW ELEVATION
~	SLOPE
SCCO	COUNTY OF SANTA CRUZ
SSCO	SANITARY SEWER CLEANOUT
STMDR	STORM DRAIN CLEANOUT
TYP	TYPICAL
TOS	TOP OF SLOPE
WM	WATER METER

TOPOGRAPHIC SURVEY

THE TOPOGRAPHIC SURVEY AND BOUNDARY INFORMATION PROVIDED HEREON WAS COMPLETED BY HANSHAW LAND SURVEY, INC. IS ENGINEERING INC. MAKES NO GUARANTEE AS TO THE ACCURACY OF WORK. THE CONTRACTOR SHALL VERIFY THE BOUNDARY LOCATION AND TOPOGRAPHIC INFORMATION PRIOR TO COMMENCING WORK.

APPROXIMATE EARTHWORK QUANTITIES

	CUBIC YARDS		
	CUT	FILL	NET
SITE GRADING	8888	10279	1391 FILL
SWM TRAIL AND PARK GRADING	2145	5788	4644 FILL

NOTES:
1. EARTHWORK QUANTITIES ARE APPROXIMATE AND SHALL BE INDEPENDENTLY VERIFIED BY THE CONTRACTOR FOR BIDDING PURPOSES.
2. EARTHWORK VOLUMES FOR REFERENCE GRADING INCLUDE EXCAVATION TO ROUGH GRADE FOR CONSTRUCTION OF THE PROPOSED IMPROVEMENTS. EARTHWORK VOLUMES REQUIRED TO CONSTRUCT THE PROPOSED IN THE PLANS, BUT NOT BEEN INCLUDED. EARTHWORK VOLUMES FOR ANY GRADING INCLUDE EXCAVATION TO CONSTRUCT IMPROVEMENTS ONLY.
3. EXCESS SOILS SHALL BE HAULED OR PLACED IN A COUNTY APPROVED SOILS SITE.
4. EARTHWORK QUANTITIES DO NOT INCLUDE SWM PARK GRADING

PRELIMINARY DRAINAGE EVALUATION

SANTA CRUZ DESIGN CRITERIA
PART 3, SECTION C
PROJECT CATEGORY: LARGE PROJECT
PROPOSED MITIGATIONS: WATER QUALITY TREATMENT BY SILT AND GREASE TRAPS & BIORETENTION SWALE, WATER QUANTITY MITIGATION BY WATER DETENTION

EXISTING CONDITIONS	PROPOSED CONDITIONS
PROJECT AREA = 12.14 AC	PROJECT AREA = 12.14 AC
IMPERVIOUS AREA = 0.00 AC	IMPERVIOUS AREA = 0.50 AC
SEMI-IMPERVIOUS AREA = 0.00 AC	SEMI-IMPERVIOUS AREA = 2.45 AC
RUNOFF COEFFICIENT C=0.30	RUNOFF COEFFICIENT C=0.39

10 YEAR STORM

DESIGN EVENT: 10 YR STORM
P60 = 2.00
RAINFALL INTENSITY: I=2.58 IN/HR
TIME OF CONCENTRATION: 15 MINS

PRE DEVELOPMENT FLOW RATE: Qm = 8.40 CFS
POST DEVELOPMENT FLOW RATE: Qm = 12.08 CFS

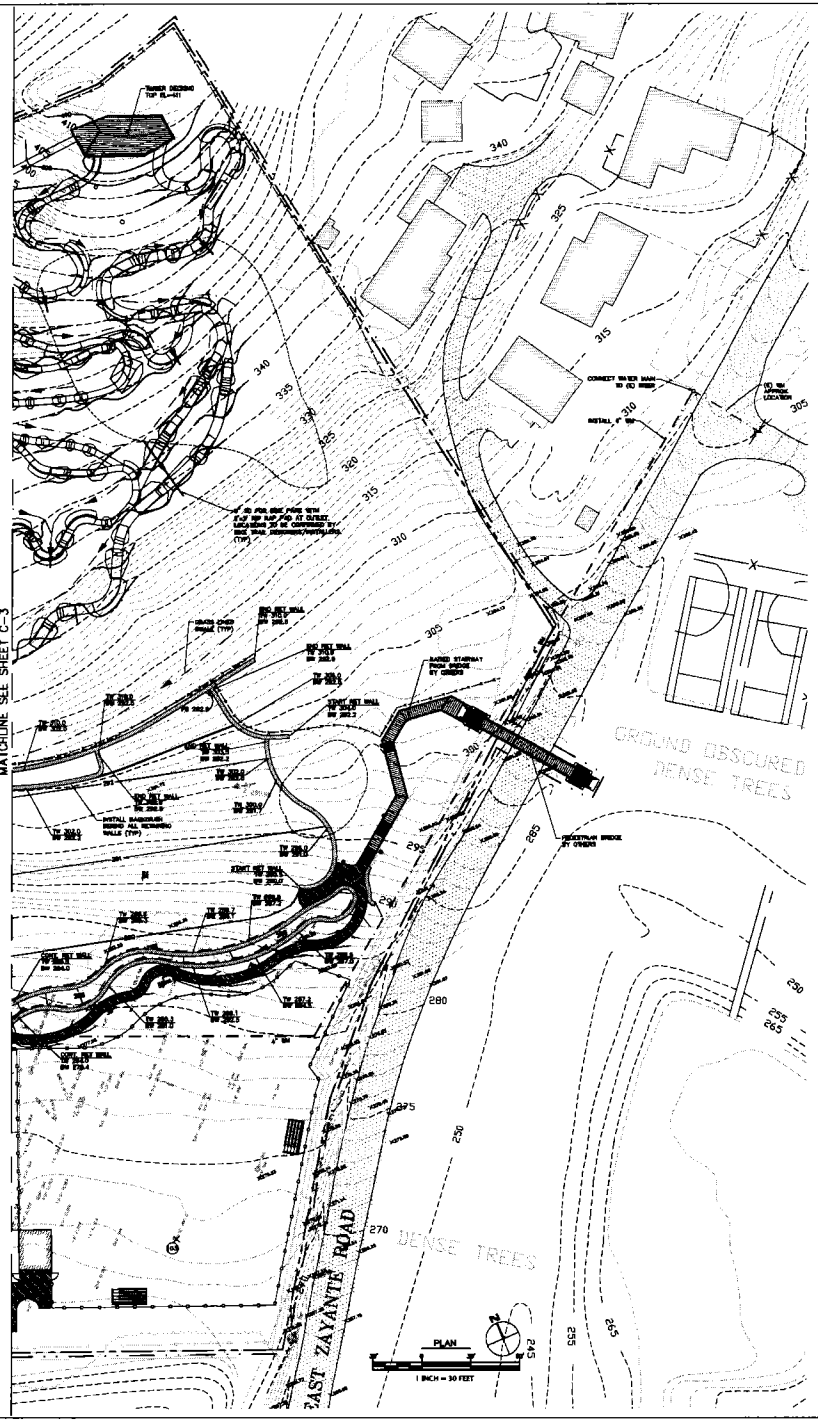
100 YEAR STORM

DESIGN EVENT: 100 YR STORM
P60 = 2.00
RAINFALL INTENSITY: I=3.32 IN/HR
TIME OF CONCENTRATION: 15 MINS

PRE DEVELOPMENT FLOW RATE: Qm = 15.13 CFS
POST DEVELOPMENT FLOW RATE: Qm = 19.42 CFS

STORMWATER TREATMENT AREA

STORAGE VOLUME FOR 10 YEAR STORM=2570 CF
RELEASE RATE FOR 10 AND 25 YEAR STORM=8.40 CFS
STORAGE VOLUME FOR 100 YEAR STORM=4810 CF
RELEASE RATE FOR 100 YEAR STORM=15.13 CFS



LEGEND

- (E) AC
- (E) CONCRETE
- (E) FLOWLINE
- (E) RETAINING WALL
- PROPERTY LINE
- PROPOSED LIMIT OF WORK
- PROPOSED REDWOOD SWALE
- PROPOSED AC BERM
- PROPOSED SWALE
- PROPOSED INFILTRATION SWALE
- PROPOSED SD
- PROPOSED PERIMETER SD
- PROPOSED PAVEMENT/PAVERS SUBDRAIN
- PROPOSED RIP RAP PAD
- PROPOSED AREA DRAIN
- PROPOSED CATCH BASIN (CB)
- PROPOSED AC
- PROPOSED TIMBER DECKING
- PROPOSED CRUSHED DG WALKWAY
- PROPOSED DG OVER AB PARKING LOT
- PROPOSED PERVIOUS CONCRETE
- PROPOSED PERMEABLE SURFACE
- PROPOSED STORMWATER DETENTION BASIN
- PROPOSED TREE REMOVAL
- TREE NUMBER, SEE ARBORIST REPORT
- PROPOSED PH
- LIMIT OF OVEREXCAVATION/RECOMPACTION
- NEW CUT SLOPE/FILL

GENERAL NOTES

1. THE CONTRACTOR SHALL MAKE A DETAILED AND THOROUGH STUDY OF THESE PLANS AND SHALL INSPECT PRIOR TO ANY WORK ON THE SITE, THE CONTRACTOR IS TO VERIFY ALL EXISTING CONSTRUCTION CONDITIONS AND IS TO COORDINATE THESE DRAWINGS WITH ALL OTHER SHEETS COMPRISING THE FULL SET OF PLANS FOR THE CONSTRUCTION IS ALSO TO UNDERSTAND THAT ANY FEATURE OF CONSTRUCTION NOT FULLY SHOWN OR DETAILED SHALL BE SIMILAR TO FEATURES SHOWN FOR SIMILAR CONDITIONS.

2. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY DISCREPANCY DISCOVERED ON THE DRAWINGS OR FOUND IN HIS OBSERVATION WORK. NO CHANGES IN APPROVED PLANS SHALL BE MADE WITHOUT THE APPROVAL OF THE PROJECT ENGINEER AND THE COUNTY OF SANTA CRUZ DEPARTMENT OF PUBLIC WORKS.

3. ANY REQUEST FOR ALTERATIONS OR SUBSTITUTIONS MUST BE PRESENTED DIRECTLY TO THE PROJECT ENGINEER AND APPROVED BY A DETAILED SKETCH FOR REVIEW, BEFORE ANY APPROVAL WILL BE GIVEN AND BEFORE PROCEEDING WITH THE WORK. ANNOTATED OR MARKED-UP PRINTS WILL NOT BE ACCEPTED AS THE WILL BE APPROVED ON ANY SHOP DRAWINGS.

4. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS (CALTRANS), LATEST EDITION, THE COUNTY OF SANTA CRUZ DESIGN CRITERIA AND ALL APPLICABLE CODES AND ORDINANCES.

5. THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THE PLANS WERE OBTAINED FROM RECORD DRAWINGS AND MAY NOT REPRESENT TRUE LOCATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY THE LOCATION AND DEPTH OF THESE UTILITIES PRIOR TO CONSTRUCTION, AND TO NOTIFY THE PROJECT ENGINEER IN CASE OF CONFLICT.

6. THE CONTRACTOR SHALL SECURE ALL REQUIRED CONSTRUCTION PERMITS FROM THE COUNTY OF SANTA CRUZ PRIOR TO THE START OF WORK.

7. CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICE, CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS RESPONSIBILITY SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD PROJECT ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE PROJECT ENGINEER.

8. GRADING SHALL BE DONE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT AND THE REQUIREMENTS OF THE COUNTY OF SANTA CRUZ.

9. THE CONTRACTOR SHALL NOTIFY THE COUNTY GRADING INSPECTOR, GEOTECHNICAL ENGINEER, THE CIVIL ENGINEER, & THE COUNTY CONSTRUCTION ENGINEER AT LEAST 48 HOURS PRIOR TO TO THE START OF CONSTRUCTION.

10. WORK SHALL BE LIMITED TO 8:00 A.M. TO 5:00 P.M. WEEKDAYS NON-NOISE, PRODUCING ACTIVITIES, SUCH AS INTERIOR PAINTING, SHALL NOT BE SUBJECT TO THIS RESTRICTION.

11. ALL PIPING (P/S) REFERENCES, UNLESS OTHERWISE SPECIFIED, REFER TO STANDARD DRAWINGS IN THE CURRENT EDITION OF THE "COUNTY OF SANTA CRUZ DESIGN CRITERIA."

12. NO LAND CLEARING, GRADING OR EXCAVATING SHALL TAKE PLACE BETWEEN OCTOBER 15 AND APRIL 15 UNLESS THE PLANNING DIRECTOR APPROVES A MINUTE WINTER EROSION CONTROL PLAN.

13. ALL EXPOSED SOILS BETWEEN OCTOBER 15 AND APRIL 15, EXPOSED SOIL SHALL BE PROTECTED FROM EROSION AT ALL TIMES DURING CONSTRUCTION SUCH PROTECTION MAY CONSIST OF MULCHING OR THE PLANTING OR ESTABLISHMENT OF VEGETATIVE COVER, OR ANY COMBINATION OF THESE OR OTHER METHODS SATISFACTORY TO THE PLANNING DIRECTOR. AFTER COMPLETION OF THE PROJECT, ANY DISTURBED AREA OR DISTURBED SOILS SHALL BE COMPLETELY PROTECTED FROM EROSION.

14. THE CONTRACTOR SHALL APPLY WATER TO ALL EXPOSED EARTH SURFACES AT INTERVALS SUFFICIENT TO PREVENT AIRBORNE DUST FROM LEAVING THE PROJECT SITE. ALL EXPOSED EARTH SHALL BE SEEDED BY THE END OF THE WORK DAY.

15. WASTE OR TRANSIT TO AND FROM THE PROJECT SITE, ALL TRUCKS TRANSPORTING FILL SHALL BE EQUIPPED WITH TARPS.

16. PURSUANT TO SECTIONS 16.40.040 AND 16.42.100 OF THE COUNTY CODE, IF AT ANY TIME DURING SITE PREPARATION, EXCAVATION, OR ANY OTHER GROUND DISTURBANCE ASSOCIATED WITH THIS PROJECT, ANY EVIDENCE OF AN ARCHAEOLOGICAL SITE OR ANY HUMAN REMAINS ARE DISCOVERED, THE RESPONSIBLE PERSONS SHALL IMMEDIATELY CEASE AND DESIST FROM ALL FURTHER SITE EXCAVATION AND NOTIFY THE SHERIFF-CORONER OF THE DISCOVERY. IF THE DISCOVERY CONTAINS HUMAN REMAINS, OR ANY ARCHAEOLOGICAL SITE IS DISCOVERED, CONTINUING NO HUMAN REMAINS, THE PROCEDURES ESTABLISHED IN SECTIONS 16.40.040 AND 16.42.100 SHALL BE OBSERVED.

17. ALL CONSTRUCTION STAKING FOR CURB, GUTTER, SIDEWALK, SANITARY SEWER, STORM DRAINS AND WATER LINES SHALL BE DONE UNDER THE SUPERVISION OF A LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER.

18. THE DIRECTOR OF PUBLIC WORKS, OR HIS AUTHORIZED REPRESENTATIVE, SHALL HAVE THE AUTHORITY TO "STOP WORK" IF THE WORK IS NOT BEING DONE IN ACCORDANCE WITH THE APPROVED IMPROVEMENT PLANS.

19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION OF CONSTRUCTION QUANTITIES PRIOR TO BIDDING OR ANY ITEM QUANTITY REFERENCED IN WORK ON THESE PLANS. ED ENGINEER'S ESTIMATES ARE FOR ESTIMATING PURPOSES ONLY AND SHALL NOT BE CONSIDERED AS A BASIS FOR CONTRACTOR PAYMENT. COUNTY SHALL NOT BE RESPONSIBLE FOR ANY FLUCTUATIONS IN SUCH QUANTITIES AND ESTIMATES.

20. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR OR LIABLE FOR, UNAUTHORIZED CHANGES TO, OR USES OF, THESE PLANS. ALL CHANGES MUST BE IN WRITING AND MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

21. UNDERGROUND UTILITY LOCATIONS SHOWN ARE COMPILED FROM INFORMATION SUPPLIED BY UTILITY AGENCIES, AND ARE APPROXIMATE ONLY. CONTRACTOR SHALL VERIFY LOCATIONS OF APPROVED UTILITY LINES PRIOR TO ANY EXCAVATING OR GRADING AND POSSIBLE THERE ARE OTHER UTILITIES, CONFLICTS EXIST OR WHERE DATA IS OTHERWISE INCOMPLETE. FOR LOCATION, CALL USA 1-800-424-5555.

22. ANY EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED AS A PART OF THIS CONSTRUCTION SHALL BE RELOCATED AT THE DEVELOPER'S EXPENSE.

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2485 The Alameda
Santa Clara, CA 95050
t: 408.896.7300
fax: 408.896.7344
www.VerdeDesign.com

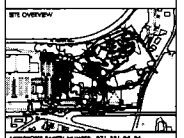
STAMP

PROFESSIONAL ENGINEER — RICHARD A. IRISH — No. 49830 — Exp. 12-31-14 — CIVIL — STATE OF CALIFORNIA

CONSULTANT

RJ Engineering, Inc.
303 Potrero St., Suite 42-202, Santa Cruz, CA 95060
831-425-3901 www.rjengineering.com

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 071-231-02, 06

SHEET TITLE

GRADING & DRAINAGE PLAN 2

PROJECT NAME

MOUNT HERMON NEW PROPERTY DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PRELIMINARY REVIEW	8/6/13

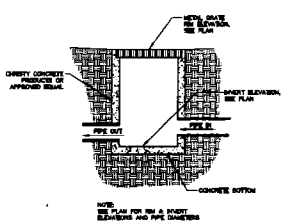
NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

DRAWN BY	CHECKED BY
MMG	DM/CS
DATE ISSUED	SCALE
8/6/13	1" = 30'

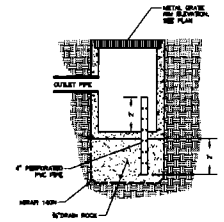
PROJ. NO.
1209400-1515

SHEET NO.
C-4
OF 6 SHEETS

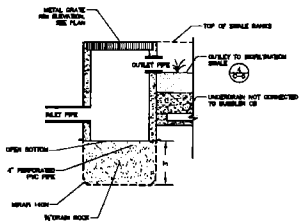
ATTACHMENT 2



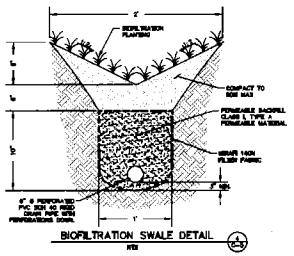
TYPICAL CATCH BASIN DETAIL 1/C-5



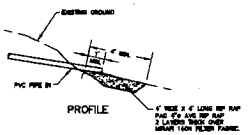
CATCH BASIN WITH SILT AND GREASE TRAP 2/C-5



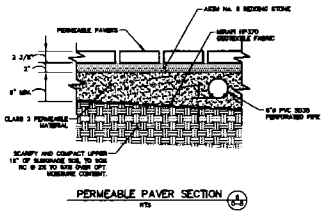
BUBBLER CATCH BASIN 3/C-5



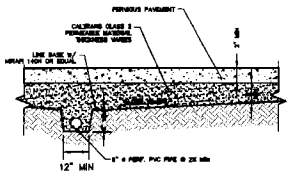
BIOFILTRATION SWALE DETAIL 4/C-5



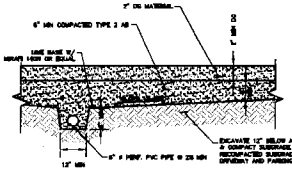
RIP RAP PAD DETAIL 5/C-5



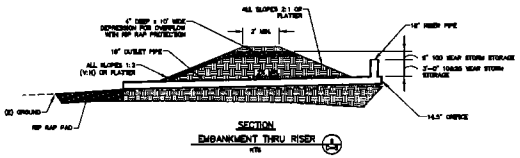
PERMEABLE PAVER SECTION 6/C-5



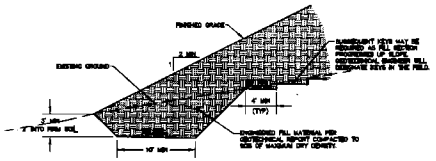
PERVIOUS PAVEMENT SUBDRAIN DETAIL 7/C-5



PARKING LOT PAVEMENT SUBDRAIN DETAIL 8/C-5



SECTION
EMBANKMENT THRU RISER 9/C-5



FILL KEYWAY DETAIL 10/C-5

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3468 The Alameda
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fax: 408.985.7389
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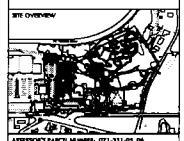
RICHARD J. RIBBY
No. 42550
Exp. 12-31-14
CIVIL
STATE OF CALIFORNIA

CONSULTANT

RJ Engineering Inc.
303 Potrero St., Suite 42-202, Santa Cruz, CA 95060
831-425-3901 www.rjengineering.com

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 027-321-05, 06

SHEET TITLE

DETAILS

PROJECT NAME

MOUNT HERMON
NEW PROPERTY
DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PRELIMINARY REVIEW	8/6/13

NO.	REVISIONS	DATE
1		
2		
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4		
5		
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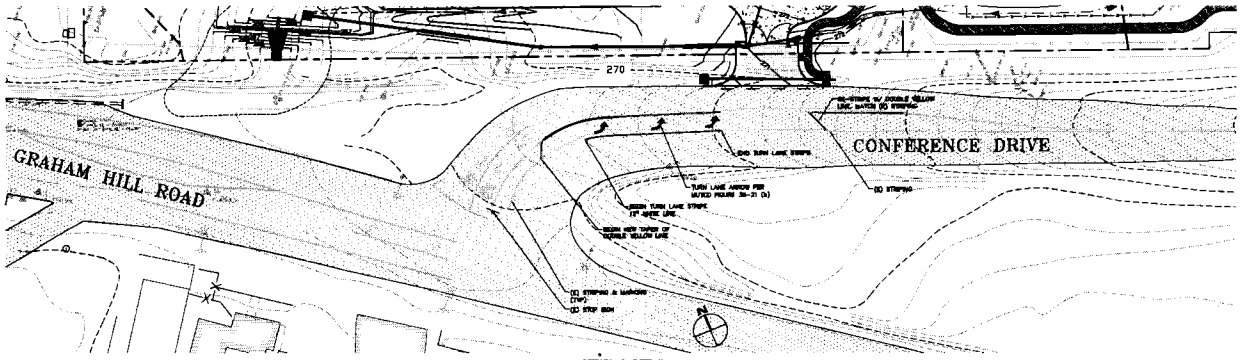
DRAWN BY	CHECKED BY
MMG	DM/CMS
DATE ISSUED	SCALE
8/6/13	1" = 30'

PROJ. NO.
1209400-1515

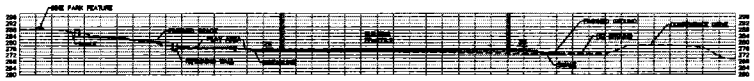
SHEET NO.
C-5
OF 6 SHEETS

DRAWING NAME: S:\Projects\1209.01\12-0515-01\dwg\SHEET.dwg
PLOT DATE: 08-07-13 PLOTTED BY: mark

ATTACHMENT 2



STRIPING DETAIL
SCALE 1"=20'



SECTION D-D
SCALE 1"=20' HORIZONTAL, VERTICAL

SECTION C-C
SCALE 1"=20' HORIZONTAL, VERTICAL

SECTION B-B
SCALE 1"=20' HORIZONTAL, VERTICAL

SECTION A-A
SCALE 1"=20' HORIZONTAL, VERTICAL

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fax. 408.845.7586
www.VerdeDesign.com

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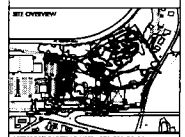
RICHARD J. REDY
PE 40550
Exp. 12-31-14
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

CONSULTANT
RJ Engineering, Inc.
303 Potrero St., Suite #2-202, Santa Cruz, CA 95060
831-425-3901 www.rjengineering.com

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE
CROSS SECTIONS

PROJECT NAME
MOUNT HERMON
NEW PROPERTY
DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PRELIMINARY REVIEW	8/6/13

NO.	REVISIONS	DATE
1		
2		
3		
4		
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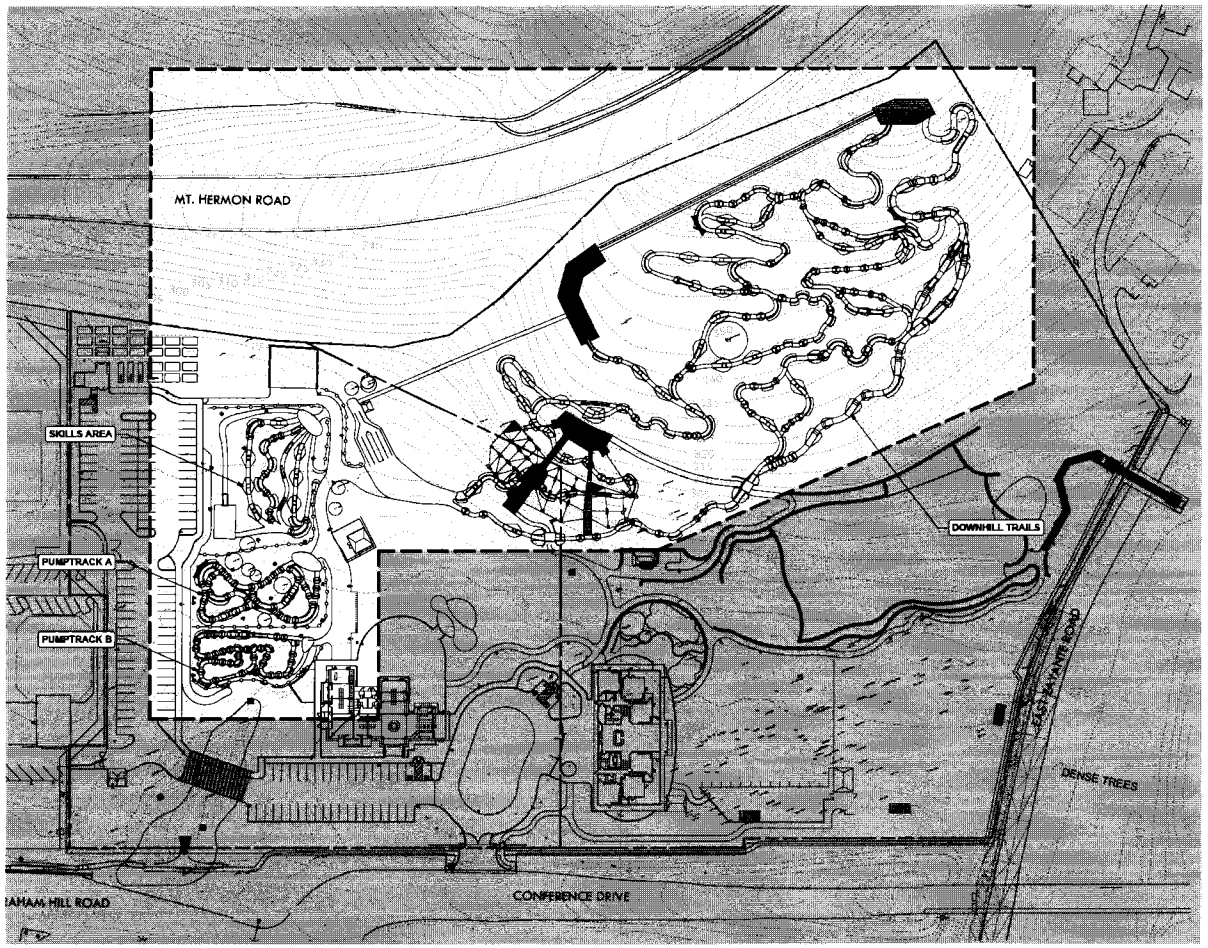
DRAWN BY	CHECKED BY
MMG	DM/CS
DATE ISSUED	SCALE
8/6/13	1" = 30'

PROJ. NO.
1209400-1515

SHEET NO.
C-6
OF 6 SHEETS

ATTACHMENT 2



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fax. 408.260.7201
www.VerdeDesignInc.com

STAMP

CONSULTANT

mountain hermon

ALPINE BIKE PARKS
8 - 1050 Millar Creek Road
Whistler, BC, V0N 1B1
1.888.263.9563

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 077-021-03, 06

SHEET TITLE
BIKE PARK SITE PLAN

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

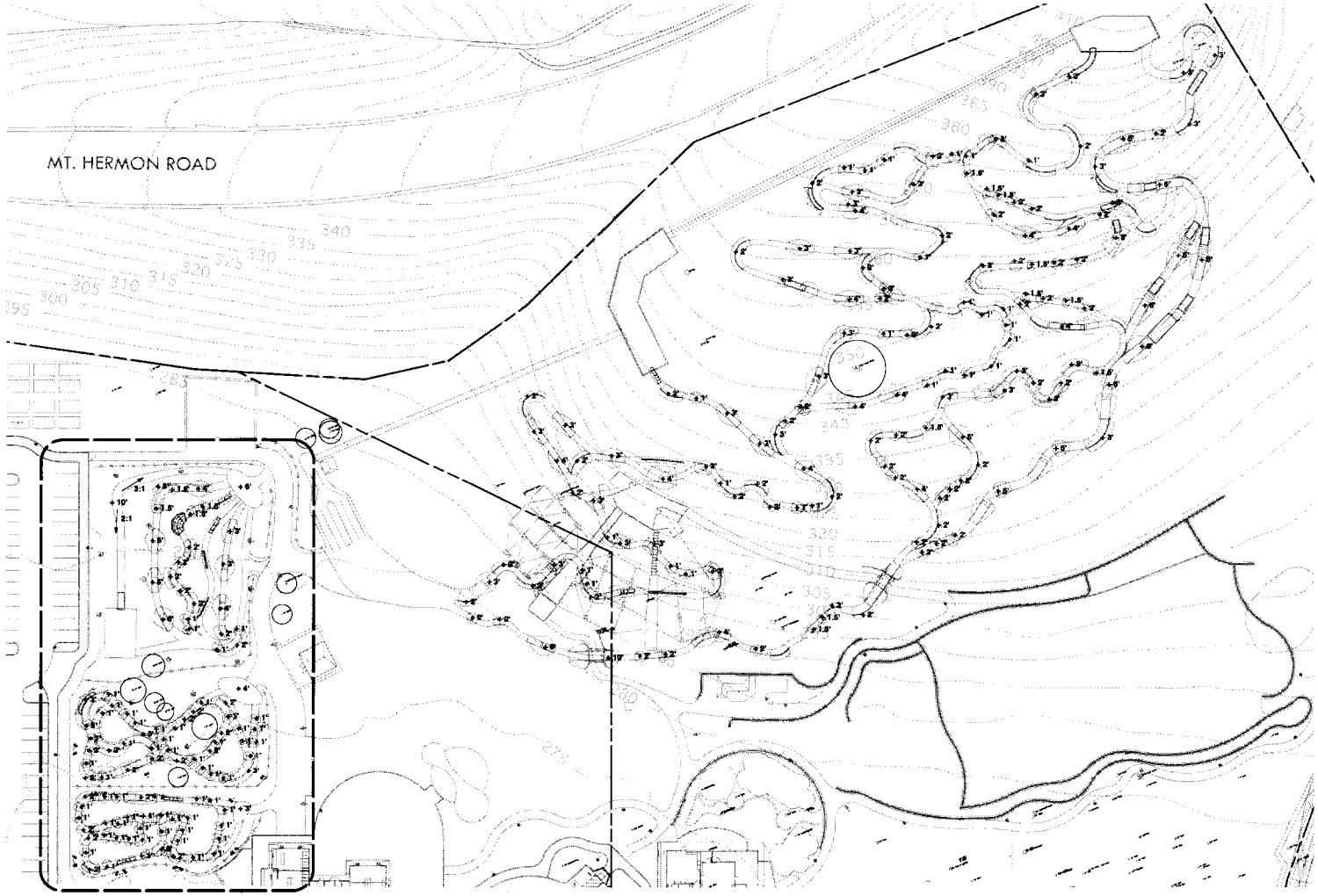
PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

DRAWN BY: AM
CHECKED BY: JD
DATE ISSUED: 8/8/13
SCALE: 1"=50'-0"
PROJ. NO: 1209400-1515
SHEET NO.: B1.0 OF SHEETS

ATTACHMENT 2



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tel. 408.243.7929
fax. 408.243.7588
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STAMP

CONSULTANT

mountHermon

ALPINE BIKE PARKS
8 - 1050 Miller Creek Road
Whistler, BC, V0N 1B1
1.888.283.9563

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE
FEATURE SPOT ELEVATIONS - TRAILS

PROJECT NAME
MOUNT HERMON NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

NO.	REVISIONS	DATE

DRAWN BY	CHECKED BY
AM	JD

DATE ISSUED	SCALE
8/8/13	1"=30'-0"

PROJ. NO. 1209400-1515

SHEET NO. B2.0 OF SHEETS

ATTACHMENT 2

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
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ALPINE BIKE PARKS
8 - 1050 Millar Creek Road
Whistler, BC, V0N 1B1
1.888.263.9563

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE
FEATURE SPOT ELEVATIONS - PUMPTRACK & SKILLS AREA

PROJECT NAME
MOUNT HERMON NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

NO.	REVISIONS	DATE

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DATE ISSUED	SCALE
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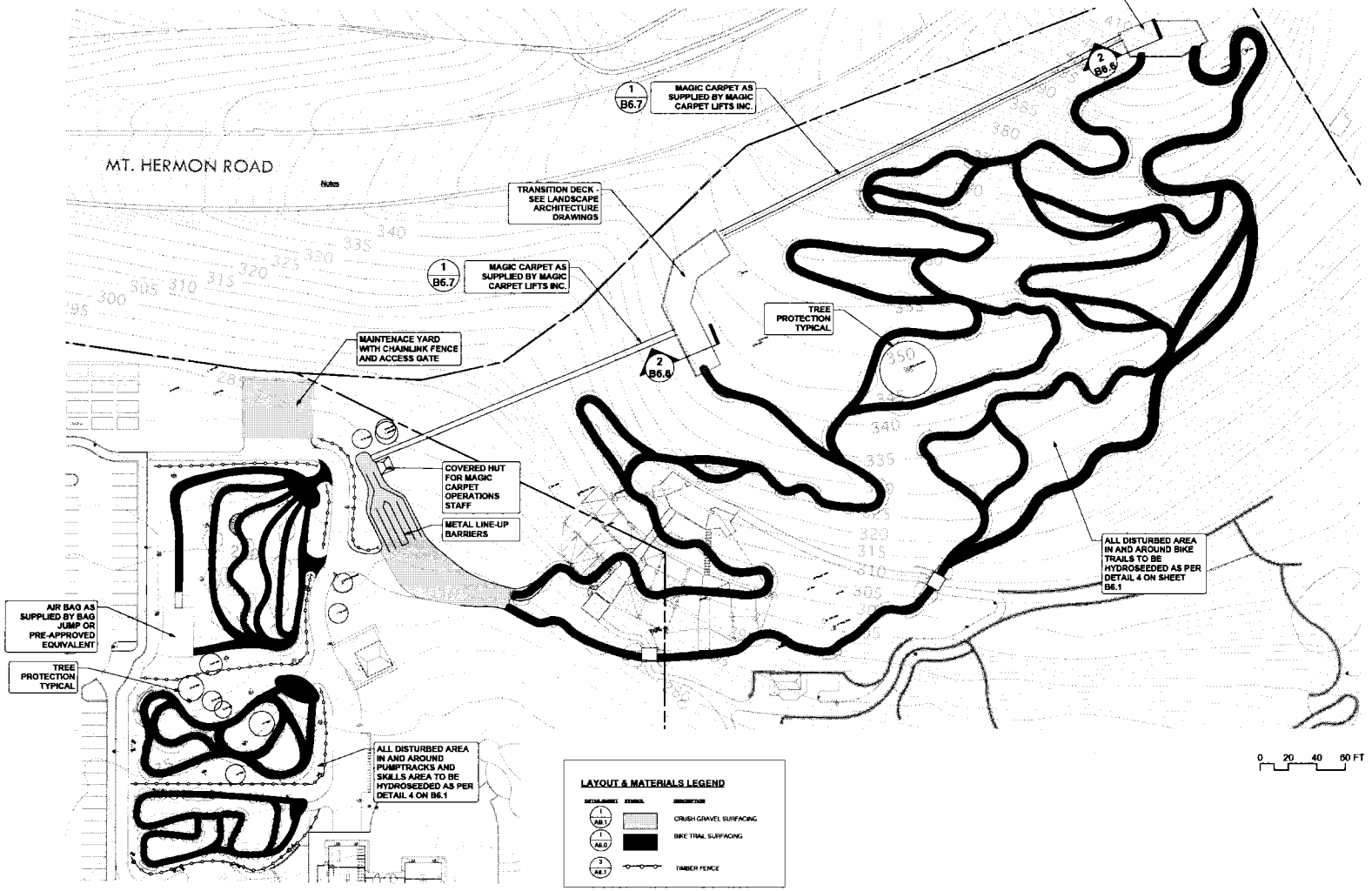
PROJ. NO.	
1209400-1515	
SHEET NO.	OF SHEETS
B2.1	

ATTACHMENT 2



VERDE DESIGN
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3444 Tin Avenue
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Whistler, BC, V0N 1B1
1.888.763.9563

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE
LAYOUT & MATERIALS PLAN

PROJECT NAME
MOUNT HERMON NEW LAND DEVELOPMENT

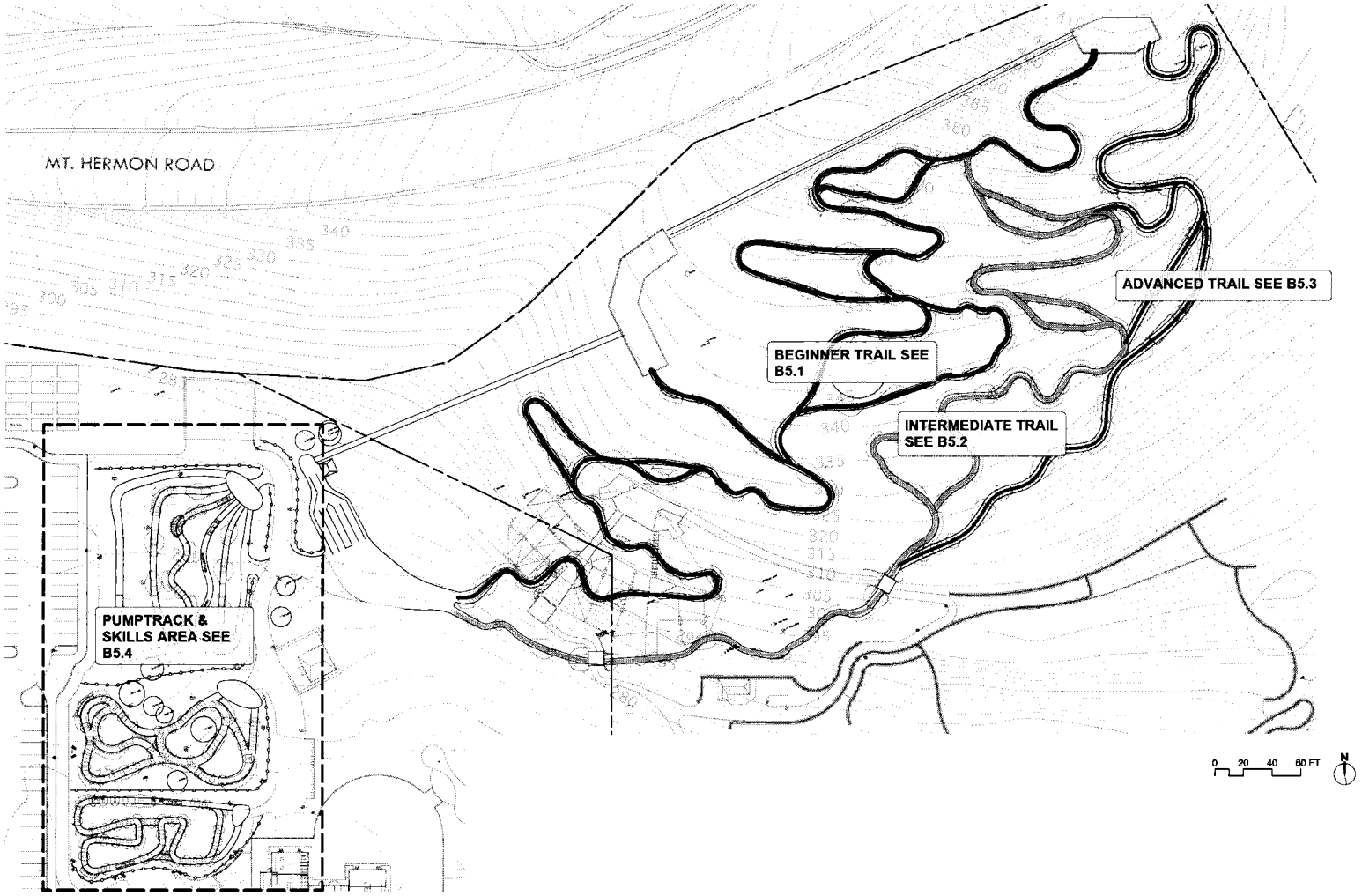
PROJECT ADDRESS
CONFERENCE DRIVE MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

NO.	REVISIONS	DATE

DRAWN BY: AM
CHECKED BY: JD
DATE ISSUED: 8/8/13
SCALE: 1"=30'-0"
PROJ. NO: 1209400-1515
SHEET NO: B3.0 OF SHEETS

ATTACHMENT 2



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ALPINE BIKE PARKS
8 - 1050 Miller Creek Road
Whistler, BC V0N 1B1
1.888.765.9583

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-08, 06

SHEET TITLE
BIKE PARK OVERALL LAYOUT PLAN

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

NO.	REVISIONS	DATE
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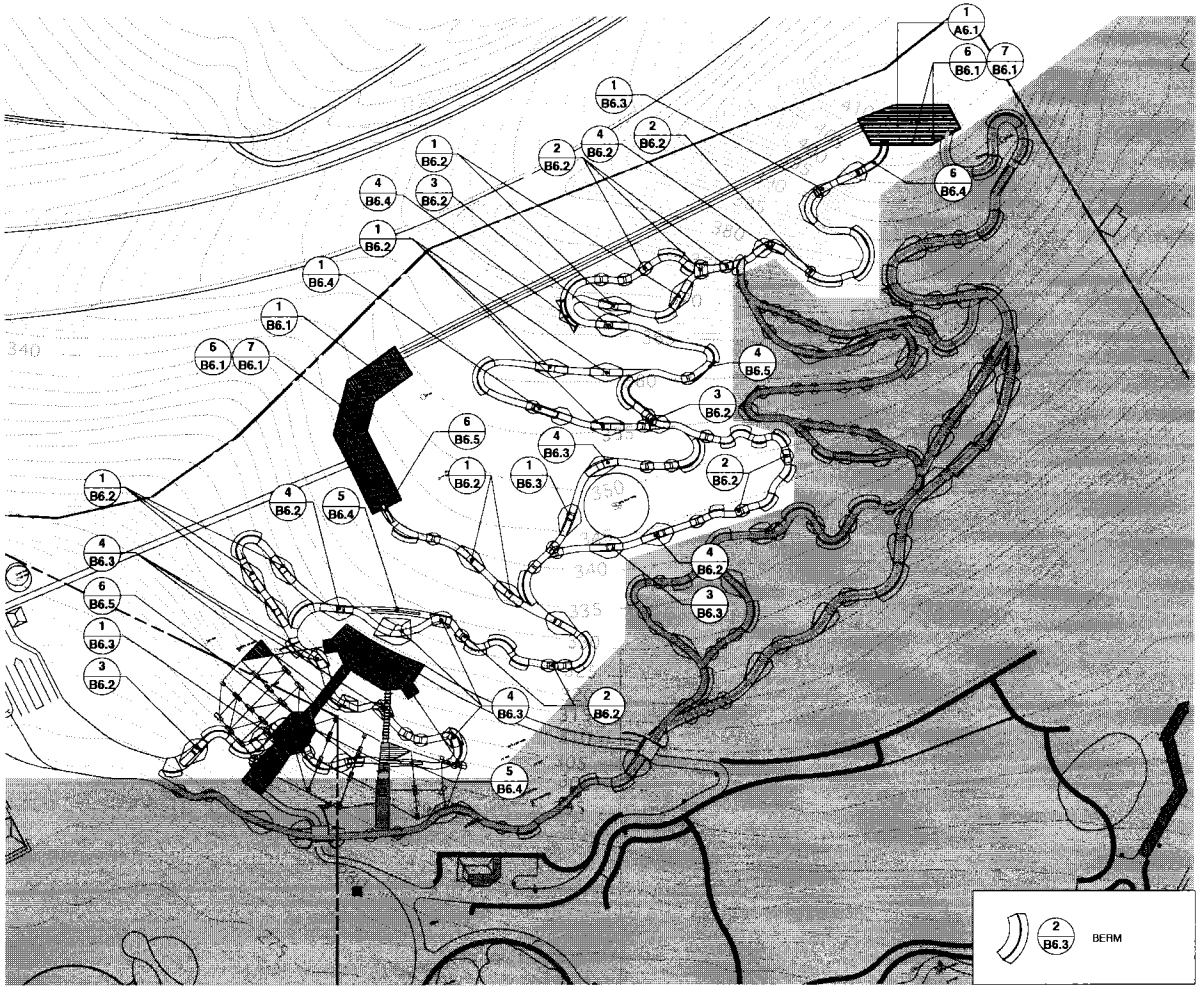
DRAWN BY: AM
CHECKED BY: JD
DATE ISSUED: 8/8/13
SCALE: 1"=30'-0"
PROJ. NO: 1209400-1515
SHEET NO: B4.0 OF SHEETS

ATTACHMENT 2



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VERDE DESIGN
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ALPINE BIKE PARKS
8 - 1050 Millar Creek Road
Whistler, BC, V0N 1B1
1.888.263.9563

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 571-321-02, 06

SHEET TITLE
FEATURE LOCATION PLAN - BEGINNER TRAIL

PROJECT NAME
MOUNT HERMON NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.06.13

NO.	REVISIONS	DATE
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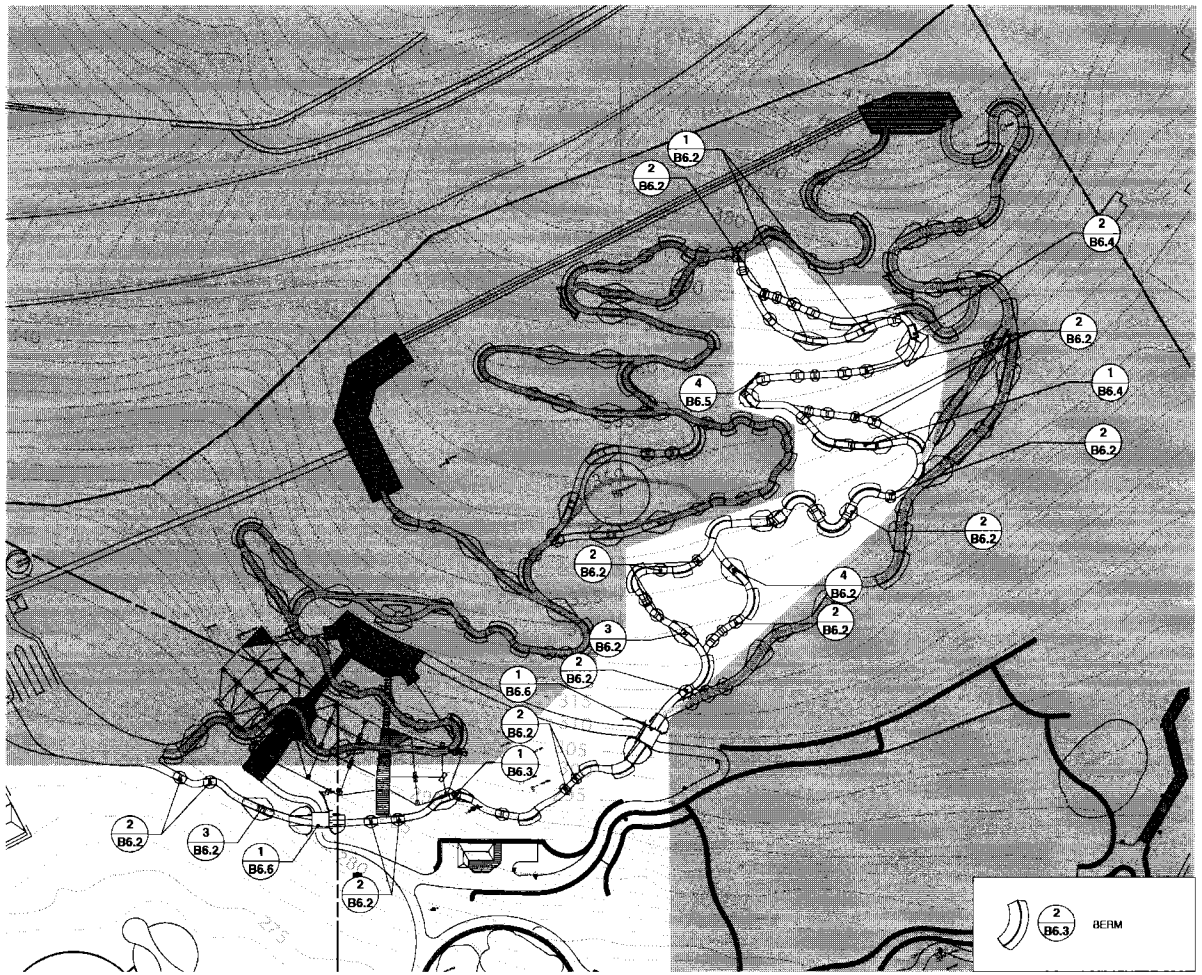
AM	JD
DATE ISSUED	SCALE
8/8/13	1"=30'-0"
PROJ. NO.	
1209400-1515	
SHEET NO.	OF SHEETS
B5.1	

ATTACHMENT 2



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ALPINE BIKE PARKS

8 - 1050 Millar Creek Road
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1.888.263.9563

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 091-331-02, 04

SHEET TITLE

FEATURE LOCATION PLAN - INTERMEDIATE TRAIL

PROJECT NAME

MOUNT HERMON NEW LAND DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

NO.	REVISIONS	DATE
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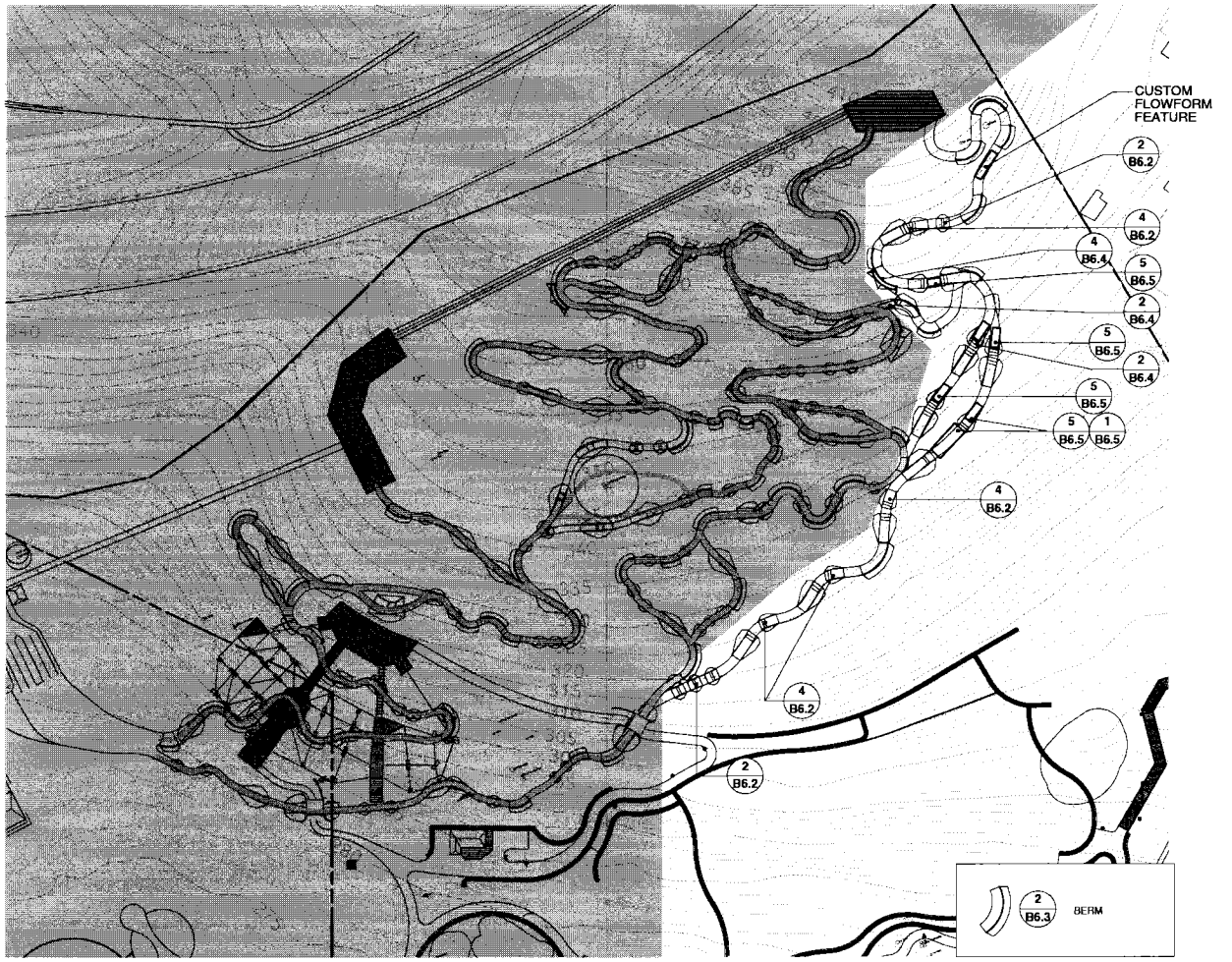
DRAWN BY: AM
CHECKED BY: JD
DATE ISSUED: 8/8/13
SCALE: 1"=30'-0"
PROJ. NO.: 1209400-1515
SHEET NO.: B5.2 OF SHEETS

ATTACHMENT 2



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ALPINE BIKE PARKS
8 - 1050 Millar Creek Road
Whistler, BC, V0N 1B1
1.888.263.9363

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-03, 04

SHEET TITLE
FEATURE LOCATION PLAN - ADVANCED TRAIL

PROJECT NAME
MOUNT HERMON NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

NO.	REVISIONS	DATE
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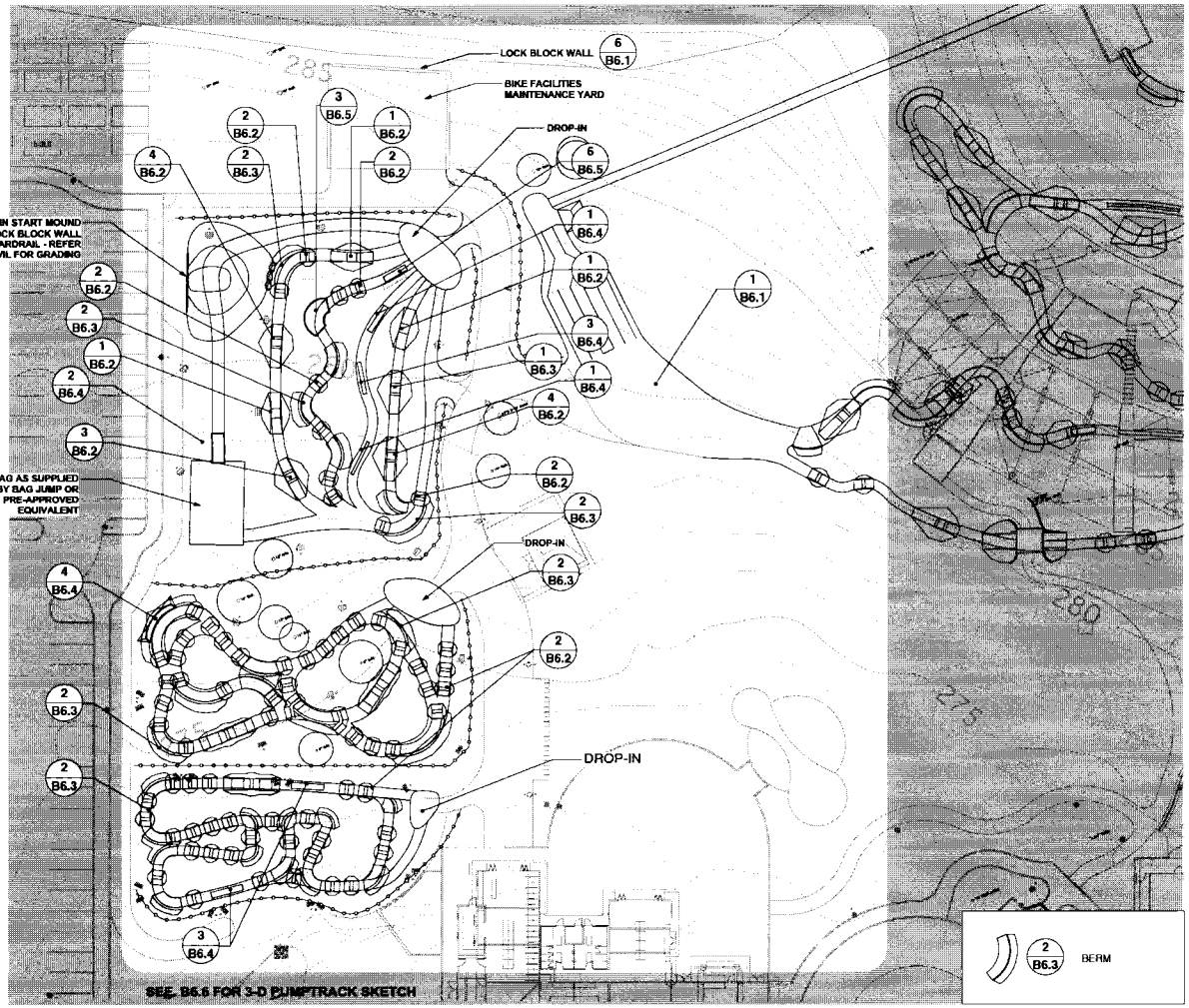
AM	JD
DATE ISSUED	SCALE
8/8/13	1"=30'-0"

PROJ. NO.
1209400-1515

SHEET NO.
B5.3
OF SHEETS

ATTACHMENT 2



VERDE DESIGN

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ALPINE BIKE PARKS

8 - 1050 Miller Creek Road
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SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 049-331-06, 06

SHEET TITLE

FEATURE LOCATION PLAN - PUMPTRACK & SKILLS AREA

PROJECT NAME

MOUNT HERMON NEW LAND DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	6.28.13

NO.	REVISIONS	DATE

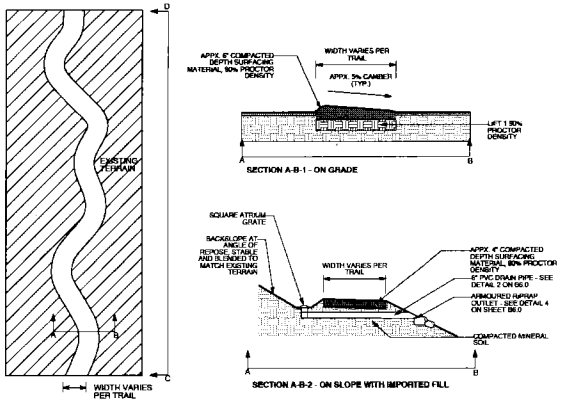
DRAWN BY	CHECKED BY
AM	JD

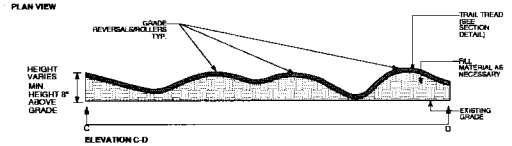
DATE ISSUED	SCALE
8/8/13	1"=30'-0"

PROJ. NO.
1209400-1515

SHEET NO.
B5.4
OF SHEETS

ATTACHMENT 2

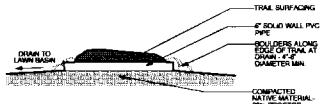




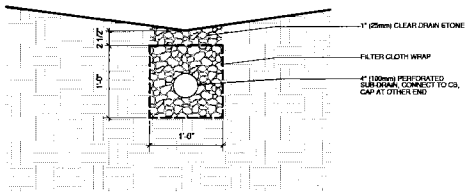
NOTES:

1. TRAIL SHALL HAVE FLOWING TURNS WITH VARYING RADII.
2. TRAIL SHALL HAVE AN AVERAGE OF 7 GENTLE VERTICAL UNDULATIONS OF VARYING HEIGHTS PER 100 LF.
3. TRAIL TREAD SHALL BE SMOOTH, WITH NO ROCKS PROTRUDING MORE THAN 2".
4. TURNS SHOULD BE CAMBERED (BERMED).
5. TRAILSIDE OBJECTS (EXISTING OR IMPORTED) MAY BE PLACED AT THE INSIDE APEX OF TURNS, AS NEEDED, TO PREVENT OR REDUCE SHORT CUTTING.
6. TO ENSURE DRAINAGE ON FLAT GROUND, THE TREAD SHOULD BE CAMBERED, NOT CROWNED. IN MOST INSTANCES, CAMBERING SHOULD BE SLOPED TOWARDS THE INSIDE OF A TURN. GREATER CAMBERING MAY BE REQUIRED IN LARGER TURNS. CAMBERING IS NOT NEEDED ON THE ASCENDING OR DESCENDING FACES OF UNDULATIONS AND CROWNING MAY BE DESIRABLE IN THESE LOCATIONS.

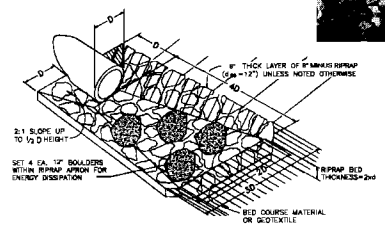
1 TRAIL TYPE TYP.



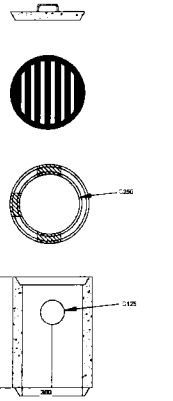
2 DRAIN PIPE UNDER TRAIL
Scale: 1/4" = 1'-0"



3 4" DRAIN PIPE
Scale: 1 1/2" = 1'-0"

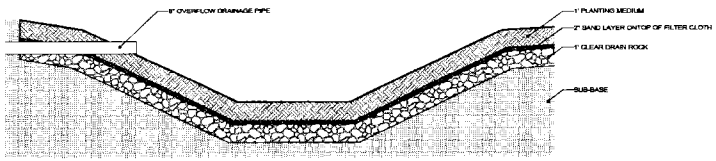


4 ROCK LINED OUTFLOW FROM DRAIN PIPE
Scale: 1/2" = 1'-0"



NOTE: LAWN BASIN AS SUPPLIED BY LANGLEY CONCRETE, OR APPROVED EQUIVALENT. REFER TO MANUFACTURERS SPECIFICATIONS FOR INSTALLATION

6 CATCH BASIN
Scale: 1 1/2" = 1'-0"



NOTE:
GRASS CATCHMENT AREA IS CONCEPTUAL ONLY. FINAL SIZE, MATERIAL DEPTHS, AND TYPES TO BE SPECIFIED BY CIVIL ENGINEER

5 GRASS CATCHMENT POND
Scale: 3/8" = 1'-0"

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ALPINE BIKE PARKS
B - 1050 Millar Creek Road
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1.866.283.9582

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-07, 08

SHEET TITLE
BIKE PARK DETAILS

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

NO.	REVISIONS	DATE
1		
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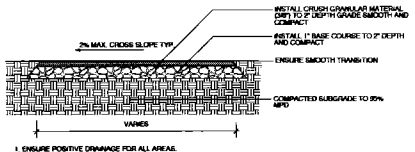
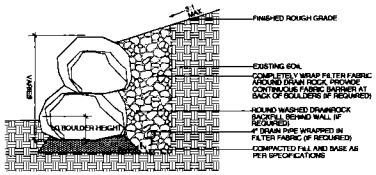
PROJ. NO.: 1209400-1515
SHEET NO.: B 6.0 OF SHEETS

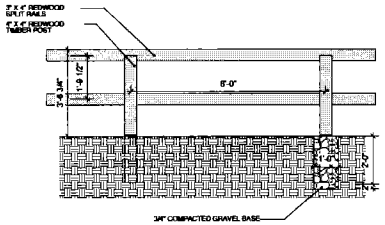


1 CRUSH GRAVEL PATHS TYP.
Scale: 1/2" = 1'-0"

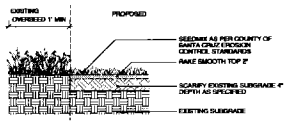


NOTE:
- SELECT FLAT ROCKS TYP. (SEE SPECIFICATIONS FOR SIZES)
ROCKS TO BE PLACED WITH THE LONGEST LENGTH RUNNING OPPOSITE TO EXPOSED ROCK FACE
- SEE SPECIFICATIONS FOR PLACEMENT, TYPE, SIZE, AND FINISHINGS

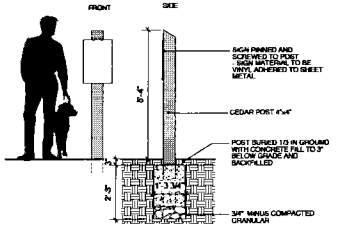
2 ROCKSTACK WALL
Scale: 1/2" = 1'-0"



3 POST AND SPLIT RAIL FENCE TYP.
Scale: 1/2" = 1'-0"

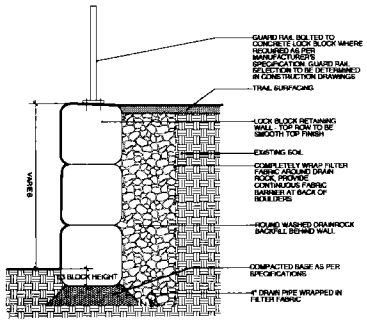


4 HYDROSEED TYP.
Scale: 1/2" = 1'-0"



NOTE: SIGN LOCATIONS TO BE DETERMINED IN CONSTRUCTION DRAWINGS

5 DIRECTIONAL MARKER TYP
Scale: 1/2" = 1'-0"



CONTRACTOR IS RESPONSIBLE FOR LOCK BLOCK WALL SHOP DRAWINGS AND MUST BE APPROVED BY STRUCTURAL ENGINEER.

6 LOCK BLOCK WALL
Scale: 1/2" = 1'-0"

ATTACHMENT 2

VERDE DESIGN
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CONSULTANT

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ALPINE BIKE PARKS
8 - 1050 Millar Creek Road
Whistler, BC, V0N 1B1
1.888.263.9563

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-02, 09

SHEET TITLE
BIKE PARK DETAILS

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

NO.	REVISIONS	DATE
1		
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DATE ISSUED: 8/8/13
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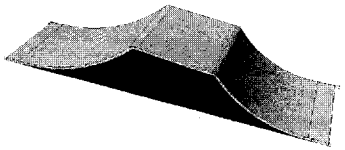
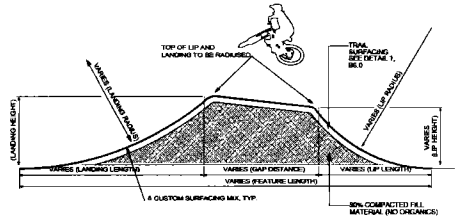
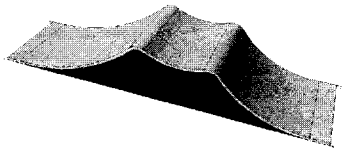
PROJ. NO.: 1209400-1515
SHEET NO.: B 6.1
OF SHEETS

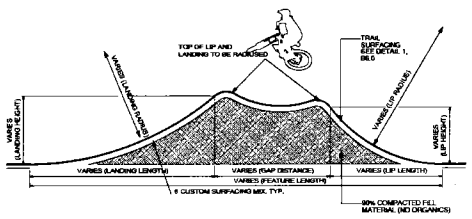
ATTACHMENT 2



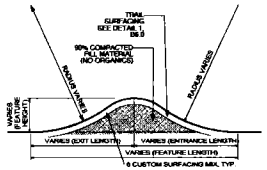


1 TABLE TOP SECTION TYP.



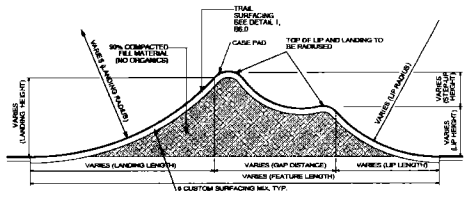


3 ROLLER DOUBLE SECTION TYP.

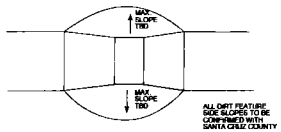


2 ROLLER SECTION TYP.

FOLLOWING TRAIL CONSTRUCTION, ALL NON-ROUND AREAS IN DISTURBED TERRAIN PARKS TO BE DRESSED WITH 3" OF TOPSOIL. PLAN FOR POSITIVE OUTFLOW AND DRAINAGE ACCORDINGLY.



4 DIRT STEP-UP TYP.



5 DIRT FEATURE SIDE SLOPES TYP

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ALPINE BIKE PARKS
8 - 1050 Miller Creek Road
Whistler, BC, V0N 1B1
1.888.283.9583

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 061-331-03, 04

SHEET TITLE
BIKE PARK DETAILS

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
Per County Planning Submittal	8.08.13

NO.	REVISIONS	DATE
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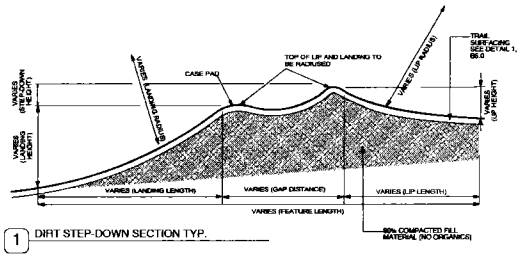
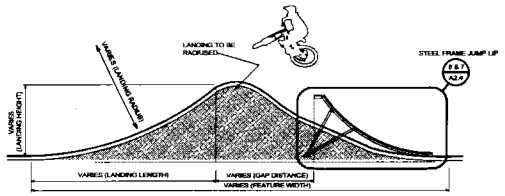
8/8/13	

PROJ. NO. 1209400-1515

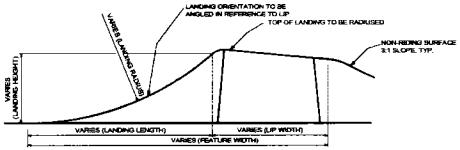
SHEET NO. B 6.2 OF SHEETS



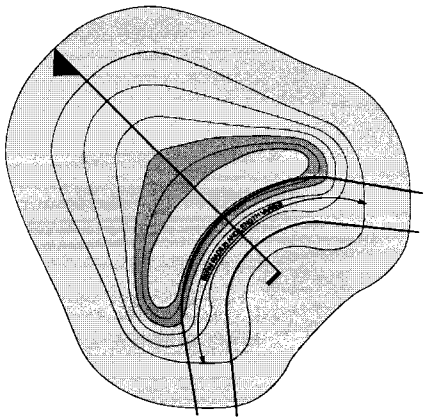
1 DIRT STEP-DOWN SECTION TYP.



3 GAP DOUBLE WITH MANUFACTURED LIP

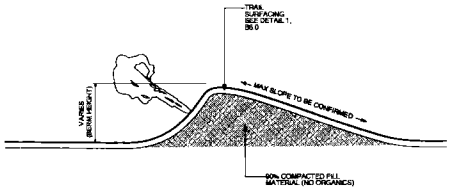


4 HIP TABLE TOP - FRONT ELEVATION

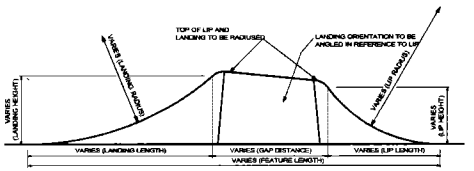


2 BERM - PLAN TYP.

FOLLOWING TRAIL CONSTRUCTION, ALL NON-RIDING AREAS IN DISTURBED TERRAIN PARKS TO BE DRESSED WITH 2" OF TOPSOIL. PLAN FOR POSITIVE OUTFLOW AND DRAINAGE ACCORDINGLY.



2A BERM - SECTION TYP.



4A HIP TABLE TOP - SIDE ELEVATION

ATTACHMENT 2

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
[redacted]

STAMP

CONSULTANT

mountthermon

ALPINE BIKE PARKS
8 - 1050 Miller Creek Road
Whistler, BC, V0N 1B1
1.888.283.9563

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE
BIKE PARK DETAILS

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

NO.	REVISIONS	DATE
1		
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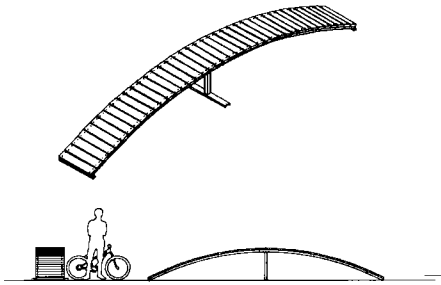
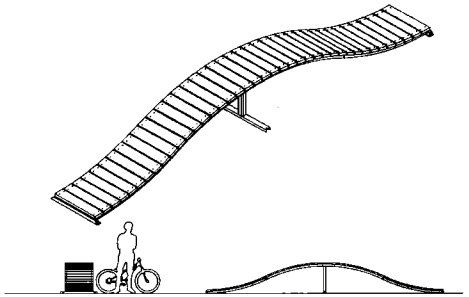
DRAWN BY: AM
CHECKED BY: JD
DATE ISSUED: 8/8/13
SCALE:
PROJ. NO.: 1209400-1515
SHEET NO.: B 6.3 OF SHEETS

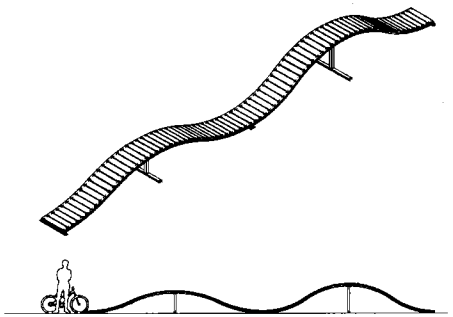
ATTACHMENT 2



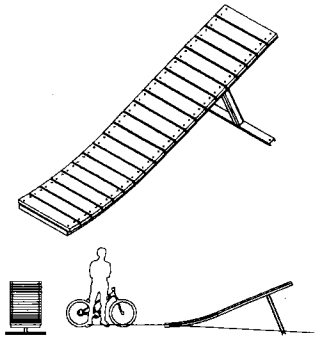
1 FLOWFORM RAINBOW
NTS



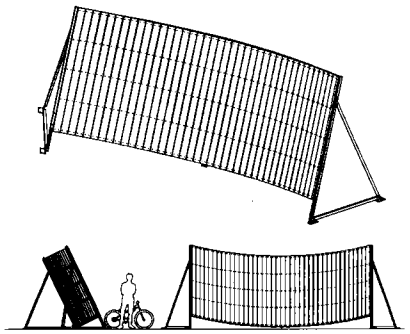
3 FLOWFORM SUNSET
NTS



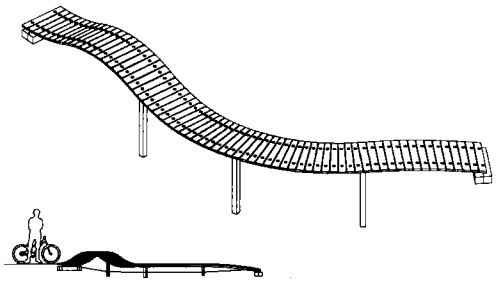
5 FLOWFORM ROLLERCOASTER
NTS



2 FLOWFORM CANNON
NTS



4 FLOWFORM GWALL
NTS



6 FLOWFORM SHORE BRIDGE
NTS

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN

STAMP

CONSULTANT

mountherman

ALPINE BIKE PARKS
8 - 1050 Miller Creek Road
Whistler, BC, V0N 1B1
1.888.263.9563

SEE OVERVIEW

ASSESSOR'S PARCEL NUMBER: (P) 1-331-08, 06

SHEET TITLE
BIKE PARK DETAILS

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.06.13

NO.	REVISIONS	DATE
1		
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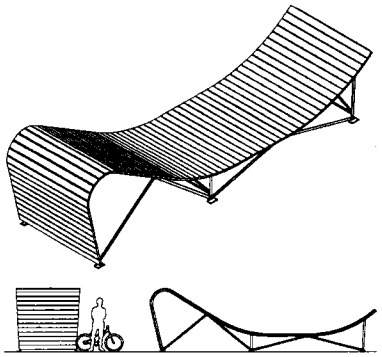
AM	JD

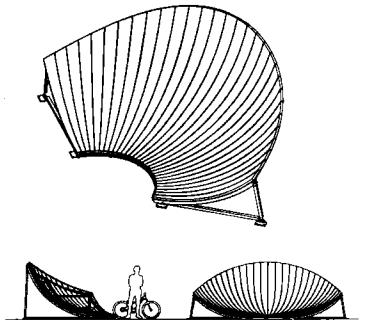
DATE ISSUED	SCALE
8/8/13	

PROJ. NO.
1209400-1515

SHEET NO.
B 6.4
OF SHEETS



1 FLOWFORM ROCKER
NTS



3 FLOWFORM CLAM SHELL
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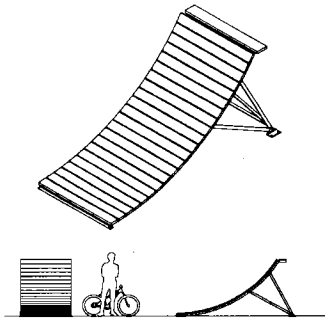

5 FLOWFORM LAUNCH PAD
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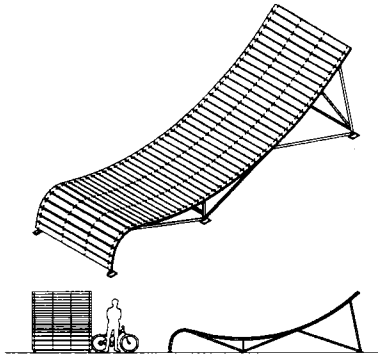

2 FLOWFORM SPUTNIK
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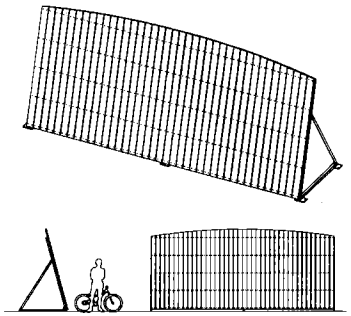

4 FLOWFORM JET BLAST DEFLECTOR
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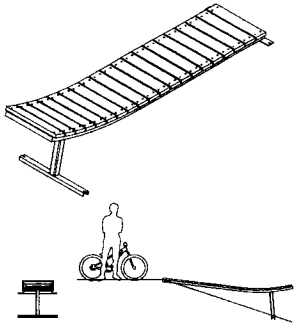

6 FLOWFORM GANGPLANK
NTS

ATTACHMENT 2

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
3420 Bay Alexander
Santa Clara, CA 95054
ph: 408.845.7300
fax: 408.986.7366
www.VerdeDesign.com

CONSULTANT
mountainhermon
ALPINE BIKE PARKS
8 - 1050 Miller Creek Road
Whistler, BC, V0N 1B1
1.888.283.9583

STAMP

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE
BIKE PARK DETAILS

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

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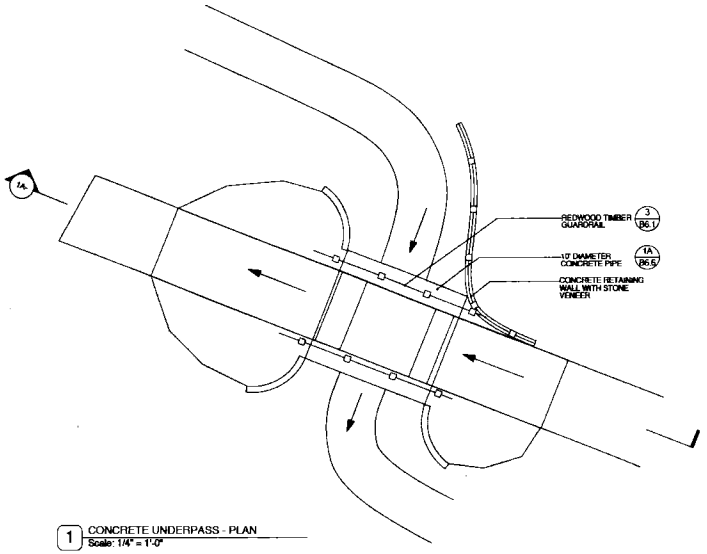
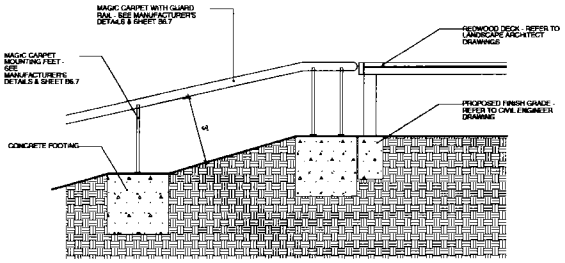
DATE ISSUED 8/8/13 | SCALE
PROJ. NO. 1209400-1515
SHEET NO. B 6.5 OF SHEETS

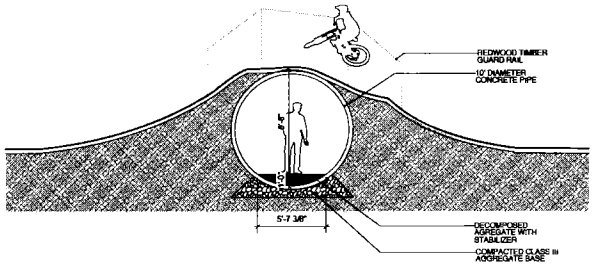
ATTACHMENT 2



1 CONCRETE UNDERPASS - PLAN
Scale: 1/4" = 1'-0"



2 SECTION AT MAGIC CARPET LANDINGS
Scale: 1/2" = 1'-0"



1A CONCRETE UNDERPASS - SECTION
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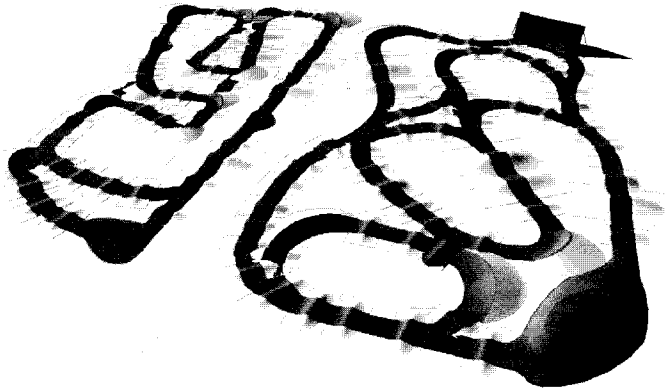

3 PUMPTRACK SKETCH

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORE PLANNING & DESIGN
3468 The Alameda
Santa Clara, CA 95050
tel. 408.296.7300
fax. 408.296.7250
www.VerdeDesign.com

STAMP

CONSULTANT

mountthermon

ALPINE BIKE PARKS
B - 1050 Millar Creek Road
Whistler, BC, V0N 1B1
1.888.283.9563

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 091-331-05, 06

SHEET TITLE
BIKE PARK DETAILS

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

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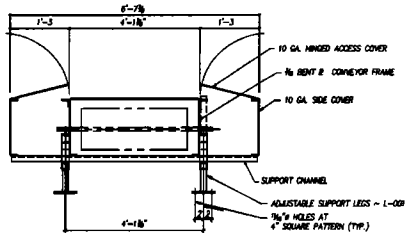
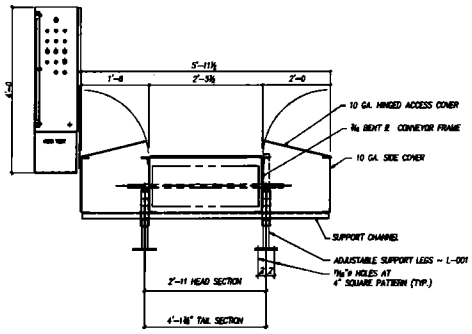
DATE ISSUED: 8/8/13
SCALE:
PROJ. NO.: 1209400-1515
SHEET NO.: B 6.6 OF SHEETS

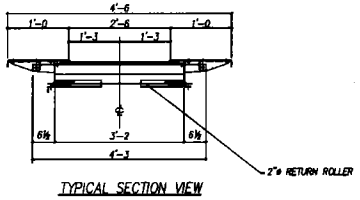
ATTACHMENT 2



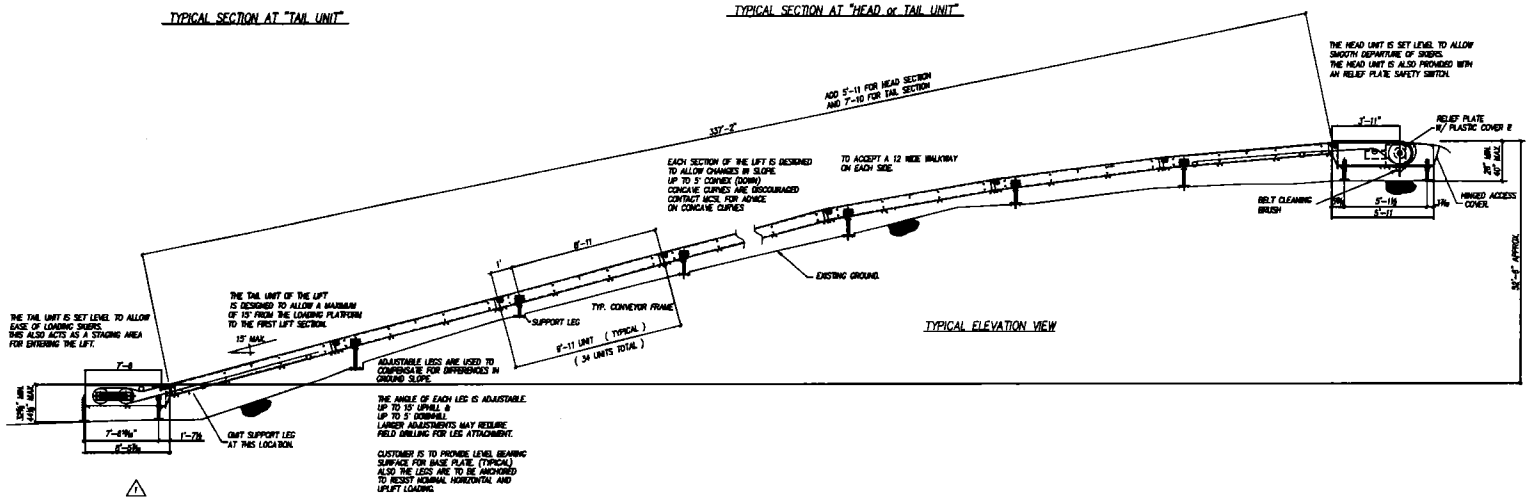
TYPICAL SECTION AT "TAIL UNIT"



TYPICAL SECTION AT "HEAD or TAIL UNIT"



TYPICAL SECTION VIEW



1 MAGIC CARPET TYP.
NTS

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN

STAMP

CONSULTANT
mountthermon
ALPINE BIKE PARKS
8 - 1050 Miller Creek Road
Whistler, BC, V0N 1B1
1.888.263.9563

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-03, 06

SHEET TITLE
BIKE PARK DETAILS

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
For County Planning Submittal	8.08.13

NO.	REVISIONS	DATE
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DRAWN BY: AM
CHECKED BY: JD
DATE ISSUED: 8/8/13
SCALE:
PROJ. NO.: 1209400-1515
SHEET NO.: B 6.7 OF SHEETS

PROJECT DESCRIPTION

SWELL explorations

44 Park Way, PO Box 5
Mount Hermon, CA 95041
831.824.4361

AERIAL ADVENTURE COURSE

AUXILIARY REPORT

CLIENT

Mount Hermon Association, Inc.
Dana Padlock, Facility Engineer
17 Conference Drive
Mount Hermon, CA 95041

Dear Mr. Padlock:

This auxiliary document was hereby prepared to aid in the understanding of the Aerial Adventure Course proposed on location next to the Forest Falls Shopping Plaza in Felton, California. Please review this report in conjunction with the design sheets so that it may be understood how the overall proposed and its parts serve the programming and operations.

Please keep in mind, aerial adventure courses are not typical amusements, their aim is to facilitate a program/operation while inspiring participants to journey to new heights and push themselves in unique ways that can lead to personal growth and discovery.

TABLE OF CONTENTS

WHAT IS AN AERIAL ADVENTURE COURSE?

In short, an aerial adventure course is a structure manufactured of height tree rafters both recreational and educational for visitors through the use of physical obstacles and "controlled" risk.

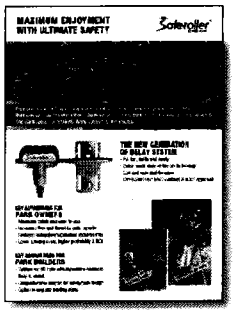
These courses, often referred to as ropes courses, challenge coworkers or individuals' parts, are typically built in trees or on poles/columns. It is used, one obstacle or platform at both on each of the poles/trees and then connected by a series of aerial obstacles. The obstacles support friends from platforms to platforms challenging themselves both physically and mentally while supporting each challenge. The obstacles are reminiscent of childhood play, rope and wood and offer expression through agression and fun physical challenge and adventure through "personified" fun by being at heights (typically it runs 20' to 50' in the air).

Traditionally, ropes courses have been used for education or summer camps and other group oriented organizations across the World as a way to promote participation for the users to develop confidence and ease in living their daily lives. The unusual and exciting nature of the exercise making more unforgettable for all and helps maintain the visitor's interest and spirit through implemented agreeable exercise.

IS IT SAFE? WHAT IF I FALL?

All activities, such as crossing the Mount Hermon rocks between this. Tested Adventure courses navigate that not through trained staff and always ensuring that a participant is protected in the event that they fall. Falling in one of the fun and enchantments on adventure course and is usually limited to a very small vertical displacement a safety system constructs visitor.

As you can see in the picture above the short girl is protected through the use of a harness and lanyard attached to a structure with rope that runs overhead. Advanced technology called a "Continuous Belay" was always for the participant to never be disconnected from the overhead safety system. At each platform the carabiner (karabiner/clip) on the end overhead was rope through a continuous track system. (See next page). These type of belay system have been developed over the past decade in foreign where adventure Parks have become very popular. The product found on the following page is called the "Safe-Rider" and is comprised of an overhead belay with an attached cable lanyard coupled with counterweight overhead were rope travel that prevent or participant participant on the course. Being that is a safety system unequally referred to as "belayed".

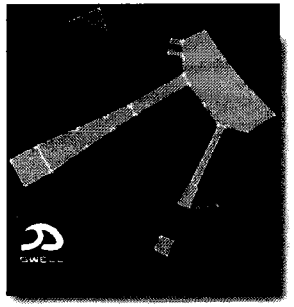


On course staff escorts participants at all times this depends. They are also there to coach visitors through the course and assist if needed. Adventure Course construction and operational standards have been developed over the past 25 years by the Association for Challenge Course Technology (ACCT) and dictates that staff go through extensive training in order to operate a course with the ultimate goal of risk mitigation and safety.

COURSE/CIRCUIT OVERVIEW

The course shown on the plan set is a rope-based aerial obstacle course that is broken up into six (6) different circuits or trail. Each circuit or trail contains six (6) stations (9) challenges. There are three (3) levels of difficulty:

1) EASY – Green and Blue Circuits (Easiest lowest obstacles)
2) MODERATE – Orange and Red Circuits
3) DIFFICULT – Brown and Black Circuits



The course also provides lots of space for spectators and family members (see safety requirement needed) to spectate and cheer on participants enjoying the different circuits. Spectators are able to access the main area of the course via a sturdy (8') foot pedestrian bridge and trail that they are a part of the course without ever getting on a business. This easy allows for glare/guardians to witness up-close the overcome of their charge/guardians/loves also be supervising on-course without having to put on any safety equipment. All pedestrian accessible areas are fully raised and built to current building codes.

Entry and exit gates that separate pedestrian and participants areas will have spaced locks on them so that they are not able to be opened by pedestrians. Operational staff will have special keys to open gates and control entry and exits of persons/crowds.

It's adventure time so will almost 3 percent of all ages. Staff provided would for participants to ensure children are old enough and tall enough (about 48 inches or 4 feet) to be on course. The ultimate goal is to provide a family-friendly course that encourages togetherness and adventure the use of parents entertainment and reading for both 'after' to overcome each obstacle.

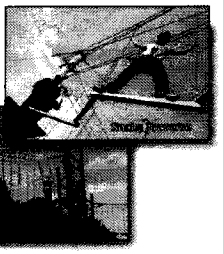
UNIVERSAL ACCESSIBILITY

The course has been designed in such a way that allows for persons with disabilities to enjoy the incredible elements of the course. The pathway from the gear up area to the start of each circuit is accessible. From there, the participant is able to be hooked up to the Zipper Land where they choose to push on to each circuit is determined.

Specialized equipment must able to participant condition and advanced staff training are important factors that help to achieve everyone a fantastic form and enjoying the thrills and recreational opportunities the course has to offer.

TYPICAL ELEMENTS

Obstacles or challenges are chosen to suit the difficulty level of each circuit. Each one of these is made sure that elements are free of protrusions, sometimes angles, and hazards. Various ergonomics are properly taken into account when designing / create to ensure a smooth flow from beginning to end. We are also can see some good examples of typical adventure course obstacles.



COURSE ACCESS AND EXITS

There are two (2) access points of participant access across the obstacle. The Easy Circuits (Green and Blue) are accessed entirely on the main level pedestrian deck and the Moderate (Orange and Red) and Hard (Brown and Black) Circuits are accessed via a gabbed floor bridge near the Public Access Deck area and the end of the access road. Access to the Black Circuit is through a lean-to / camp monitor at the start of the Expert Loops.

There are five (5) descents. The first is to simply walk back across the aforementioned bridge at the end of the Moderate Circuits. The second and third are 25 feet or the end of the Easy Circuits and grade one of the Green Circuit. The fourth is a very serious and exciting descent that allows riders to jump from the second floor of the course and experience a controlled descent to the Lower Level deck. The is made possible by using the static sleeves in the right called a POWERFAN. The ride is no way by the thrill-seeking private / mixed and more for fearful to use external power sparks. It allows users to make a rapid descent while wearing specific harness.

PASSIVE ZONES

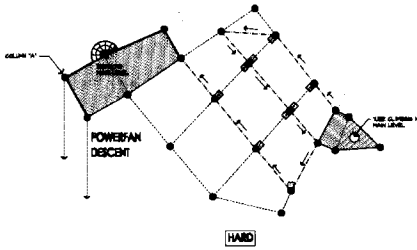
Passive zones or adventure courses are important zones that facilitate rest, reflection, and restorative relaxation. At the beginning and end of each circuit/adventure there are wooden platforms that the participant can use to rest and harmonize their efforts after the most obstacle in front of them. In addition to the wooden platforms there are also passive zones in the form of a hammocks (single and a flexible netted platforms (triangular) hangers that you have just finished a string of moderate obstacles and want to take a nice relaxing in the gym hammock. From here you can watch as fellow visitors work and the trainers in your next circuit and see the breeze from mountain tribes soothing their underneath. Participants are usually no charge for a block of time, one to two hours, and these passive areas are ideal to meet one of participants (or crew, since they are course, at their own pace.

FURTHER QUESTIONS

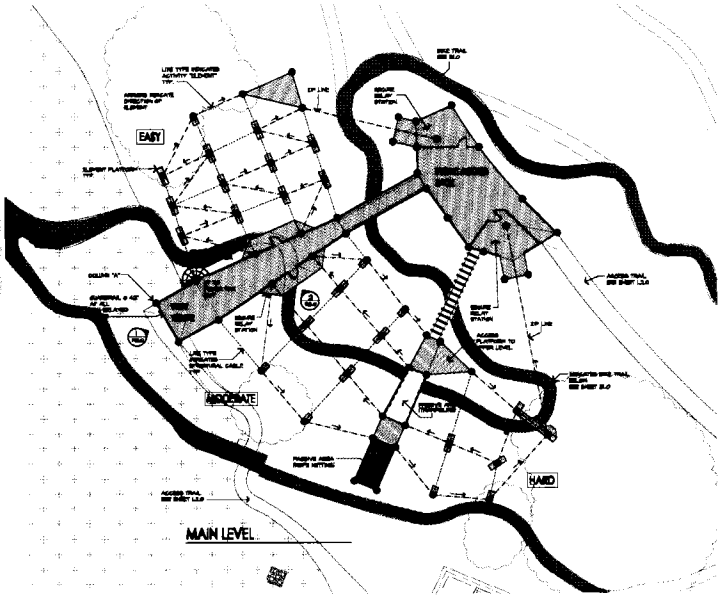
For further questions or clarification please contact:

For Mount Hermon Association	For Aerial Adventure Course
Dana Padlock	Mark Rodriguez
Mount Hermon Association Inc.	Swell Explorations
dpadlock@mounthermon.org	mark@swellexplorations.com
831.430.3204	831.824.4361

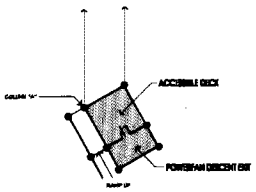
"Thank you very much for your time and consideration"



UPPER LEVEL



MAIN LEVEL



LOWER LEVEL

AERIAL ADVENTURE COURSE - PLAN VIEW

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT FACILITY DESIGN
2482 The Alameda
Santa Clara, CA 95050
tel. 408.986.7300
fax. 408.986.7380
www.VerdeDesign.com

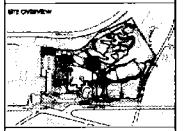
STAMP

CONSULTANT

SWELL EXPLORATIONS
Post Office Box 5
Mount Hermon, CA 95041
Office: 831.824.4361
www.swellexplorations.com

ATTACHMENT 2

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 071-321-08, 06

SHEET TITLE
AERIAL ADVENTURE COURSE PLAN AND PROJECT DESCRIPTION

PROJECT NAME
MOUNT HERMON CONFERENCE CENTER NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	8.6.13

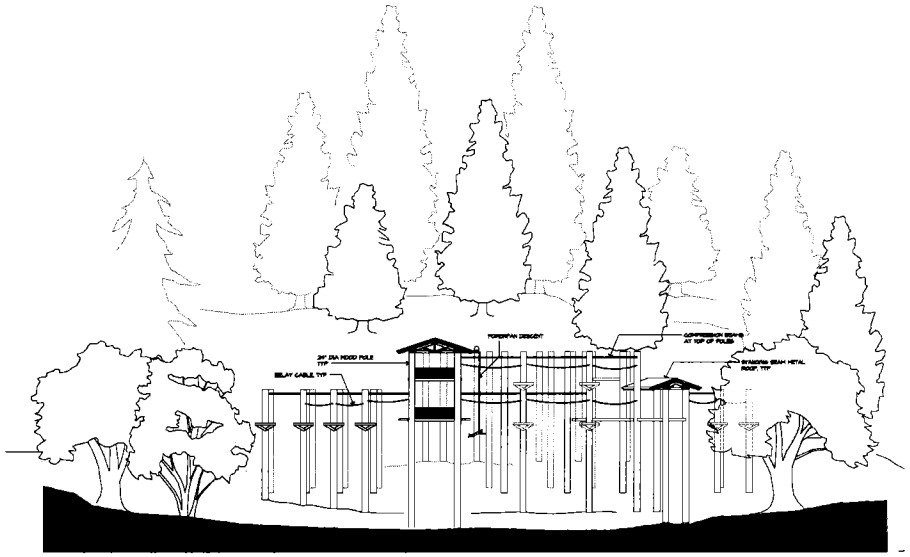
NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

DRAWN BY	CHECKED BY
QM	NR
DATE ISSUED	SCALE
08/06/13	1/16"=1'-0"

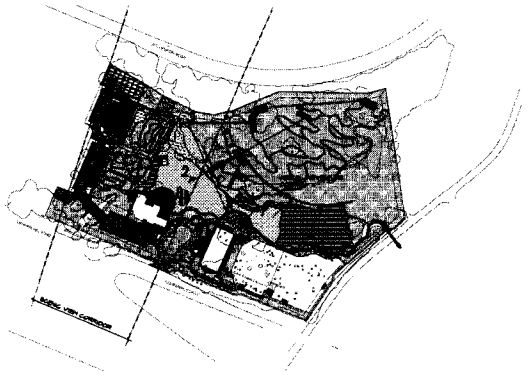
PROJ. NO.
1209400-1515

SHEET NO.
R1.0
OF SHEETS

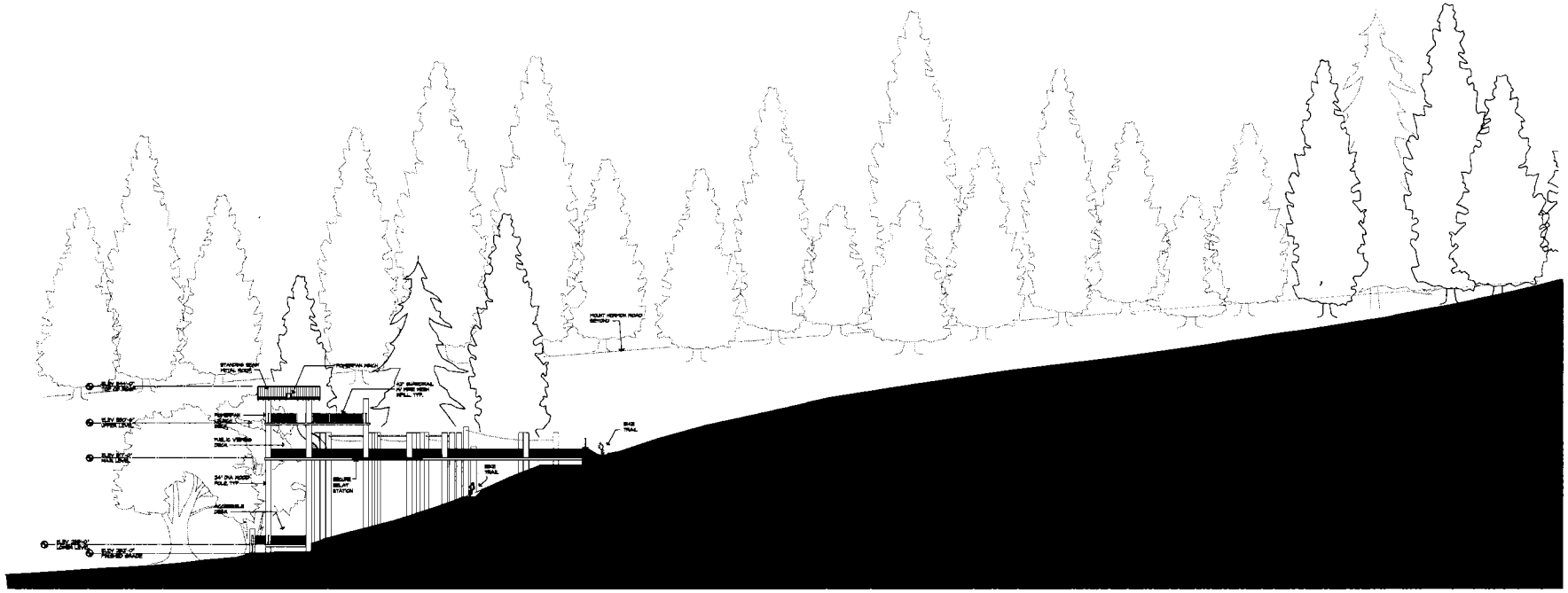
ATTACHMENT 2



ELEVATION 1



SITE PLAN KEY



ELEVATION 2

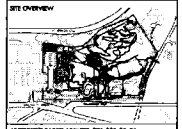
VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN

STAMP

CONSULTANT

SWELL
EXPLORATIONS

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 077-301-00, 08

SHEET TITLE
AERIAL ADVENTURE COURSE SECTION / ELEVATIONS

PROJECT NAME
MOUNT HERMON CONFERENCE CENTER NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	8.6.13

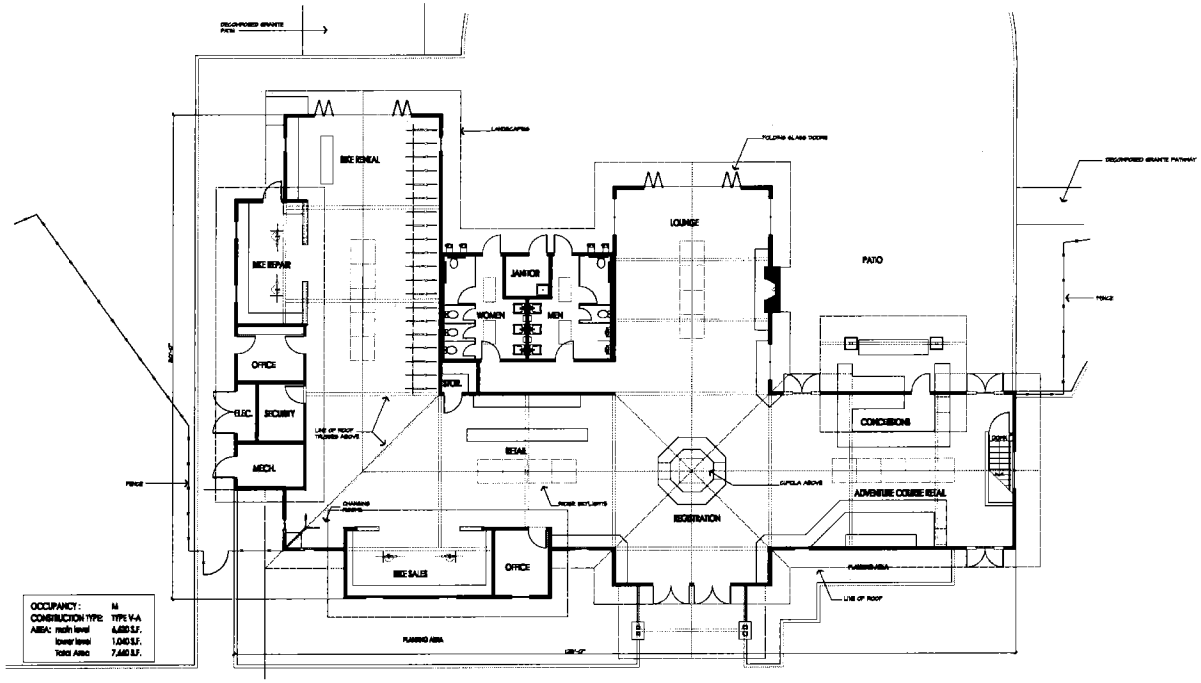
NO.	REVISIONS	DATE

DRAWN BY	CHECKED BY
GM	NR
DATE ISSUED	SCALE
08/06/13	1/16"=1'-0"

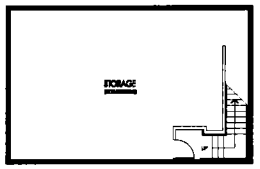
PROJ. NO.
1209400-1515

SHEET NO.
R2.0
OF SHEETS

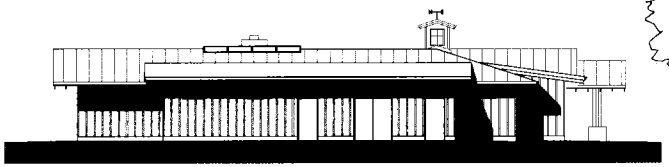
ATTACHMENT 2



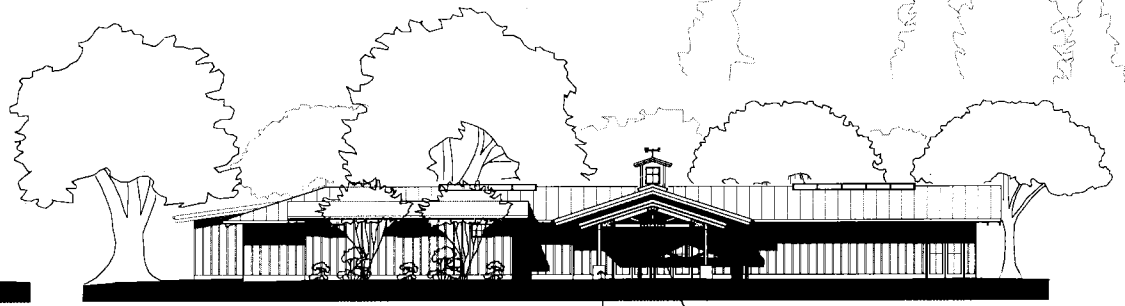
RETAIL FLOOR PLAN



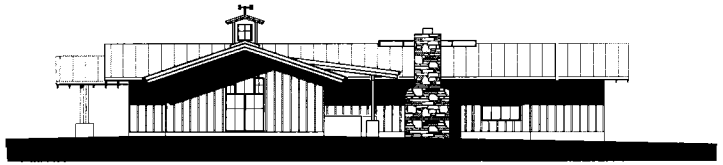
LOWER LEVEL



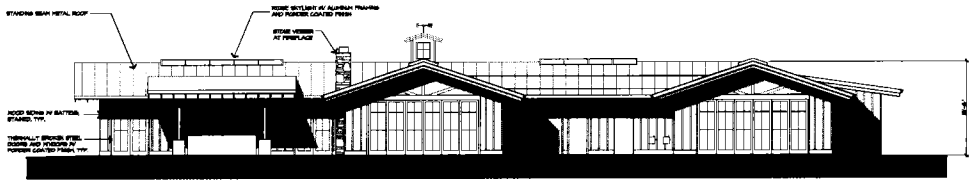
WEST ELEVATION



SOUTH ELEVATION



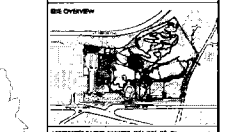
EAST ELEVATION



NORTH ELEVATION

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN

MAYFIELD ARCHITECTS



SHEET TITLE
RECREATION / RETAIL BUILDING
FLOOR PLANS
EXTERIOR ELEVATIONS

PROJECT NAME
MOUNT HERMON
CONFERENCE CENTER
NEW LAND DEVELOPMENT

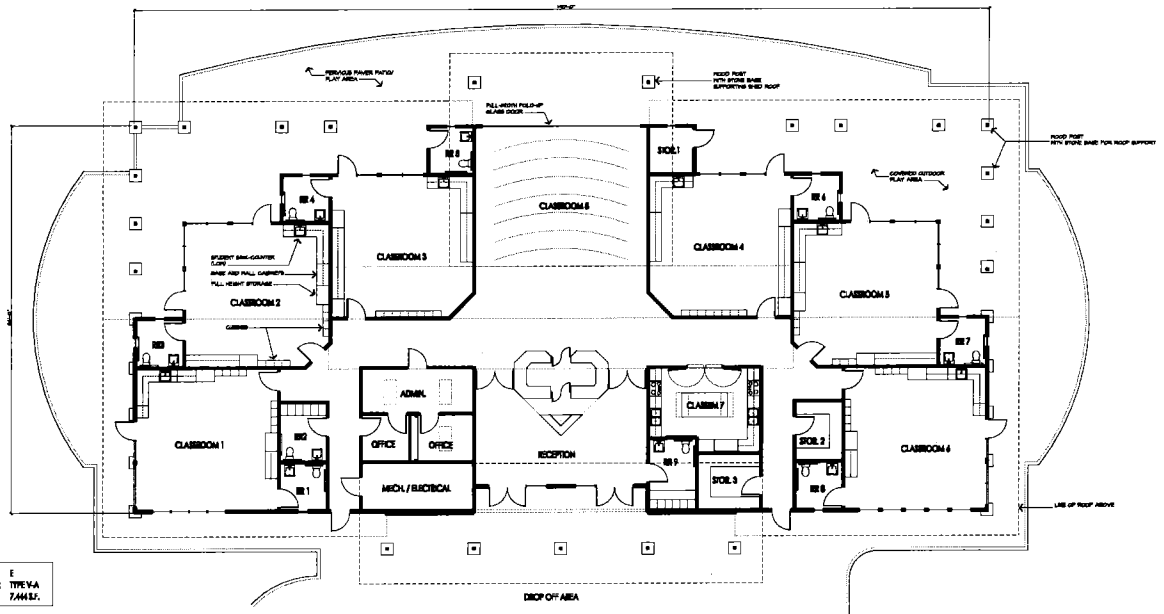
PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	8.6.13

NO.	REVISIONS	DATE

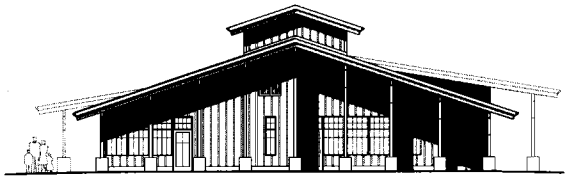
DRAWN BY: GM
CHECKED BY: WKM
DATE ISSUED: 08/06/13
SCALE: 1/8"=1'-0"
PROJ. NO.: 1209400-1515
SHEET NO.: A1.1 OF SHEETS

ATTACHMENT 2

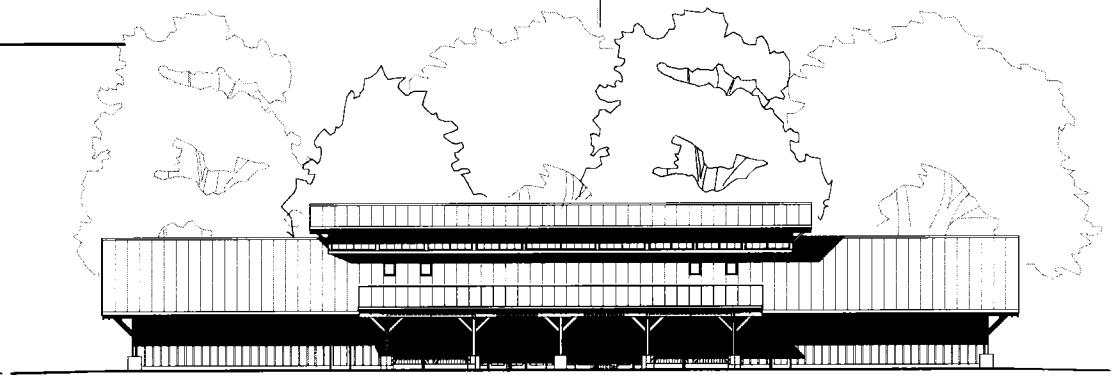


OCCUPANCY:	E
CONSTRUCTION TYPE:	TYPE V-A
AREA:	7,444 S.F.

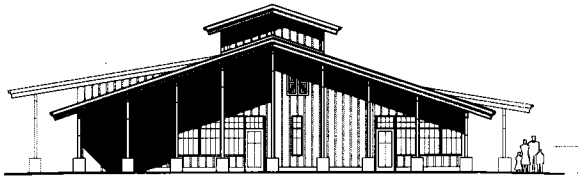
DAYCAMP FLOOR PLAN



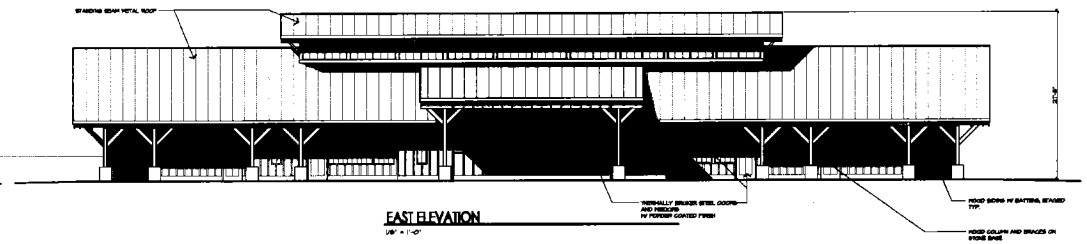
SOUTH ELEVATION



WEST ELEVATION



NORTH ELEVATION



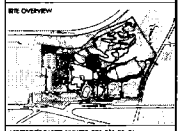
EAST ELEVATION

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN

STAMP

CONSULTANT

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 071-331-03, 06

SHEET TITLE

EDUCATION / DAYCAMP BUILDING
FLOOR PLANS
EXTERIOR ELEVATIONS

PROJECT NAME

MOUNT HERMON
CONFERENCE CENTER
NEW LAND DEVELOPMENT

PROJECT ADDRESS

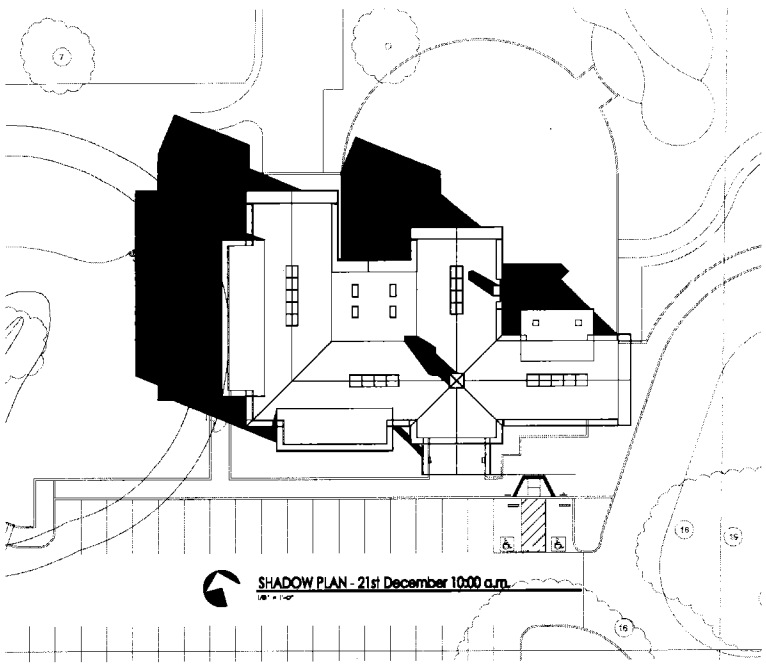
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	8.6.13

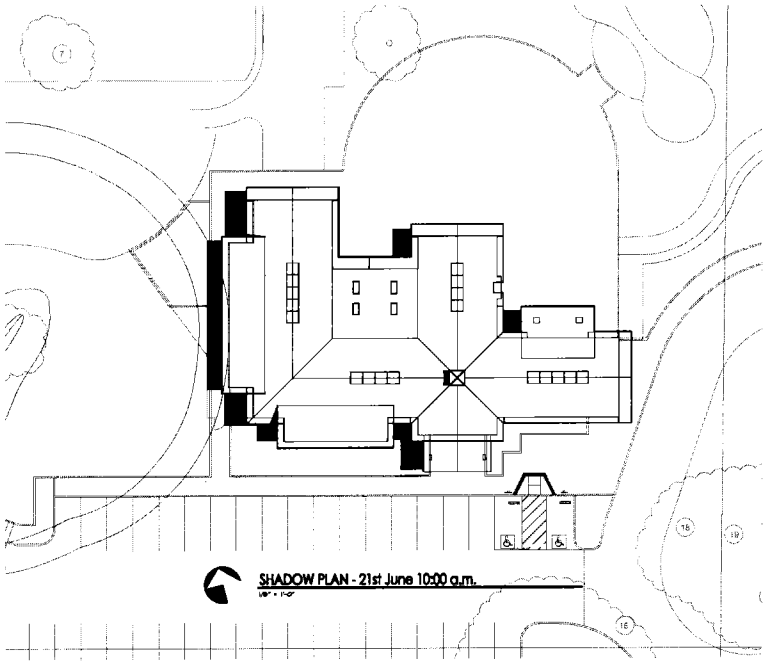
NO.	REVISIONS	DATE

DRAWN BY: GM	CHECKED BY: WKM
DATE ISSUED: 08/03/13	SCALE: 1/8"=1'-0"
PROJ. NO.: 1209400-1515	
SHEET NO.: A1.2	OF

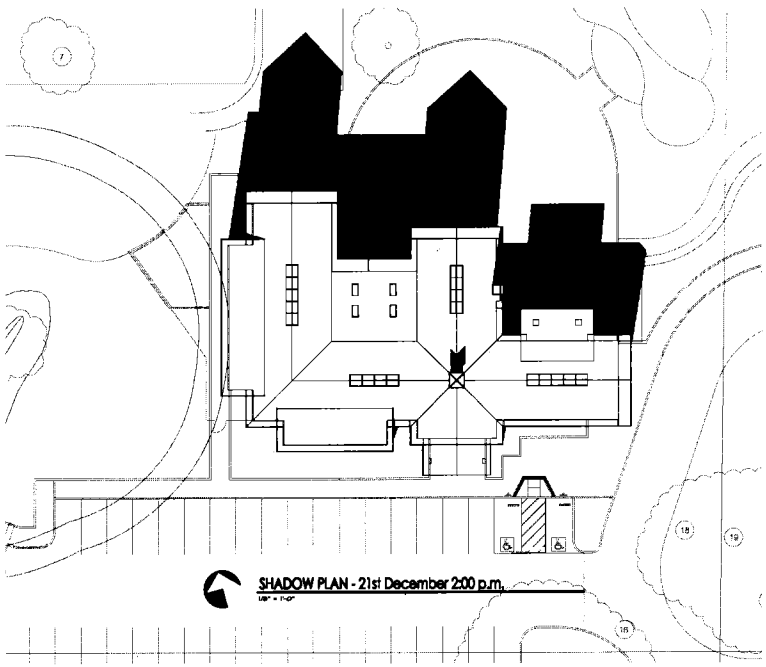
ATTACHMENT 2



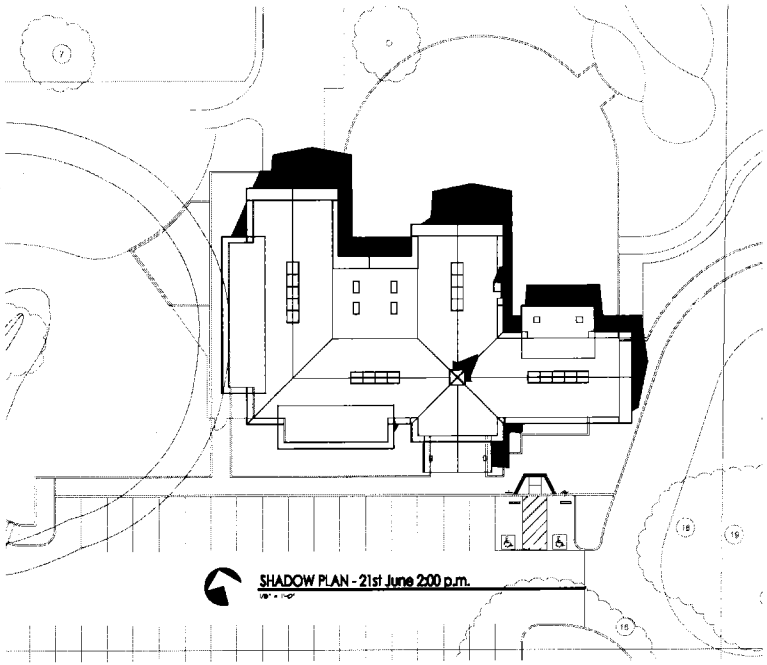
SHADOW PLAN - 21st December 10:00 a.m.



SHADOW PLAN - 21st June 10:00 a.m.



SHADOW PLAN - 21st December 2:00 p.m.



SHADOW PLAN - 21st June 2:00 p.m.

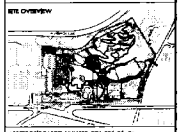
VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
3403 Tile Alameda
Santa Clara, CA 95050
tel: 408.984.7300
fax: 408.984.7360
www.VerdeDesign.com

STAMP

CONSULTANT

MAYFIELD

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE

RECREATION / RETAIL BUILDING
SHADOW STUDIES

PROJECT NAME

MOUNT HERMON
CONFERENCE CENTER
NEW LAND DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON

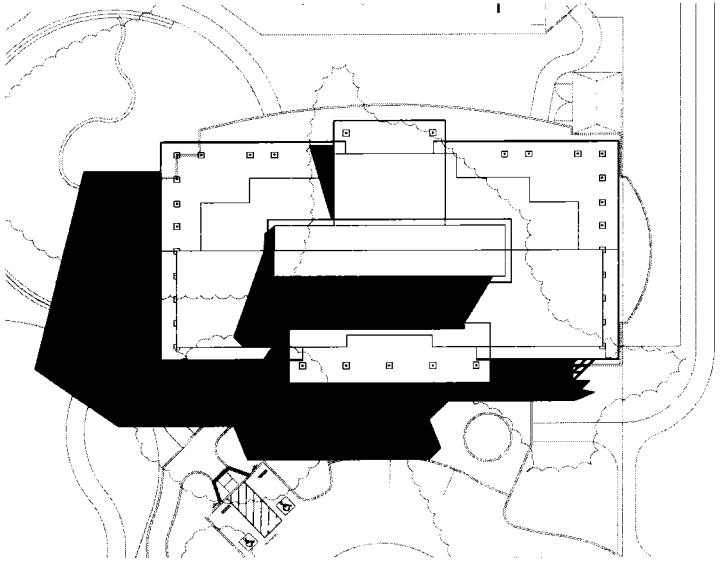
SUBMITTAL	DATE
COUNTY PLANNER SUBMITTAL	8.6.13

NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

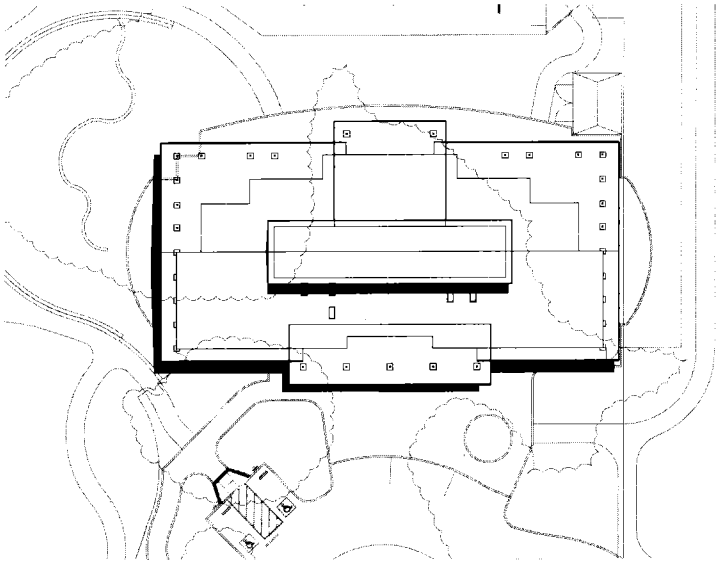
DRAWN BY	CHECKED BY
GM	WKM
DATE ISSUED	SCALE
08/06/13	1/8"=1'-0"

PROJ. NO.
1209400-1515

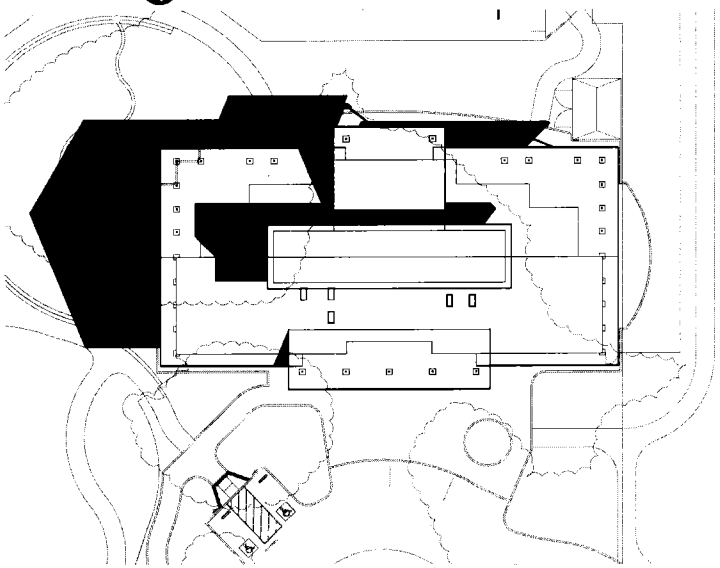
SHEET NO.
A2.1
OF SHEETS



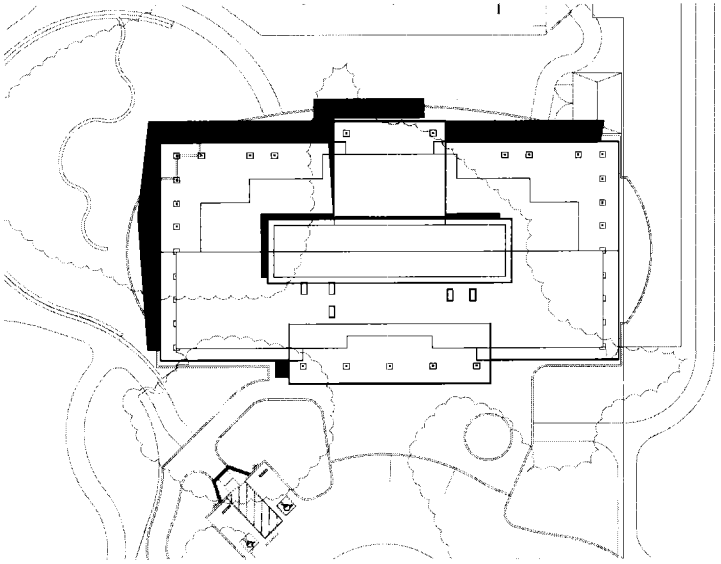
DAYCAMP SHADOW PLAN - 21st December 10:00 a.m.



DAYCAMP SHADOW PLAN - 21st June 10:00 a.m.



DAYCAMP SHADOW PLAN - 21st December 2:00 p.m.



DAYCAMP SHADOW PLAN - 21st June 2:00 p.m.

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
3493 The Alameda
Santa Clara, CA 95050
tel: 408.985.7300
fax: 408.985.7340
www.VerdeDesignInc.com

STAMP

WILLIAM R. HARPER
C 28808
CALIFORNIA
STATE OF CALIFORNIA

CONSULTANT

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-251-05, 06

SHEET TITLE

EDUCATION / DAYCAMP BUILDING
SHADOW STUDIES

PROJECT NAME

MOUNT HERMON
CONFERENCE CENTER
NEW LAND DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
COUNTY PLANNER SUBMITTAL	8.6.13

NO.	REVISIONS	DATE

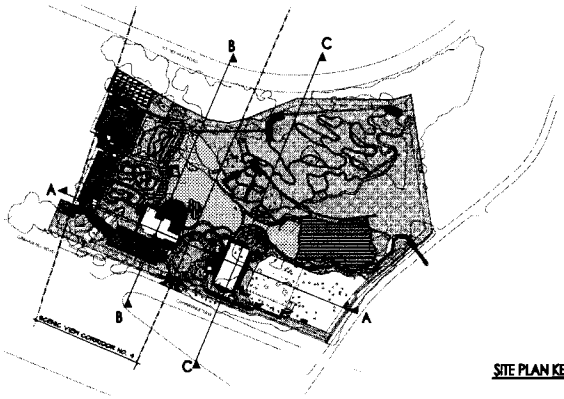
DRAWN BY	CHECKED BY
GM	WKM
DATE ISSUED	SCALE
08/06/13	1/8"=1'-0"

PROJ. NO.
1209400-1515

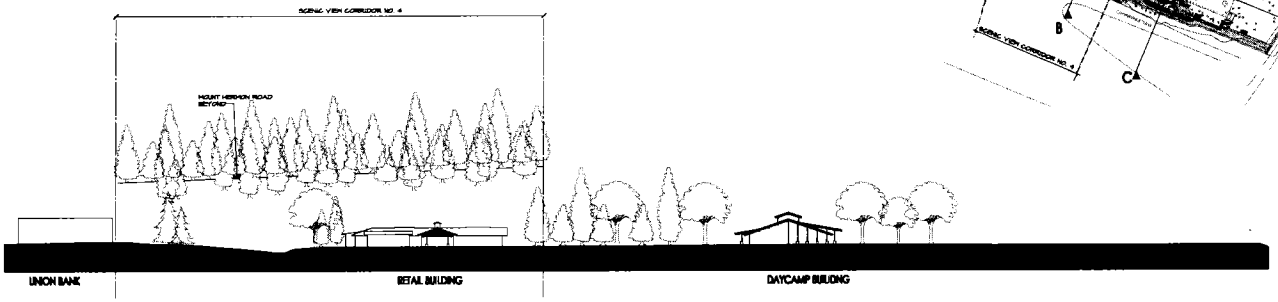
SHEET NO.
A-2.2
OF SHEETS

ATTACHMENT 2

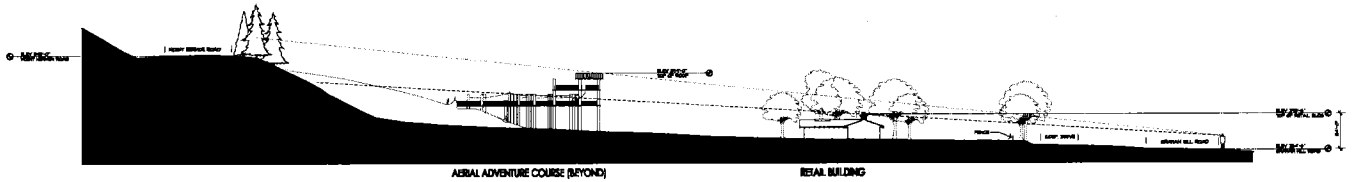
ATTACHMENT 2



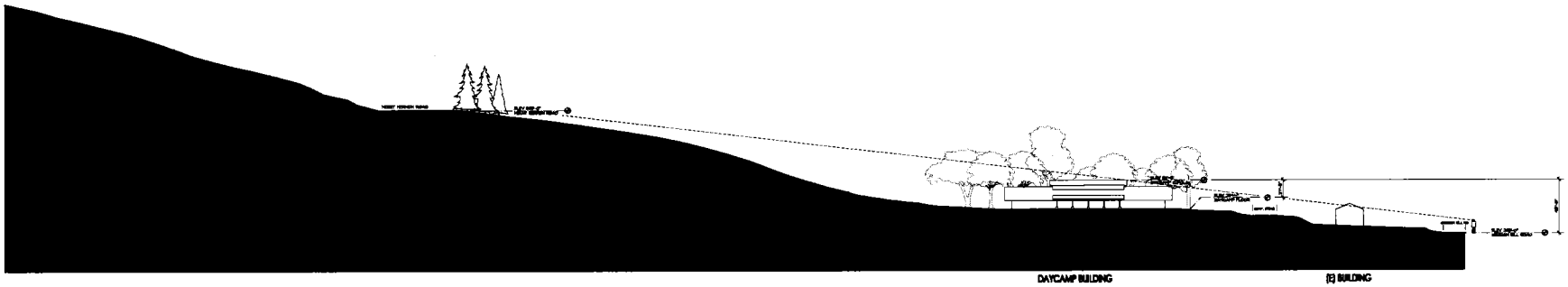
SITE PLAN KEY



SITE SECTION A
1" = 40'-0"



SITE SECTION B
1" = 40'-0"



SITE SECTION C (NOT IN VIEW CORRIDOR)
1" = 40'-0"

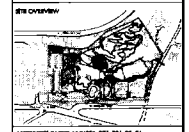
VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
1433 The Alameda
Santa Clara, CA 95050
tel: 408.985.7300
fax: 408.985.7360
www.VerdeDesign.com

STAMP

CONSULTANT

MAYFIELD
ARCHITECTS

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE
SITE SECTIONS

PROJECT NAME
MOUNT HERMON
CONFERENCE CENTER
NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	8.6.13

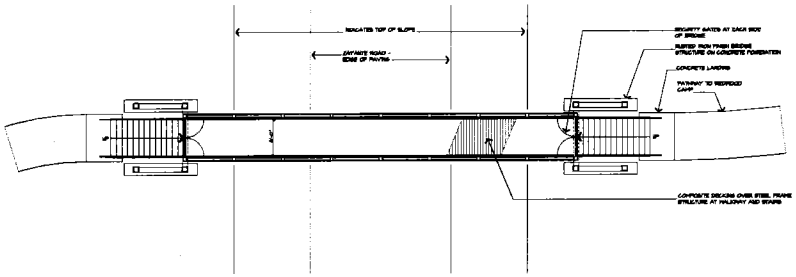
NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

DRAWN BY	CHECKED BY
GM	WKM
DATE ISSUED	SCALE
08/06/13	1"=40'-0"

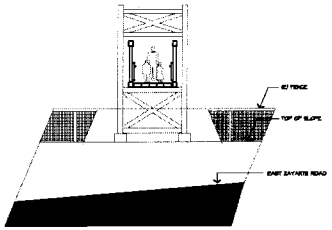
PROJ. NO.
1209400-1515

SHEET NO.
A3.1
OF SHEETS

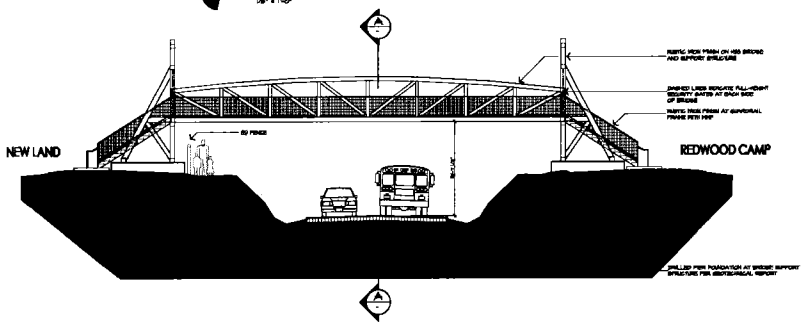
ATTACHMENT 2



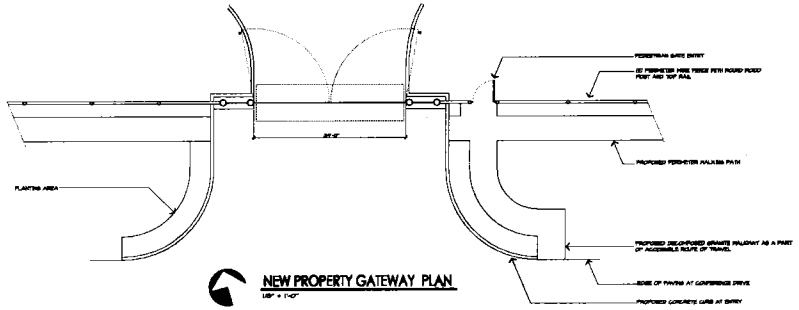
EAST ZAYANTE RD. PEDESTRIAN BRIDGE PLAN



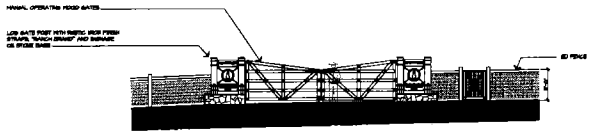
SECTION A



PEDESTRIAN BRIDGE ELEVATION FROM SOUTH ON EAST ZAYANTE RD.



NEW PROPERTY GATEWAY PLAN



NEW PROPERTY GATEWAY ELEVATION FROM CONFERENCE DRIVE

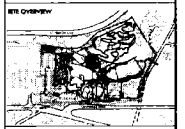
VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
3480 The Alameda
Santa Clara, CA 95050
tel: 408.984.7300
fax: 408.984.7360
www.VerdeDesign.com

STAMP

CONSULTANT

MAYFIELD

SITE OVERVIEW



ASSESSOR'S PARCEL NUMBER: 071-231-08, 09

SHEET TITLE

PEDESTRIAN BRIDGE OVER E. ZAYANTE RD
ENTRANCE GATEWAY
PLANS AND ELEVATIONS

PROJECT NAME

MOUNT HERMON
CONFERENCE CENTER
NEW LAND DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	8.6.13

NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
6		

DRAWN BY	CHECKED BY
GM	WKM
DATE ISSUED	SCALE
08/06/13	1/8"=1'-0"

PROJ. NO.
1209400-1515

SHEET NO.
A4.1
OF SHEETS

LUMINAIRE SCHEDULE										
Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Notes
+	S1	14	DSX1-LED-P1-40K-T5W-HS	DSX1 LED, P1 PERFORMANCE PACKAGE, 4000K, TYPE 5W, HOUSE SIDE SHIELD	P1 (1 LED) - 4000K	6000	0.87	81.8	
■	B2	17	DSX1-LED-P1-40K-BLC-HS	DSX1 LED, P1 PERFORMANCE PACKAGE, 4000K, BLC, HOUSE SIDE SHIELD	P1 (1 LED) - 4000K	6000	0.87	48C	
◆	A	6	DCS-ESPRA-LED-P1-40K-T3M-HS-DDBXD	Domes Small	DCS-LED-P1-40K-T3M-HS-DDBXD @ 350mA, 4000K, TYPE 3M, HOUSE SIDE SHIELD @ 120-277V	DCS-LED-P1-40K-T3M-HS-DDBXD @ 350mA, 4000K, TYPE 3M, HOUSE SIDE SHIELD @ 120-277V	3861	1.00	82.54	

STATISTICS						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Bk Bike Trails	+	94.5 fc	362 fc	1.3 fc	281:1	74.4:1
Bike Course Trails	+	93.1 fc	361 fc	2.3 fc	158:1	71.9:1
Small Bike Trails	+	89.8 fc	481 fc	1.4 fc	350:1	114.2:1

NOTES

1. Calculation Maintenance Factor: .90 in Post-Condition.
2. Bike track luminaires mount 10'1" AFF. 10'1" used for calculation on 20' steel poles with an 8' arm.
3. Luminaires mount 20' AFF. 20' used for calculation on 30' steel poles with an 8' arm.
4. Bike Traks: Iso Footcandle Lines & Histogram to follow the trails. Iso Footcandle Lines & Histogram to follow the trails. Bike Traks: Iso Footcandle Lines & Histogram to follow the trails. Bike Traks: Iso Footcandle Lines & Histogram to follow the trails. The current model does not include the trees and other obstructions that will be present. The current model does not include the trees and other obstructions that will be present. The current model does not include the trees and other obstructions that will be present. The current model does not include the trees and other obstructions that will be present. It is recommended that the trees and other obstructions be trimmed to maximize the light levels on the trails.
5. Type A light fixtures are mounted on 24' Poles.

Mount Hermon Adventure Park Photometrics Study

Design Development Submittal

Bike Traks: Iso Footcandle Lines and Data Points

PRIME DESIGN GROUP
1800 GREEN HILLS RD. STE 100
SCOTTS VALLEY, CA 95066
PHONE: (831) 430-3600
FAX: (831) 430-9460
PDG PROJECT NO.: 09117.06
ELECTRICAL CONSULTING ENGINEERS

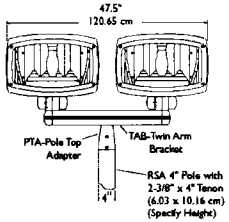
Designer: Mike Cabak

Date: 9/19/2013

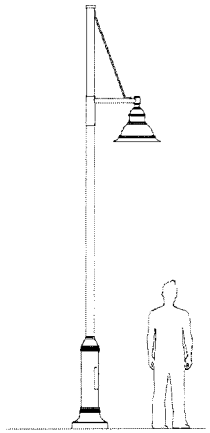
Scale: As Noted

Drawing No.: E-1

ATTACHMENT 2



FIXTURE TYPES S1 & S2



Luminaire: DOS-SG
Mounting: DBC-1A
Pole: AM8

FIXTURE TYPE A

LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
	S1	14	DF12-MFL-750PSMH	DESIGNER FLOOD	CLEAR VERTICAL 750PSMH/U RATED FOR 82000 LUMENS	DF12-MFL 750P.IES	82500	0.87	818
	S2	17	DF12-NSP 400PSMH	DESIGNER FLOOD	COATED HORIZONTAL 400PSMH/U RATED FOR 38000 LUMENS	DF12-NSP 400X.IES	38000	0.87	452
	A	8	DOS-60WWXLED4K-ES-LE4F	Domus Small	(DOS-LE4F) White 60W BBL D/W Advance Driver XITAWLM 72W/24V @ 120.00V	DOS-60WWXLED4K-ES-LE4F (S11WDR.IES)	3661	0.95	62.34

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Big Bike Track	-	10.6 fc	39.2 fc	1.5 fc	26.1:1	12.4:1
Skills Course Track	-	10.1 fc	38.7 fc	2.3 fc	16.8:1	7.9:1
Small Bike Track	-	19.9 fc	40.1 fc	1.4 fc	28.6:1	14.2:1

NOTES

1. Calculated Illuminance values are in Foot-Candles.
2. Bike track luminaires (types "S1" AND "S2") shall be mounted on 20' steel poles with adjustable brackets.
3. Initial lilt of "S1" and "S2 luminaires is 1 foldgrees up from the nadir.
4. Bike Track luminaires shall be controlled by a timed system that automatically shuts down the lights in stages after a 2 hour time period. The control system shall require a user to manually turn them back on. Such system shall make it impossible for the lights to be left on when not in use.
5. Type 'A' light fixtures are mounted at 14' a.f.g.

SCALE: 1"=15'

PRIME DESIGN GROUP
ELECTRICAL CONSULTING ENGINEERS

ATTACHMENT 4

Mount Hermon Adventure Park Photometrics Study

County Planning Submittal

Bike Traks: Iso Footcandle Lines Only

Designer	Mike Cabak
Date	8/6/2013
Scale	As Noted
Drawing No.	E-2

ATTACHMENT 2

SEE SHEETS E-1 AND E-2 FOR LIGHTING PLANS OF THESE AREAS.

N

1 SITE LIGHTING PHOTOMETRICS PLAN
SCALE: 20'-1"=1'

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Bridge between Lower Lot	+	1.9 fc	3.2 fc	0.4 fc	7.9:1	4.8:1
Lot Overall	+	1.5 fc	3.2 fc	0.1 fc	32.0:1	15.0:1
Overall LOT	+	2.4 fc	17.6 fc	0.1 fc	N/A	N/A
Pathway	+	1.9 fc	6.2 fc	0.2 fc	31.0:1	9.5:1
Path between Buildings	+	0.8 fc	1.1 fc	0.1 fc	N/A	N/A
Steps to Bridge	+	1.4 fc	3.2 fc	1.1 fc	2.9:1	1.3:1
Overall	+	1.9 fc	6.2 fc	0.1 fc	62.0:1	19.0:1

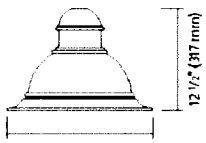
LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
■	A	1	DOS 18" (457 mm) 12 1/2" (317 mm) DOS LED	Domus Small	DOS LED 3000K 80 CRI 1,000mA @ 77.0W/42.0V 1,000mA	DOS 18" (457 mm) 12 1/2" (317 mm) DOS LED 3000K 80 CRI 1,000mA @ 77.0W/42.0V 1,000mA	5,000	0.90	82.34
●	B	12	DMS50-SCB 16 1/8" (410 mm) 27 1/2" (698 mm) 19" (435 mm) DMS50-SCB		DMS50-SCB - 50W CERAMIC METAL HALIDE 4,200K 80 CRI 120-277V	DMS50-SCB - 50W CERAMIC METAL HALIDE 4,200K 80 CRI 120-277V	3,150	0.90	60
●	C	2	DOSB1 DOSB1	Domus Bollard	DOSB1 - 42W 3CCM LED 3,000K 80 CRI 120-277V	DOSB1 - 42W 3CCM LED 3,000K 80 CRI 120-277V	1,764	0.90	28.03

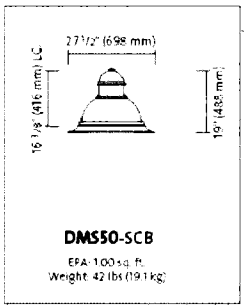
LUMINAIRES

Conforms to the UL 1598 and CSA C22.2 No. 250.0-08 standards

DOS



1 FIXTURE TYPE 'A'
SCALE: NONE

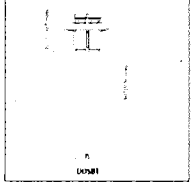


DMS50-SCB

EPA: 1.00 sq. ft.
Weight: 42 lbs (19.1 kg)

2 FIXTURE TYPE 'B'
SCALE: NONE

DOSB1



3 FIXTURE TYPE 'C'
SCALE: NONE

SHEET NOTES

1. CALCULATED ILLUMINANCE VALUES ARE IN FOOT-CANDLES.
2. ALL PARKING AREAS ARE DESIGNED WITH TYPE 'B' LUMINAIRES TO BE PLACED AT 18' ABOVE GRADE.
3. TYPE 'A' LUMINAIRES LOCATED ON PATHS SHALL BE AT 14' ABOVE GRADE.
4. ALL TYPE 'C' FIXTURES ARE BOLLARDS WITH THE LIGHT SOURCE AT APPROXIMATELY 40" ABOVE GRADE.

GENERAL NOTES

THESE REVISED LIGHTING PLANS SHOW THE ADDITION OF A NEW ADA ACCESSIBLE RAMP TO THE ROPES COURSE PER DIRECTION FROM THE ARCHITECT. THIS RAMP SHALL NOT BE USED DURING NIGHT TIMES THEREFOR LIGHTING THIS PATH IS NOT NEEDED.

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
2453 The Alameda
Santa Clara, CA 95050
tel: 408.963.7300
fax: 408.985.7360
www.VerdeDesignInc.com

PRIME DESIGN GROUP
ELECTRICAL ENGINEERS
303 POTRERO ST STE 42 204
SANTA CRUZ, CA 95060
PHONE (831) 430 3646
PDG # 13310.00

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER 07-131-03,06

SHEET TITLE
PHOTOMETRICS STUDY PARKING LOT AND PATHS, ISO-FOOTCANDLE LINES AND DATA POINT

PROJECT NAME
MOUNT HERMON CONFERENCE CENTER
FELTON FAIRE PROPERTY

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	8.6.12
COUNTY PLANNING RE SUBMITTAL	11.8.13
COUNTY PLANNING BACK CHECK SUBMITTAL	12.16.13
COUNTY PLANNING BACK CHECK SUBMITTAL	3/27/14

NO	REVISIONS	DATE
1		
2		
3		
4		
5		

DRAWN BY | CHECKED BY

DATE ISSUED 3/26/14
SCALE AS-NOTED
PROJ. NO 13304.00
SHEET NO E-3 OF 4 SHEETS

ATTACHMENT 9

SITE LIGHTING PHOTOMETRICS PLAN
SCALE: 1" = 30'-0"

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Boulder Terrace Parking Lot	+	0.4fc	0.8fc	0.1fc	8:1	4:1
Lower Drive #1	+	0.8fc	3.7fc	0.1fc	37:1	8:1
Lower Drive #2	+	0.4fc	0.8fc	0.1fc	8:1	4:1
Parking	+	3.9fc	6.1fc	0.6fc	10:1	6.5:1
Path between buildings	+	0.5fc	1.1fc	0.2fc	5.5:1	2.5:1
Upper Lot Parking	+	0.8fc	2.2fc	0.1fc	22:1	8:1
Basketball	+	1.6fc	6.2fc	0.7fc	8.9:1	2.3:1

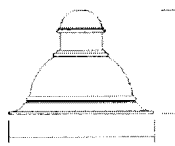
LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	Filo	Lumens	LLF	Watts
	A	3	DOS-S-14WLED-3CCT-UNV-DIM-BZ-SCB	Dual Mount	[DOS] 1@14WLED,3CCT,UNV,DIM,BZ,SCB	[DOS] 1@1400LED,3CCT,UNV,DIM,BZ,SCB	1400	0.90	14
	B	2	DMS50-SCB-UNV-DIM-BZ-SCB-SSS-DOSB1	Single	[DMS50] 1@50WLED,3CCT,UNV,DIM,BZ,SCB	[DMS50] 1@5000LED,3CCT,UNV,DIM,BZ,SCB	7,000	0.90	50
	C	17	DLS-BZ-SSS-DOSB1	Decorative Bollard	[DLS] 1@9WLED,3CCT,UNV,DIM,BZ,SCB	[DLS] 1@900LED,3CCT,UNV,DIM,BZ,SCB	750	1.00	9.00

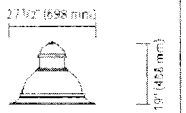
LUMINAIRES

Conforms to the UL 1598 and CSA C22.2 No. 250.0-08 standards

DOS



FIXTURE TYPE "A"
SCALE: NONE

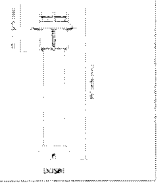


DMS50-SCB

EPA: 1.00 sq. ft.
Weight: 42 lbs (19.1 kg)

FIXTURE TYPE "B"
SCALE: NONE

DOSB1



FIXTURE TYPE "C"
SCALE: NONE

SHEET NOTES

1. CALCULATED ILLUMINANCE VALUES ARE IN FOOT-CANDLES.
2. ALL PARKING AREAS ARE DESIGNED WITH TYPE "B" LUMINAIRES TO BE PLACED AT 18' ABOVE GRADE.
3. TYPE "A" LUMINAIRES LOCATED ON PATHS SHALL BE AT 14' ABOVE GRADE.
4. ALL TYPE "C" FIXTURES ARE BOLLARDS WITH THE LIGHT SOURCE AT APPROXIMATELY 40" ABOVE GRADE.

GENERAL NOTES

THESE REVISED LIGHTING PLANS SHOW THE ADDITION OF A NEW ADA ACCESSIBLE RAMP TO THE NORTH SIDE OF THE BOULDER TERRACE PARKING LOT. PER DIRECTION FROM THE ARCHITECT, THIS RAMP SHALL NOT BE USED DURING NIGHT TIMES THEREFOR LIGHTING TWO PATH IS NOT NEEDED.

VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
2477 The Alameda
Santa Clara, CA 95050
tel: 408.983.1326
fax: 408.983.1360
www.VerdeDesign.com

PRIME DESIGN GROUP
ELECTRICAL ENGINEERS
1028 PINE RD, ST. STE. 6-204
SANTA CRUZ, CA 95060
PHONE (831) 420-5631
PDG # 13318.00

SITE OVERVIEW

SHEET TITLE
PHOTOMETRICS STUDY PARKING LOT AND PATHS, ISO-FOOTCANDLE LINES ONLY

PROJECT NAME
MOUNT HERMON CONFERENCE CENTER
FELTON FAIRE PROPERTY

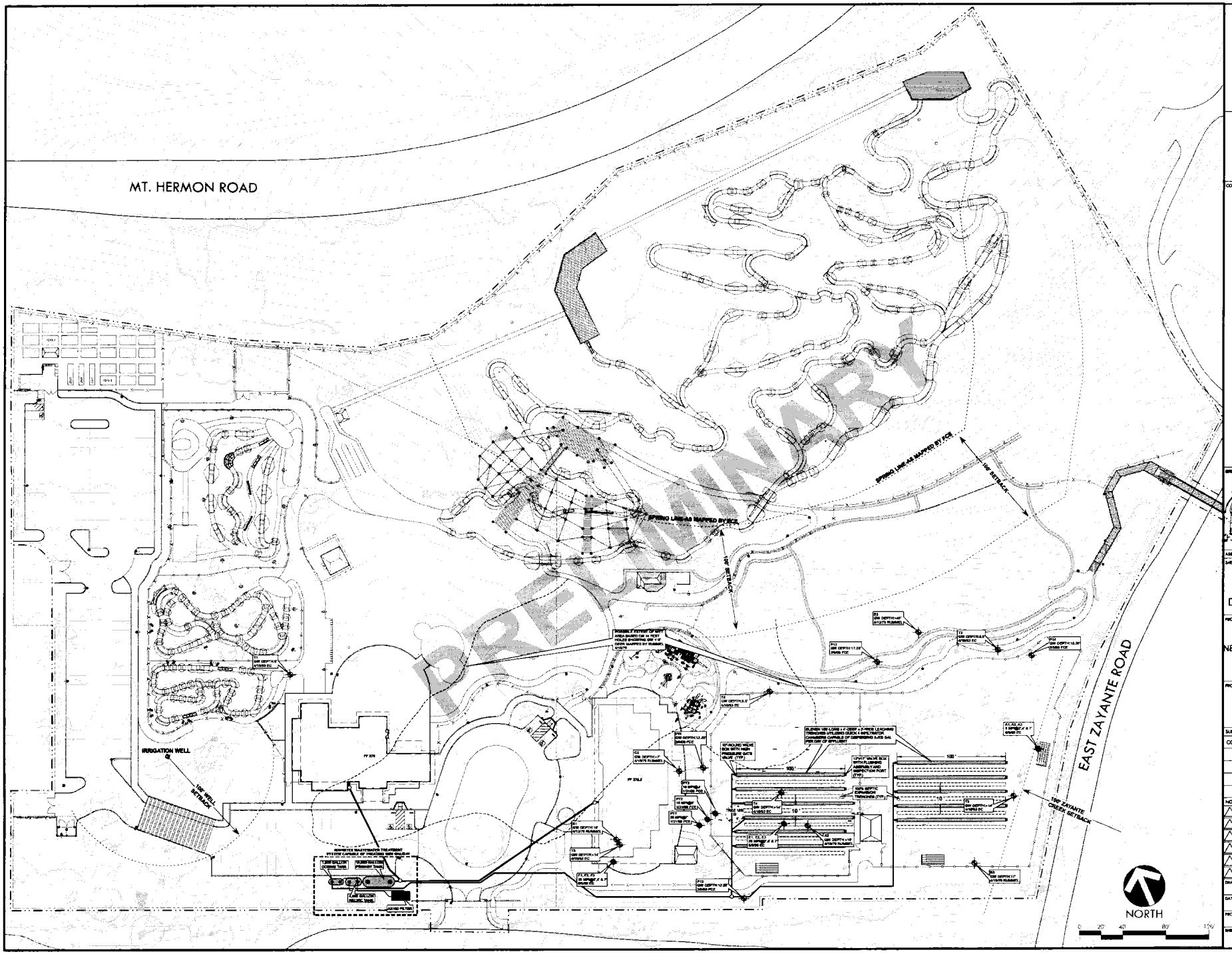
PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	8.15.13
COUNTY PLANNING RESUBMITTAL	11.18.13
COUNTY PLANNING BACK CHECK SUBMITTAL	12.16.13
COUNTY PLANNING BACK CHECK SUBMITTAL	3/26/14

NO.	REVISIONS	DATE

DRAWN BY: CHECKED BY:
DATE (AS OF): 3/26/14
SCALE: AS NOTED
PROJ. NO: 13304.00
SHEET NO: E-4 OF 4 SHEETS

ATTACHMENT 2



VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN

BioSphere Consulting
A corporation
1315 King Street Santa Cruz, CA 95060

ONSITE WASTEWATER TREATMENT AND DISCHARGE SYSTEM

PROJECT NAME
MOUNT HERMON NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	8/16/13

NO.	REVISIONS	DATE

DRAWN BY: DQ
CHECKED BY: AB
DATE ISSUED: 08/16/13
SCALE: 1"=30'-0"
PROJ. NO.: 13020
SHEET NO.: W-1
1 OF 1 SHEETS

Bauldry Engineering, Inc.

CONSULTING GEOTECHNICAL ENGINEERS

718 SOQUEL AVENUE, SANTA CRUZ, CA 95062 (831) 457-1223 FAX (831) 457-1225

1303-SZ951-J33
August 1, 2013

Mount Hermon Association Inc.
P. O. Box 413
Mount Hermon, CA 95041

Subject: Plan Review
Proposed Recreational Complex
Conference Drive Property
APN's 0 71-331-05, 071-331-06
Felton, California

Dear Mr. Pollock,

As requested, we are providing the geotechnical engineering services for the subject site. We have reviewed the geotechnical engineering aspects of the following preliminary plans and specifications

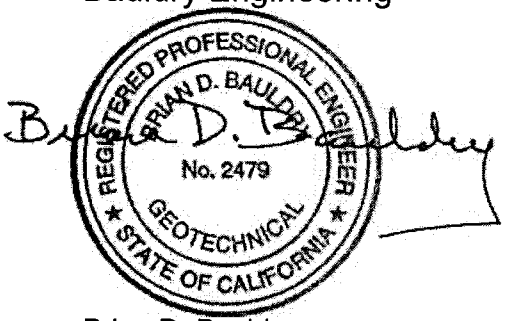
TYPE	SHEETS	ISSUE DATE	PREPARED BY
Site and Grading	C-3, -4, -5, -6	August 6, 2013	RI Engineering, Inc.
Wastewater	W1	6/26/13	Biosphere Consulting

It is our opinion that the above plans and specifications are in general conformance with the requirements and specifications of our Geotechnical Investigation Report dated May 14, 2013.

If you have any questions, please call our office.

Very truly yours,

Bauldry Engineering



Brian D. Bauldry
Principal Engineer
G. E. 2479
Exp. 12/31/14

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Copies: Dale Pollock

ATTACHMENT

GEOTECHNICAL INVESTIGATION
FOR
PROPOSED RECREATIONAL COMPLEX
CONFERENCE DRIVE PROPERTY
FELTON, CALIFORNIA
APN's 071-331-05, 071-331-06

FOR
MOUNT HERMON ASSOCIATION, INC.
MOUNT HERMON, CALIFORNIA

BY
BAULDRY ENGINEERING, INC.
CONSULTING GEOTECHNICAL ENGINEERS
1303-SZ951-J33
MAY 2013

ATTACHMENT 3

Bauldry Engineering, Inc.

CONSULTING GEOTECHNICAL ENGINEERS

718 SOQUEL AVENUE, SANTA CRUZ, CA 95062 *(831) 457-1223* *FAX (831) 457-1225*

1303-SZ951-J33
May 14, 2013

Mount Hermon Association Inc.
P. O. Box 413
Mount Hermon, CA 95041

Attn: Dale Pollock

Subject: Geotechnical Investigation
Proposed Recreational Complex
Conference Drive Property
APN's 0 71-331-05, 071-331-06
Felton, California

Dear Mr. Pollock,

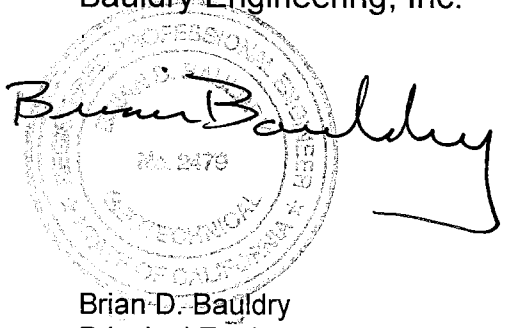
In accordance with your authorization, we have performed a geotechnical investigation for your proposed recreational complex project located along Conference Drive in the Felton area of Santa Cruz County, California.

The accompanying report presents our conclusions and recommendations as well as the results of the geotechnical investigation on which they are based. The conclusions and recommendations presented in this report are contingent upon our review of the plans during the design phase of the project, and our observation and testing during the construction phase of the project.

If you have any questions concerning the data, conclusions, or recommendations presented in this report, please call our office.

Very truly yours,

Bauldry Engineering, Inc.



Brian D. Bauldry
Principal Engineer
G. E. 2479
Exp. 12/31/14

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Copies: Mount Hermon Association

ATTACHMENT 3

TABLE OF CONTENTS

ATTACHMENT 4

GEOTECHNICAL INVESTIGATION

PURPOSE OF INVESTIGATION

The purpose of our investigation was to explore the subsurface conditions in the area of the proposed construction and based on our findings provide geotechnical engineering recommendations for the design and construction of the proposed recreational complex. The proposed complex includes a retail building, an educational building, pedestrian bridges, an aerial ropes course, a bike park with an elevated ski-lift type conveyor system, driveways, parking lots and associated site improvements.

The subject property was previously investigated for a housing development by Donald M Tharp & Associates (Geotechnical Engineering) and Rogers E. Johnson and Associates (Geology). It should be noted that the Tharp and Johnson reports assessed Parcel Numbers 071-201-43, 071-331-05 and 071-331-06. The Recreational Complex, which is the subject of this report, only includes the two smaller parcels on south side of Mount Hermon Road; Assessor Parcel Numbers 071-331-05 and 071-331-06. Parcel 071-201-43 is not part of the subject recreational complex project.

SCOPE OF SERVICES

This report describes the geotechnical investigation and presents results, including recommendations, for the proposed development. If the proposed design and construction differ significantly from that planned at the time this report was written, the conclusions and recommendations provided in this report are null and void unless the changes are reviewed by our firm, and the conclusions and recommendations presented in this report are modified, or verified, in writing.

Our scope of services for this project has consisted of:

1. Discussions with you.
2. Review of the following maps and reports:
   a. The report titled "Soil & Foundation Investigation, Proposed Subdivision for Redtree Properties, Mount Hermon Rd. and Graham Hill Rd, Santa Cruz County, California." prepared by Tharp & Associates, Inc. and dated October 22, 1997.
   b. The report titled "Geotechnical Investigation - Design Phase, Stability of Slope Proposed as Septic Leach Field Area, Proposed Felton Faire Affordable Housing Project, Mount Hermon Road, Felton, California" prepared for South County Housing by Tharp & Associates, Inc., dated December 31, 2007.
   c. The report titled "Geotechnical Plan Review and Update, Proposed Zayante Oaks Development (Formerly Felton Faire Affordable Housing Project,) Mount Hermon Road, Felton, California, APN's 71-331-05, 06"" prepared for South County Housing by Tharp & Associates, Inc., dated February 25, 2008.
   d. The report titled "Limited Geotechnical Assessment, Existing Fill Slope, Mt. Hermon Road, Adjacent Proposed Zayante Oaks Development (Formerly Felton Faire Affordable Housing Project), Felton, California, APN's 71-331-05, 06" prepared for South County Housing by Tharp & Associates, Inc., dated February 25, 2008.

ATTACHMENT 3

e. The report titled "Geotechnical Report Update, Proposed Zayante Oaks Development (Formerly Felton Faire Affordable Housing Project), Mount Hermon Road, Felton, California, APN's 71-331-05, 06" prepared for South County Housing by Tharp & Associates, Inc., dated October 1, 2008.

f. The report titled "Preliminary Geologic Investigation Redtree Properties, Mt. Hermon Road, Felton, Santa Cruz County APN 71-201-43 & 71-331-05, 06" prepared by Rodgers E. Johnson & Associates, Inc., dated 23 June 1994.

g. The report titled "Addendum Geologic Report Redtree Properties, Mt. Hermon Road, Felton, California, Santa Cruz Co., APN's 71-201-43 & 71-331-05, -06" prepared by Rodgers E. Johnson & Associates, Inc., dated November 11, 1997.

h. Geologic Map of Santa Cruz County, California, Brabb, 1989.

i. Preliminary Landslide Deposits in Santa Cruz County, California, Cooper-Clark, 1975.

j. Map Showing Quaternary Geology and Liquefaction Potential of Santa Cruz County, California, Dupré, 1975.

k. Map Showing Faults and Their Potential Hazards in Santa Cruz County, California; Hall, Sarna-Wojcicki, Dupré, 1974.

l. Santa Cruz County's online Geographic Information System "GISWEB Interactive Mapping Application" http://gis.co.santa-cruz.ca.us/internet/wwwgisweb/viewer.htm

3. The drilling and logging of 7 test borings.

4. Laboratory analysis of retrieved soil samples.

5. Engineering analysis of the field and laboratory results.

6. Preparation of this report documenting our investigation and presenting recommendations for the design of the project.

Our scope of services does not include any environmental assessment or investigation for the presence of hazardous or toxic materials in the soil, groundwater, or air; on, below, or proximal to the site.

SITE DESCRIPTION

Location

The project site is comprised of two adjacent parcels. The parcels are located adjacent to and north of Conference Drive and Graham Hill Road, and adjacent to and west of East Zayante Road in the Felton area of Santa Cruz County, California. The site is accessed off Conference Drive. The site is comprised of APN's 0 71-331-05 and 071-331-06.

Site Topography and Setting

The southern section of the project site is relatively flat to gently sloping. The western portion of the southern section is a meadow with scattered trees. The eastern portion is covered with a grove of trees. A relatively shallow swale traverses the southwest section of the meadow area.

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The northern section of the property is generally steeper. The eastern portion of the northern section is generally moderately sloping. The uphill area in the eastern corner of the northern section of the site is moderate to moderately steep. The western portion of the northern section of the project site contains a large fill slope that ascends to and supports Mount Hermon Road. The northern portion of the property is covered with wild grasses, brush and several scattered trees. The site presently contains no structures.

The proposed site of the pedestrian crossing of East Zayante Road is comprised of relatively flat to gently sloping land adjacent to low but relatively steep cut banks along East Zayante Road. This proposed crossing area is covered with brush and trees.

Proposed Development

The project, as currently proposed, consists of the design and construction of a recreational complex to include bike trails, an elevated rope course, a gravel parking lot, a new driveway that utilizes permeable pavement, a small bridge to cross the swale in the proposed parking area next to the Felton Fair retail Complex, a retail shop, an educational building and a pedestrian crossing from Redwood Camp to the new recreational complex. The bike trails will include an elevated conveyor lift, decks and a new fill slope. The retail shop may include a basement. Currently, a pedestrian bridge over East Zayante Road, a tunnel beneath East Zayante Road and a conventional street crossing are being considered for the Redwood Camp crossing.

Earth Materials

The northern and eastern sections of the project site are mapped on the USGS Geologic Map of Santa Cruz County (Brabb 1989) as being underlain by the Monterey Formation; the western and southern sections of the project site are mapped as being underlain by alluvial deposits. The Monterey Formation (Tm; middle Miocene) typically consists of medium to thick bedded and laminated olive-gray to light-gray mudstone and sandy siltstone. The Alluvial Deposits (Qal; Holocene) typically consist of unconsolidated heterogeneous moderately sorted silt and sand containing discontinuous lenses of clay and silty clay. The alluvium may include large amounts of gravel and may include younger and older flood plain deposits consisting of unconsolidated fine grained sand, silt, and clay.

Plate 1 of the Rogers E. Johnson and Associates report dated 11/97 has the southern portion of the site mapped as alluvium; the central area mapped as colluvium, colluvium overlaying alluvium, and alluvium. The northern portion of the site is mapped as Monterey Formation and artificial fill.

Our borings were located in the southern and central sections of the subject property where development is currently proposed. The soils encountered generally consisted of stiff to very stiff, slightly to moderately compressible silts and clays (CL, ML). The laboratory testing indicates that the upper silt and clay has a low to medium expansion potential. The upper layer of clay and silt ranged in thickness from 5 to 23 feet. The silt and clay layer overlaid medium dense to dense, silty sand and sandy silt (SM, ML). Sandstone was encountered in Boring No. 5, which was located in the area of the ropes course tower, at a depth of 29 feet below ground surface. Sandstone/Siltstone was encountered in the pedestrian bridge area along East Zayante Road, at depths of 9 and 8½ feet.

Groundwater

Groundwater was not encountered to the depths drilled in any of our borings drilled on the property west of East Zayante Road. Groundwater was encountered in our boring drilled on the east side of East Zayante Road for the pedestrian bridge. The groundwater was perched on the siltstone bedrock.

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It should be noted that our borings were open only for the duration of the drilling, which may not have been sufficient time for a stabilized water table to develop.

Tharp & Associates reported encountering groundwater in two of their borings drilled in August and September of 1997. Tharp & Associates reported encountering groundwater at a depth of 40 feet in their boring located in the south central area of the site and at a depth of 14 feet in their boring located in the northeastern section of the site

The groundwater conditions described in this report reflect the conditions encountered during the drilling investigation at the specific locations and on the specific days drilled. It must be anticipated that the perched and regional groundwater tables may vary with location and will fluctuate with variations in rainfall, runoff, irrigation and other changes to the conditions existing at the time our measurements were made.

GEOTECHNICAL HAZARDS

The potential geotechnical hazards we consider pertinent to the proposed project are intense seismic shaking, slope failure, expansive soils, differential settlement and the presence of the Ben Lomond Fault on the site.

Seismic Shaking and CBC Design Parameters

The project should be designed assuming that significant seismic shaking will occur during the lifetime of the project. Generally, shaking will be more intense the closer the site is to an earthquake epicenter, however, seismic shaking can be intensified by local topography and soil conditions.

Mapped active or potentially active faults which may significantly affect the site are listed in the following table. The fault distances are based on a review of the following documents:

- Geologic Map of Santa Cruz County, California, Brabb, 1989.
- Map Showing Faults and Their Potential Hazards in Santa Cruz County, California; Hall, Sarna-Wojcicki, Dupré, 1974.

Fault	Range of Magnitude Distance (miles)
San Andreas	8½
San Gregorio	9¾
Ben Lomond	on-site
Zayante	4

The following peak ground accelerations (PGA) were obtained for the project site from the USGS Seismic Hazards Program online probabilistic assessment tool.

Probability of Exceedance	PGA
2% in 50 years	0.69g
10% in 50 years	0.45g

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Structures built in accordance with the latest edition of the California Building Code may be damaged during a large magnitude earthquake but should not collapse. We recommend the project be designed using the following seismic design parameters.

2010 CBC Seismic Design Parameters

Site Class	D – Stiff Soil Profile
Mapped Spectral Response Accelerations	S_S = 1.500g
	S_1 = 0.601g
Site Coefficients	F_a = 1.0
	F_v = 1.5
Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameters	S_{MS} = 1.500g
	S_{M1} = 0.901g
Design Spectral Response Acceleration Parameters	S_{DS} = 1.000g
	S_{D1} = 0.601g

Design parameters were obtained from the Ground Motion Parameter Calculator provided by the USGS website: http://earthquake.usgs.gov/research/hazmaps/design/

Ben Lomond Fault

Surface rupture typically occurs along prior faulting. The Ben Lomond Fault has been mapped as passing through the site. The Ben Lomond Fault is a bedrock fault with a questionable activity level. Many researchers ascribe a low level of activity to this fault.

Although the exact location of the Ben Lomond fault is not known, the previous geologic reports provided our office regarding the property indicate that the Ben Lomond fault may pass beneath the artificial fill slope along Mount Hermon Road and the toe of the natural hillside in the northeast section of the property.

A fault investigation was beyond our scope of service for this project. The geologic reports for the projects previously proposed for the site discuss the Ben Lomond fault at the site. Should a detailed fault investigation including setback recommendations be required or desired by either you or the County, the services of a Certified Engineering Geologist with knowledge of the Ben Lomond Fault will be required.

Landsliding

The "Preliminary Map of Landslide Deposits in Santa Cruz County, California" by Cooper•Clark Associates shows no mapped landslides at the project site. Landslide features depicted on the Cooper•Clark map were identified solely by examination of aerial photographs. An investigation regarding the global stability of the natural hillside or the artificial fill slope along Mount Hermon Road was beyond the scope of services. The project site contains three significant slopes. These slopes are discussed below.

Artificial Fill Slope: The northwest section of the project site contains a large fill slope that ascends to and supports Mount Hermon Road. The fill slope has a general gradient of 2:1 (horizontal to vertical). No landslides or slope failure were observed during our site reconnaissance. Some minor sloughing has occurred. The slope appears to be performing as intended. The current plans show a community garden and maintenance yard along the toe of the slope. In our opinion the potential for the fill slope to fail and adversely affect the subject project is low.

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Northeast Native Slope: A moderately sloping hillside occupies the northeastern section of the subject property. An Alpine Bike Park consisting of bike trails, decks and an elevated conveyor system (a ski lift type system) and an Aerial Adventure Park consisting of a pole supported ropes course are proposed for this hillside. In our opinion the potential for the native slope to fail and adversely affect the subject project is considered low.

A previous geotechnical investigation of the stability of the hillside indicated that the hillside may experience instability if leach fields are located on the hillside. Based on our geotechnical investigation and our review of the previous geotechnical and geologic investigations we recommend that leach fields be located in the relatively flat area along Conference Drive or Graham Hill Road and not on the hillside.

To mitigate the potential for soil creep to affect the proposed conveyor system, decks and ropes course facilities, we recommend that these features be founded on piers. Design recommendations are provided in the Foundation section of this report.

Pedestrian Bridge Slope: A steep cliff along Zayante Creek is situated near the proposed pedestrian bridge on the east side of East Zayante Road. The height of the cliff is on the order of 40 to 50 feet. The eastside of the bridge site is underlain relatively shallowly by sound bedrock. It should be anticipated that soil slumping or soil creep could occur along the face of the slope and a short distance from the break-in-slope.

It is our opinion that the potential for landsliding or slope creep to significantly affect the proposed bridge is low provided that the foundation is 1) setback ≥20 feet from the face-of-slope, 2) founded on piers embedded in bedrock and 3) designed and constructed in accordance with the recommendations of this report.

Liquefaction

The southern and western sections of the site have been mapped on the USGS "Map Showing Liquefaction Potential of Quaternary Deposits in Santa Cruz County" (Dupré 1989) as potentially liquefiable. Liquefaction tends to occur in soils composed of loose sands and non-cohesive silts of restricted permeability. In order for liquefaction to occur there must be the proper soil type, soil saturation, and cyclic accelerations of sufficient magnitude to progressively increase the water pressures within the soil mass. Non-cohesive soil shear strength is developed by the point to point contact of the soil grains. As the water pressures increase in the void spaces surrounding the soil grains, the soil particles become supported more by the water than the point to point contact. When the water pressures increase sufficiently, the soil grains begin to lose contact with each other, resulting in the loss of shear strength and continuous deformation of the soil where the soil appears to liquefy.

Our borings and the borings previously drilled for the subdivision project that was previously proposed for the site indicate that the site is underlain by relatively dense to very dense soils. Based on the density of the soil and the lack of a shallow groundwater table, it is our opinion that the potential for liquefaction to occur and cause damage to the proposed structures is low.

Soil Expansion Potential

Two expansive index tests were performed on near surface soil samples taken from the proposed retail and educational building sites by our firm. The index test results were 33 and 49, which corresponds to a low expansion potential. It should be noted that the range for low expansion potential is 21 to 50, therefore the expansion potential is on the threshold of having a medium expansion potential. The recommendations provided in this report are intended to moderate the adverse effects of soil with a medium expansion potential.

ATTACHMENT 3

CONCLUSIONS AND RECOMMENDATIONS

PRIMARY GEOTECHNICAL ISSUES

1. Site Viability

The results of our investigation indicate that from a Geotechnical Engineering standpoint the property may be developed as proposed. It is our opinion that provided our recommendations are followed; the proposed recreational complex structures and site improvements can be designed and constructed to an "ordinary" level of seismic risk and performance as defined below:

> **"Ordinary Risk":** Resist minor earthquakes without damage: resist moderate earthquakes without structural damage, but with some non-structural damage: resist major earthquakes of the intensity or severity of the strongest experienced in California without collapse, but with some structural damage as well as non-structural damage. In most structures it is expected that structural damage, even in a major earthquake, could be limited to reparable damage. (Source: Meeting the Earthquake Challenge, Joint Committee on Seismic Safety of the California Legislature, January 1974).

If the property owner desires a higher level of seismic performance for this project, supplemental design and construction recommendations will be required.

2. Primary Geotechnical Constraints

Based on our field and laboratory investigations, it is our opinion that the primary geotechnical issues associated with the design and construction of the proposed recreational complex at the subject site are the following:

a. **Ben Lomond Fault:** The Ben Lomond Fault has been mapped as passing through the site. The Ben Lomond Fault is a bedrock fault with a questionable activity level. Many researchers ascribe a low level of activity to this fault. Although the exact location of the Ben Lomond fault is not known, the previous geologic reports provided our office regarding the property indicate that the Ben Lomond fault may pass beneath the fill slope along Mount Hermon Road and the toe of the hillside in the northeast section of the property. The proposed Aerial Adventure Park and Alpine Bike Park are situated in the area where the Ben Lomond Fault is suspected to be located.

   A fault investigation was beyond our scope of service for this project. The geologic reports for the projects previously proposed for the site discuss the Ben Lomond fault at the site. Should a detailed fault investigation including setback recommendations be required or desired by either you or the County, the services of a Certified Engineering Geologist with knowledge of the Ben Lomond Fault will be required.

b. **The Stability Of Native Hillside:** A moderately sloping hillside occupies the northeastern section of the subject property. An Alpine Bike Park consisting of bike trails, decks and an elevated conveyor system (a ski lift type system) and an Aerial Adventure Park consisting of a pole supported ropes course are proposed for this hillside. In our opinion the potential for the native slope to fail and adversely affect the subject project is considered low.

A previous geotechnical investigation of the stability of the hillside indicated that the hillside may experience instability if leach fields are located on the hillside. Based on our geotechnical investigation and our review of the previous geotechnical and geologic investigations we recommend that leach fields be located in the relatively flat area along Conference Drive or Graham Hill Road and not on the hillside.

To mitigate the potential for soil creep to affect the proposed conveyor system, decks and ropes course facilities, we recommend that these features be founded on piers. Design recommendations are provided in the Foundation section of this report.

c. **Moderately Compressible Soils:** Our field and laboratory investigations indicate that the upper soils in the proposed building and driveway areas are moderately compressible. To mitigate adverse effects due to settlement, we recommend that the upper soils in the building and pavement areas be removed and replaced as an engineered fill. For details see the Earthwork and Grading section of this report.

d. **Expansive Soil:** Our field and laboratory investigations indicate that the soil in the proposed build areas has a low to moderate expansion potential. To mitigate adverse effects to slab-on-grade floors due to soil expansion, we recommend that the upper 12 inches of the subgrade that underlies the capillary break, be removed and replaced with Class 2 aggregate base compacted as an engineered fill. The capillary break, which consists of ¾ drain rock, is separate from and must not be considered as part of the aggregate base section.

e. **Surface drainage and Runoff:** Controlling surface drainage and landscape irrigation is critical to the long-term stability of the slopes at the subject site. It is imperative that irrigation activities and all concentrated surface water, including storm water runoff and roof downspout discharge, be effectively controlled. Uncontrolled surface drainage, roof discharge and landscape irrigation could cause the slopes to fail.

POST REPORT SERVICES

3. Plan Review

Grading, foundation, retaining wall and drainage plans should be reviewed by the Geotechnical Engineer during their preparation and prior to contract bidding to insure that the recommendations of this report have been included and to provide additional recommendations, if needed.

4. Construction Observation and Testing

It must be understood that geologic and geotechnical conditions can vary from those encountered at the times and locations where available data was obtained by us and the limitation on available data results in some level of uncertainty with respect to the interpretation of these conditions, despite the use of due professional care. Field observations must be provided during construction by a representative of Bauldry Engineering, Inc. to enable them to form an opinion regarding whether changed conditions are encountered and whether the assumptions regarding geologic and geotechnical conditions that our design criteria are based on remain valid.

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Additionally, field observation and testing must be provided during construction by a representative of Bauldry Engineering, Inc. to enable them to form an opinion regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the foundation, drainage, and earthwork, construction, including the moisture content and degree of compaction, comply with the specification requirements.

Any work related to foundation, drainage, and earthwork, construction performed without the full knowledge of, and not under the direct observation of Bauldry Engineering, Inc., the Geotechnical Engineer, will render the recommendations of this report annulled.

5. Notification and Preconstruction Meeting

The Geotechnical Engineer should be notified at least four (4) working days prior to any site clearing and grading operations on the property in order to observe the stripping and disposal of unsuitable materials and to coordinate this work with the contractor. During this period, a pre-construction conference should be held on the site, with at least the owner's representative, the contractor and one of our engineers present. At this time, the project specifications and the testing and construction observation requirements will be outlined and discussed.

EARTHWORK AND GRADING

6. Initial Site Preparation

The initial site preparation will consist of the removal of trees as required, including rootballs and debris. Abandoned septic tanks and leaching lines found in the construction area must be completely removed. The extent of the soil, debris, and leach line removal will be designated by the Geotechnical Engineer in the field. This material must be removed from the site. All voids created by the removal of trees, septic tanks, and leach lines must be backfilled with properly compacted native soils that are free of organic and other deleterious materials or with approved import fill.

NOTE: Any abandoned wells encountered shall be capped in accordance with the requirements of the County Health Department. The strength of the cap shall be equal to the adjacent soil and shall not be located within 5 feet of a structural footing.

7. Stripping

Following the initial site preparation and demolition, surface vegetation and organically contaminated topsoil should be stripped from the area to be graded. This organic rich soil may be stockpiled for future landscaping. The required depth of stripping will vary with the time of year and must be based upon visual observations of the Geotechnical Engineer. It is anticipated that the depth of stripping may be 2 to 4 inches.

8. Subgrade Preparation

Building Areas: Following the stripping and backfilling of voids, the exposed soils in the building areas should be removed to a minimum depth of 30 inches below existing grade or as designated by the Geotechnical Engineer. The earth materials exposed at the base of the excavation should be scarified, moisture conditioned and compacted as an engineered fill. The excavated native soil may then be replaced in thin lifts except for the upper 12 inches of subgrade beneath the slab-on-grade floors. The upper 12 inches of subgrade beneath the capillary break, which underlies the slab-on-grade floors, should consist of Class 2 aggregate base compacted as an engineered fill There should be a minimum of 12 inches of engineered fill under all foundation elements. Recompacted sections should extend a minimum of 5 feet beyond the building perimeter.

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Driveway and Parking Areas: Following the stripping and backfilling of voids, the exposed soils in the pavement areas should be removed to a minimum depth of 12 inches below existing grade or 12 inches below the bottom of the class 2 aggregate base section or as designated by the Geotechnical Engineer, whichever is deepest. The earth materials exposed at the base of the excavation should be scarified, moisture conditioned and compacted as an engineered fill. The excavated soil may then be placed in thin lifts. There should be a minimum of 12 inches of engineered fill under the class 2 aggregate base section. Recompacted sections should extend 2 feet beyond all driveway and parking areas.

9. Compaction Requirements

With the exception of the upper 8 inches of subgrade in paved areas and driveways, the soil on the project should be compacted to a minimum of 90% of its maximum dry density. The upper 8 inches of subgrade in the pavement areas and all aggregate subbase and aggregate base should be compacted to a minimum of 95% of its maximum dry density.

The maximum dry density will be obtained from a laboratory compaction curve run in accordance with ASTM Procedure #D1557. This test will also establish the optimum moisture content of the material. Field density testing will be in accordance with ASTM Test #D2922.

10. Moisture Conditioning

The moisture conditioning procedure should result in soil with a relatively uniform moisture content of 1 to 4 percent over optimum at the time of compaction. If the soil is dry, water may need to be added. If the soil is wet, it will need to be dried back. The native soil may require a diligent and active drying and/or mixing operation to reduce or raise the moisture content to the levels required to obtain adequate compaction. Additionally, the base of excavations may require stabilization treatments prior to placement of fill sections.

11. Vibration During Compaction

Due to the proximity of the building site to adjacent residential structures, the contractor should take all precautionary measures to minimize vibration on the site during the subgrade preparation. This may require that the engineered fill be placed in thin lifts using a static roller or hand operated equipment. It is the contractor's responsibility to make sure that their chosen means and methods do not impact adjacent structures.

12. Engineered Fill Material

Native soil and/or imported fill may be used as engineered fill for the project as indicated below.

Re-use of the native soil will require the following:

a. Segregation of all expansive soil encountered during the excavation operation under the observation of the Geotechnical Engineer. All excavated expansive soil should be removed from the construction area.
b. Removal of organics, deleterious material, and cobbles larger than 2 inches.
c. Thorough mixing and moisture conditioning of approved native soil.

All imported engineered fill material should meet the criteria outlined below:

a. Granular, well graded, with sufficient binder to allow trenches to stand open.
b. Minimum Sand Equivalent of 20 and Resistance "R" Value of 30.
c. Free of deleterious material, organics and rocks larger than 2 inches in size.
d. Non-expansive with a Plasticity Index below 12.

ATTACHMENT 2

Samples of any proposed imported fill planned for use on this project should be submitted to the Geotechnical Engineer for appropriate testing and approval not less than 4 working days before the anticipated jobsite delivery.

13. Erosion Control

The surface soils are classified as moderately erodable. All finished and disturbed ground surfaces should be prepared and maintained to reduce erosion. This work, at a minimum, should include effective planting which should commence as soon as practicable so that sufficient growth will be established prior to inclement weather conditions. The ground cover should be continually maintained to minimize surface erosion.

CUT AND FILL SLOPES

14. Cut and Fill Slope Height and Gradient

Cut and fill slopes shall not exceed a 2:1 (horizontal to vertical) gradient and a 5 foot vertical height unless specifically reviewed by the Geotechnical Engineer. All fill slopes should be constructed with engineered fill meeting the minimum density requirements of this report. Where the vertical height exceeds 20 feet, intermediate benches may be required. These benches should be at least 6 feet wide and sloped to control surface drainage. A lined ditch should be used on the bench. The above recommended gradients do not preclude periodic maintenance of the slopes, as minor sloughing and erosion may take place.

15. Fill Slope Keyways

Fill slopes should be keyed into the native slopes with a 10 foot wide base keyway that is sloped negatively at least 2% into the bank. The depth of the keyways will vary, depending on the materials encountered. It is anticipated that the depth of the keyways may be 2 to 4 feet, but at all locations shall be at least 2 feet into firm material. Subsequent keys may be required as the fill section progress upslope. The Geotechnical Engineer will designate keys in the field. See the Keyway Detail in Appendix A for general details.

16. Fill Slope Face Construction

New fill slopes should be constructed by overbuilding and compacting 2 feet beyond the design face of slope. The outer 2 feet should be removed following compaction.

17. Subsurface Drainage

Our recommended cut and fill slope gradients assume that the soil moisture is a result of precipitation penetrating the slope face, and not a result of subsurface seeps or springs, which can destabilize slopes with hydrostatic pressure. All groundwater seeps encountered during construction should be adequately drained to maintain stable slopes at the recommended gradients. Drainage facilities may include subdrains, gravel blankets, rock-filled surface trenches or horizontally drains. The Geotechnical Engineer will determine the drainage facilities required during the grading operations.

18. Cut and Fill Slope Setbacks

The tops and toes of all un-retained cut and fill slopes should be set back in accordance with County guidelines, unless an alternative is approved by our office.

FOUNDATIONS – GENERAL

19. General Design and Construction Recommendations

Foundations should be setback from the top and toes of slopes in accordance with County guidelines, unless an alternative is approved by the County and our office.

The footings and piers should contain steel reinforcement as determined by the Project Structural Engineer in accordance with applicable CBC or ACI Standards.

Shallow footing excavations should be adequately moisture conditioned prior to placing concrete. Requirements for moisture conditioning the footing subgrade will depend on the soil type and seasonal moisture conditions, and will be determined by the Geotechnical Engineer at the time of construction.

Footing and pier excavations must be observed by a representative of Bauldry Engineering, Inc. before steel is placed and concrete is poured to insure embedment into proper material.

BUILDING FOUNDATIONS – SPREAD FOOTINGS

20. General Description of Foundation

It is our opinion that reinforced concrete spread footings are an appropriate system to support the proposed buildings in the gently sloping southern area of the subject site.

The footings should be bedded into properly compacted fill prepared in accordance with the EARTHWORK AND GRADING RECOMMENDATONS Section of this report.

21. Minimum Footing Dimensions

Footing widths should be based on allowable bearing values but not less than the minimum requirements shown in the table below.

Minimum Footing Dimensions

Structure Type	Footing Width	Footing Depth
1 and 2 Story Structures	15 inches	18 inches

Footing embedment depths are measured from the lowest undisturbed interior or exterior ground surface adjacent to the footing.

22. Allowable Bearing Capacity

Footings constructed to the given criteria may be designed for the following allowable bearing capacities:

- 2,000 psf for Dead plus Live Load
- a 1/3rd increase for Seismic or Wind Load

The maximum anticipated total and differential settlement for a foundation designed to the above criteria is anticipated to be within tolerable limits. The maximum anticipated total vertical settlement for a foundation designed to the above criteria is not expected to exceed ¾ inch. The maximum anticipated differential settlement is not expected to exceed ½ inch.

BUILDING FLOOR SYSTEMS - SLAB-ON-GRADE

23. General

Concrete slab-on-grade floors may be used for ground level construction on engineered fill. As discussed in the EARTHWORK AND GRADING section of this report, the upper 12 inches of subgrade beneath the capillary break, which underlies the slab-on-grade floors, should consist of Class 2 aggregate base compacted as an engineered fill. The capillary break is separate from and should not be considered as part of the aggregate base subgrade.

Slabs should be structurally integrated with the footings.

Slab thickness, reinforcement, doweling, and dummy joints or similar type crack control devices should be determined by the Project Structural Engineer.

24. Moisture Control – Capillary Break
All concrete slabs-on-grade should be underlain by a minimum 4 inch thick capillary break of ¾ inch clean crushed rock. Neither Class 2 baserock nor sand should be used as the capillary break material.

Where floor coverings are anticipated or vapor transmission may be a problem, a vapor retarder should be placed between the capillary break and the floor slab in order to reduce the potential for moisture to condensate under the floor coverings. We recommend using a robust vapor retarder such as Stego Wrap Class A Vapor Retarder, or an equivalent system, that has been designed to retard the passage of moisture from the ground into concrete slab-on-grade floors. Proprietary vapor retarders and moisture control systems must be designed and installed in accordance with the manufacturer's specifications.

NOTE: We have provided generalized recommendations associated with standard construction practices for the reduction of moisture transmission through concrete slab-on-grade floors. Bauldry Engineering, Inc. is not a moisture-proofing specialist. A waterproofing or moisture proofing specialist should be consulted for project specific moisture protection recommendations.

25. Subgrade Moisture Conditioning
It is important that the subgrade soils be adequately moisture conditioned prior to concrete placement. Requirements for pre-wetting the subgrade soil will depend on soil type and seasonal moisture conditions, and will be determined by the Geotechnical Engineer at the time of construction.

ROPES COURSE AND BIKE PARK - POLES AND PIERS

26. General Description of Foundation System
It is our understanding that wooden utility poles will be used to construct the proposed ropes course. The poles are typically placed in augered holes with compacted soil at the base of the drilled shaft and gravel or structural fill placed around the pole. The poles may have a system of guy wires and anchors. The anchors may include drilled piers. Helical anchors may be an alternative to piers. Drilled piers may be used to support decks and other facilities.

USDA Bulletin 1724E-200, Design Manual For High Voltage Transmission Lines states that wooden poles should have a minimum depth of 10% of the length of the pole plus 2 feet or 5 foot 6 inches, whichever is deeper. Pole embedment needs to be deeper in some areas including where the soil is poor, when the pole is situated adjacent to steep grades or where a higher factor of safety is desired.

27. Recommended Design Criteria
Poles and piers should be designed for the following criteria:

a. Minimum pier and pole embedment should be 8 feet into the medium dense sands and stiff cohesive soil that underlie the hillside. Actual depths could be deeper and will depend upon a lateral force analysis performed by your structural engineer.

b. Minimum pier size should be 18 inches in diameter.

c. Poles and piers should be designed to resist an active earth pressure of 45 psf/per foot of embedment. Design active forces as acting over a plane 2 times the pier or pole diameter.

d. Passive pressures of 350 psf/ft of depth can be developed, acting over a plane 2 times the pier or pole diameter. This is an ultimate value. Neglect passive pressure in the top 4 feet of soil.

e. The allowable end bearing capacity for a 8 foot deep pier is 9,000 psf, with a 1/3rd increase for wind or seismic loading. The allowable end bearing capacity can be increased by 1,000 psf for each additional foot of embedment deeper than 8 feet. The allowable end bearing capacity should not exceed 14,000 psf without a supplemental review by the Project Geotechnical Engineer. Supplemental recommendations may need to be provided at that time.

The maximum anticipated total and differential settlement for a foundation designed to the above criteria is anticipated to be within tolerable limits.

28. Pier Construction Recommendations

a. The bottom of all pier and pole holes must be free of loose material at the time concrete is placed.

b. If caving occurs during drilling the piers will need to be cased. If the casing is pulled during the concrete pour, it must be pulled slowly with a minimum of 4 feet of casing remaining embedded within the concrete at all times.

c. If seepage is present and water accumulates in the bottom of the pier shafts, the water will either have to be pumped before steel and concrete placement or the concrete placed through a tremie. If concrete is placed via a tremie, the end of the tube must remain embedded a minimum of 4 feet into the concrete at all times.

d. All pier construction must be observed by a representative of Bauldry Engineering, Inc. Any piers constructed without the full knowledge and continuous observation of Bauldry Engineering, Inc. will render the recommendations of this report invalid.

29. Helical Anchors

Helical anchors may be selected for guy wire anchoring. Helical anchor design and installation techniques are the responsibility of the specialty helical anchor contractor. The installing contractor must have extensive experience in the design and construction of helical anchors. General design and construction recommendations for helical anchors are provided below:

a. All anchors must be designed, installed and tested in accordance with the manufacturer's recommendations and specifications.

b. We recommend a minimum factor of safety of 2 be used to determine the allowable design loads and the required capacity of the helical anchors.

c. Center to center anchor or pile shaft spacing should be no closer than five times the diameter of the largest helical plate on the shaft.

d. Multiple helical plates attached to a single shaft should be spaced a minimum of 3 diameters apart.

ATTACHMENT 3

e. We recommend that the helical anchors have a minimum overburden depth of 10 feet. Additionally, there must be a minimum overburden above the top helical plate of 6 times the diameter of the largest plate.

f. All helical anchors should be **hot dipped galvanized** for corrosion resistance.

g. Helical anchors shall not be more than 6 inches from design plan locations.

Anchor design, construction details, and corrosion protection systems must be submitted to both the project structural and geotechnical engineers for review and approval a minimum of three (3) weeks in advance of tieback construction.

30. Testing and Construction Criteria

The helical anchors should be constructed in accordance with the following:

a. We recommend that a minimum of two helical anchors be compression tested prior to full scale production. The load test should be performed to verify the suitability and capacity of the proposed helical anchors, and the proposed installation procedures prior to installation of the helical anchors.

b. The pre-production tests should be performed in accordance with the Quick Test Method outlined in ASTM D1143.

c. Pre-production helical anchors installation methods, procedures, equipment, and overall length should be identical to the production helical anchors to the extent practical except where approved otherwise by the Geotechnical Engineer.

d. The contractor should submit the following information for review and acceptance prior to pier load testing:
   - Type and accuracy of load equipment
   - Type and accuracy of load measuring equipment
   - Type and accuracy of pile-head deflection equipment
   - General description of load reaction system, including description of reaction anchors
   - Calibration report for complete load equipment, including hydraulic jack, pump, pressure gauge, hoses, and fittings

e. If the pre-production test fails to meet the design requirements, the contractor should modify the helical anchor design and/or installation methods and retest the modified anchor, as approved by the Geotechnical and Structural Engineers.

f. A representative of Bauldry Engineering, Inc. must observe the compression load testing and all helical anchors construction and torque measurements during installation. Helical anchors tested or installed without the full knowledge and continuous observation of Bauldry Engineering, Inc., will nullify the recommendations contained in this report.

ZAYANTE ROAD PEDESTRIAN BRIDGE – FOUNDATIONS

31. General Description of Foundation System

It is our opinion that end-bearing cast-in-place reinforced concrete piers socketed into bedrock are an appropriate foundation system to support the proposed pedestrian bridge crossing along Zayante Road.

32. Recommended Pier Design Criteria

The Zayante Road pedestrian bridge piers should be designed for the following criteria:

a. The piers should be embedded a minimum of 7 feet into the competent siltstone or sandstone bedrock. Our borings indicate that the competent bedrock underlies the site at a depth of roughly 8½ to 9 feet below existing grades. Actual embedment depths could be deeper and will depend upon a lateral force analysis performed by your structural engineer.

b. Minimum pier size should be 18 inches in diameter.

c. Passive pressures of 300 psf/ft of depth can be developed in the soil overlying bedrock and 425 psf/ft of depth below the bedrock surface. These are ultimate values. Our borings indicate that bedrock underlies the site at a depth of roughly 8½ to 9 feet below existing grades Design passive pressures as acting over a plane 2 times the pier diameter. This is an ultimate value. Neglect passive pressure in the top 2 feet of soil.

d. The allowable end bearing capacity for a pier embedded 7 foot into bedrock is 9,500 psf, with a 1/3rd increase for wind or seismic loading. The allowable end bearing capacity can be increased by 1,000 psf for each additional foot of bedrock embedment deeper than 7 feet. The allowable end bearing capacity should not exceed 15,000 psf without a supplemental review by the Project Geotechnical Engineer. Supplemental recommendations may need to be provided at that time.

The maximum anticipated total and differential settlement for a foundation designed to the above criteria is anticipated to be within tolerable limits. The maximum anticipated total vertical settlement for a foundation designed to the above criteria is not expected to exceed ¾ inch. The maximum anticipated differential settlement is not expected to exceed ½ inch.

33. Pier Construction Recommendations

a. All pier holes must be free of loose material on the bottom.

b. Perched water was encountered overlying the bedrock surface. Given that the soil overlying the bedrock is comprised of silty and well-graded sand with little cohesion, it should be anticipated that the pier shafts may cave and that groundwater will be encountered during drilling.

c. If caving occurs during drilling the piers will need to be cased. If the casing is pulled during the concrete pour, it must be pulled slowly with a minimum of 4 feet of casing remaining embedded within the concrete at all times.

d. If seepage is present and water accumulates in the bottom of the pier shafts, the water will either have to be pumped before steel and concrete placement or the concrete placed through a tremie. If concrete is placed via a tremie, the end of the tube must remain embedded a minimum of 4 feet into the concrete at all times.

e. All pier construction must be observed by a representative of Bauldry Engineering, Inc. Any piers constructed without the full knowledge and continuous observation of Bauldry Engineering, Inc. will render the recommendations of this report invalid.

ZAYANTE ROAD PEDESTRIAN TUNNEL

34. General

A pedestrian tunnel passing below East Zayante Road is currently being considered as an alternative to a raised pedestrian bridge. Pedestrian tunnels typically are constructed by either the open cut or tunneling method. A contractor with an expertise in constructing pedestrian tunnels stated that the open cut is often comparable in price to a pedestrian bridge but that the tunneling method is a range of magnitude more expensive. The disadvantage of the open cut is that East Zayante Road may need to be closed. If a tunnel is selected as the East Zayante Road crossing, a supplemental geotechnical analysis and perhaps a geologic investigation will be required. The scope of work associated with the supplemental tunnel analysis and investigation will depend on the construction method selected.

RETAINING WALLS

35. Retaining Walls General

The proposed project may include site retaining walls. Retaining walls may be founded on either spread footings or piers. The following recommendations should be incorporated into the retaining wall design:

36. Retaining Wall Foundations

Spread Footings: Retaining walls may be founded on spread footings. All footings should be embedded such that the base of the footing is 1) a minimum of 18 inches into firm native soil, and 2) a minimum of 8 horizontal feet from the face of nearest descending slopes.

Retaining wall footings constructed in accordance with the preceding conditions may be designed for the following allowable bearing capacities. Should the footing sizes vary significantly from those provided below, supplemental design criteria should be provided.

Retaining Wall Footings

Footing Width	Embedment Depth	Bearing Capacity
3 feet	18 inches	2,000 psf
4 feet	18 inches	2,200 psf
5 feet	18 inches	2,400 psf
6 feet	18 inches	2,600 psf

Design for a "coefficient of friction" of 0.30 between the base of footing and the soil.

Piers: Site retaining walls may also be founded on piers designed for the following criteria:

a. Minimum pier embedment should be 7 feet into the firm soil. Actual depths may be deeper and will depend upon a lateral force analysis performed by your structural engineer.

b. Minimum pier size should be 18 inches in diameter.

c. The allowable end bearing capacity for a 7 foot pier is 8,000 psf, with a 1/3rd increase for wind or seismic loading. The allowable end bearing capacity can be increased by 1,000 psf for each additional foot of embedment deeper than 7 feet. The allowable end bearing capacity should not exceed 12,000 psf without a supplemental review by the Project Geotechnical Engineer. Supplemental recommendations may need to be provided at that time.

d. The bottom of all pier holes must be free of slough, debris and loose material at the time concrete is placed.

e. If caving occurs during drilling the piers will need to be cased. If the casing is pulled during the concrete pour, it must be pulled slowly with a minimum of 4 feet of casing remaining embedded within the concrete at all times.

f. If seepage is present and water accumulates in the bottom of the pier shafts, the water will either have to be pumped before steel and concrete placement or the concrete placed through a tremie. If concrete is placed via a tremie, the end of the tube must remain embedded a minimum of 4 feet into the concrete at all times.

g. All pier construction must be observed by a representative of Bauldry Engineering, Inc. Any piers constructed without the full knowledge and continuous observation of Bauldry Engineering, Inc. will render the recommendations of this report invalid.

Piers should contain steel reinforcement as determined by the Project Structural Engineer.

37. Soldier Pile Lagging

Soldier pile retaining walls should be constructed with either timber or concrete lagging spanning between steel H beams founded in cast-in-place concrete piers. Timber lagging, including field cuts, must be preserved in accordance with CALTRANS Specifications, Section 58 and AWPA Standard M4. When making a selection between wood and concrete lagging, it should be noted that timber lagging has a significantly shorter design life compared to concrete lagging.

LATERAL PRESSURES

38. Lateral Pressures

Retaining walls should be fully drained and designed using the following criteria:

a. When walls are free to yield an amount sufficient to develop the active earth pressure condition (about ½% of height), design for active earth pressures listed below. When walls are restrained at the top design for at-rest pressures.

Slope of Backfill	Active Earth Pressure	At-Rest Earth Pressure
Horizontal	45 psf/ft of depth	70 psf/ft of depth
2:1 (H:V)	60 psf/ft of depth	100 psf/ft of depth

Should the slope behind the retaining walls be other than those outlined above, the active earth or at-rest pressures for the particular slope angle may be obtained by interpolation.

b. For spread footings that support site retaining walls use a resisting passive earth pressure against the footing of 300 psf/ft of depth. This is an ultimate value. Neglect passive pressure in the top 12 inches of soil.

c. For piers that support site retaining walls use a resisting passive pressure of 325 psf/ft of depth acting over a plane 2 times the pier diameter. This is an ultimate value. Neglect passive pressure for those sections of the pier closer than 8 feet measured horizontally to the face of the slope or the top 2 feet of the pier, whichever is deeper.

d. For live or dead loads which transmit a force to the wall refer to the Surcharge Pressure Diagram in Appendix A.

e. Seismic forces should be applied to retaining walls as determined by the project structural engineer in accordance with applicable codes and standards. Where lateral seismic forces are required, we recommend using a lateral seismic force of $7H^2$, where H is the height of the retained soil in feet. We recommend designing the resultant seismic force as acting at a point ⅓H up from the base of the wall. The lateral seismic force provided above is based on the Mononobe-Okabe method of analysis. Supplemental recommendations will be provided if the structural engineer requires an alternative method of analysis.

39. Retaining Wall Drains

The above criteria are based on fully drained conditions. We recommend the retaining wall be constructed with a drain meeting the following criteria:

a. The drain should be constructed using either permeable material meeting the State of California Standard Specification Section 68-1.025, Class 1, Type A or ¾ inch open-graded crushed rock.

b. The drainage material should be a minimum of 12 inches in width and should extend to within 12 inches of the ground surface. Compacted native soil should be placed over the drain to the ground surface.

c. If permeable material is selected, Mirafi 140 filter fabric, or equivalent, should be placed horizontally over the top of the permeable material. If ¾ inch open-graded crushed rock is selected, Mirafi 180 filter fabric, or equivalent, should be placed along all sides of the drain where rock is in contact with soil.

d. A 4-inch diameter rigid perforated plastic drainpipe should be placed 3 inches above the base of the permeable material.

e. The drain line should be discharged to an approved location away from the footing area.

f. The wall must be constructed in a manner that prevents the loss of drain rock at the ends of the wall. Containment of the drain rock may be achieved by embedding the ends of the wall into solid ground.

40. Surface Drainage Above Retaining Walls

Retaining walls should be constructed with measures that prevent surface drainage from flowing over the top of the walls. A lined "V"-ditch should be constructed adjacent to and along the top of walls, where necessary, to collect surface runoff from slopes above a wall and prevent the runoff from flowing over the top of the wall. "V"-ditches should transport the collected water to a solid pipe that discharges at an approved location away from the wall and other structures. Cobbles placed over Mirafi 140 filter fabric, or equivalent, may be used to line "V" ditches.

41. Compaction of Backfill

The area behind the wall and permeable material should be compacted with approved soil to a minimum relative dry density of 90%.

ATTACHMENT 3

42. Water Proofing Retaining Walls

A water proofing system, including but not limited to water stops, liquid coatings, sheet membranes, bentonite, concrete sealant, composite systems or other appropriate options should be used to reduce moisture in the below grade portions of the structure, as recommended by your architect. The retaining wall drain should not be considered to be waterproofing.

UTILITY TRENCHES

43. Utility Trench Setbacks

Utility trenches that are parallel to the sides of the building should be placed so that they do not extend below a line with a 2:1 (H:V) gradient extending from the bottom outside edge of all footings.

44. Utility Trench Backfill

Trenches may be backfilled with the native materials or approved import granular material. The backfill soil should be compacted in thin lifts to a minimum of 95% of its maximum dry density in paved areas and 90% in all other areas. Jetting of the trench backfill is not recommended.

45. Shoring

Trenches must be shored as required by the local agency and the State of California Division of Industrial Safety construction safety orders.

46. Utility Connections

Utility lines connected to structures should be designed to mitigate potential damage resulting from the settlement of structures. Utility lines should be provided with flexible connections able to accommodate the total settlement listed in the FOUNDATIONS – SPREAD FOOTINGS section of this report.

SURFACE DRAINAGE AND STORMWATER CONTROL

47. Surface Drainage, Landscape Irrigation and Slope Stability

Controlling surface drainage and landscape irrigation is **critical** to the long-term stability of the slopes at the subject site. It is imperative that irrigation activities and all concentrated surface water, including storm water runoff and roof downspout discharge, be effectively controlled. Uncontrolled surface drainage, roof discharge and landscape irrigation could cause the slopes to fail.

48. Surface Grades and Storm Water Runoff

Water must not be allowed to pond on building pads, parking areas or adjacent to foundations. Final grades should slope away from foundations such that water is rapidly transported to drainage facilities.

Concentrated surface water should be controlled using lined ditches, catch basins, and closed conduit piping, or other appropriate facilities and should be discharged at an approved location away from structures and graded areas.

49. Roof Discharge

All roof eaves should be guttered, with the outlets from the downspouts provided with adequate capacity to carry the storm water away from the structures and graded areas.

50. Discharge Locations
Concentrated surface storm water and roof runoff should be transported in a closed conduit which discharges at an approved location. We recommend that concentrated storm water runoff systems be provided with energy dissipators that minimize erosion. Concentrated storm water must not be discharged on fill. Storm water may be discharged in the meadows along Conference Drive and Graham Hill Road. Discharge locations should be a minimum of 15 feet from the structures or fill slopes.

51. Drain Pipes
Subsurface pipes used in storm water runoff systems must be robust rigid solid pipes capable of supported the overburden loads. Flexible corrugated pipes must not be used.

52. Protection of Cut and Fill Slopes
Cut and fill slopes shall be constructed so that surface water will not be allowed to drain over the top of the slope face. This may require berms or curbs along the top of fill slopes and surface drainage ditches above cut slopes.

53. Maintenance
The building and surface drainage facilities must not be altered, and there should be no modifications of the finished grades at the project site without first consulting Bauldry Engineering, Inc., the Project Geotechnical Engineer.

The building and surface drainage facilities must be inspected and maintained on a routine basis. Repairs and upgrades, whenever necessary, must be made in a timely manner. We recommended that the property owner inspect the drainage systems prior to each rainy season, following the first significant rain, and throughout each rainy season. The civil and geotechnical engineers should be consulted if significant erosion or other drainage problems occur so that the conditions can be observed and supplemental recommendations can be provided, as necessary.

54. Landscaping and Irrigation
Irrigation activities at the site should be minimized and done in a controlled and prudent manner. We recommend that landscaping be done with native vegetation and plants that require minimal watering. We recommend that landscaping be done with native and drought tolerant plants

55. Percolation Pits
Percolation pits are acceptable for the disposal of storm water runoff at the project site. Percolation pits should be sited in the flat to gently sloping meadows or tree groves. It must be anticipated that the upper soils, which are comprised of clay and silt (CL, ML), will have slow infiltration rates. We anticipate that the infiltration rates of the sandy soil (SM) encountered in Boring No's. 1, 2 and 3 at a depth ranging from 5½ to 9 feet below existing grades will be generally faster.

56. Crawl Space Configuration
To minimize the potential for excess moisture or ponding of water under structures, crawl space grades should be no lower than exterior grades.

PAVEMENT DESIGN

57. General

The design of the pavement section was beyond our scope of services for this project. To have the selected pavement sections perform to their greatest efficiency, it is very important that the following items be considered:

a. Properly moisture condition the subgrade and compact it to a minimum of 95% of its maximum dry density, at a moisture content 1-3% over the optimum moisture content.

b. Provide sufficient gradient to prevent ponding of water.

c. Use only quality materials of the type and thickness (minimum) specified. All baserock must meet CALTRANS Standard Specifications for Class 2 Aggregate Base, and be angular in shape.

d. Compact the base and subbase uniformly to a minimum of 95% of its maximum dry density.

e. Place the asphaltic concrete only during periods of fair weather when the free air temperature is within prescribed limits.

f. Maintenance should be undertaken on a routine basis.

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR

August 11, 2014

Dale Pollock
PO Box 413
Mt Hermon, CA 95041

Subject: Review of Geotechnical Investigation by Bauldry Engineering, Inc. Dated May 14, 2013: Project: 1303-SZ951-J33
APN 071-331-05, Application #: REV131092

Dear Mr. Pollock,

The purpose of this letter is to inform you that the Planning Department has accepted the subject report and the following items shall be required:

1. All construction shall comply with the recommendations of the report.

2. Final plans shall reference the report and include a statement that the project shall conform to the report's recommendations.

3. After building permit plans are prepared that are acceptable to all reviewing agencies, please submit a signed and stamped *Soils (Geotechnical) Engineer Plan Review Form* to Environmental Planning. *Please note that the plan review form must reference the final plan set by last revision date.* Any updates to report recommendations necessary to address conflicts between the report and plans must be provided via a separate addendum to the soils report.

   The author of the report shall sign and stamp the completed form. An electronic copy of this form may be found on our website: www.sccoplanning.com, under "Environmental", "Geology & Soils", "Assistance & Forms", "Soils Engineer Plan Review Form".

4. Please submit two original, wet-signed copies of the soils report with the building permit application. If more than 3 years have lapsed since the date of the initial report, please submit an update letter from the soils engineer that states, based on field observations, the recommendations of the report remain valid and provides updates as necessary to conform to the latest edition of the California Building Code.

After building permit issuance the soils engineer *must remain involved with the project* during construction. Please review the *Notice to Permits Holders* (attached). Please note: Electronic copies of all forms required to be completed by the Geotechnical Engineer may be found on our

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ATTACHMENT 7

website: www.sccoplanning.com, under "Environmental", "Geology & Soils", "Assistance & Forms".

Our acceptance of the report is limited to its technical content. Other project issues such as zoning, fire safety, septic or sewer approval, etc. may require resolution by other agencies.

Please note that this determination may be appealed within 14 calendar days of the date of service. Additional information regarding the appeals process may be found online at: http://www.sccoplanning.com/html/devrev/plnappeal_bldg.htm

Please call the undersigned at (831) 454-5121 if we can be of any further assistance.

Sincerely,

Carolyn Burke
Civil Engineer

Cc: Robin Bolster-Grant, Project Planner
Bauldry Engineering, Inc.

ATTACHMENT 4

NOTICE TO PERMIT HOLDERS WHEN A SOILS REPORT HAS BEEN PREPARED, REVIEWED AND ACCEPTED FOR THE PROJECT

After issuance of the building permit, the County requires your soils engineer to be involved during construction. Several letters or reports are required to be submitted to the County at various times during construction. They are as follows:

1. **When a project has engineered fills and / or grading**, a letter from your soils engineer must be submitted to the Environmental Planning section of the Planning Department prior to foundations being excavated. This letter must state that the grading has been completed in conformance with the recommendations of the soils report. Compaction reports or a summary thereof must be submitted.

2. **Prior to placing concrete for foundations**, a letter from the soils engineer must be submitted to the building inspector and to Environmental Planning stating that the soils engineer has observed the foundation excavation and that it meets the recommendations of the soils report.

3. **At the completion of construction,** a *Soils (Geotechnical) Engineer Final Inspection Form* from your soils engineer is required to be submitted to Environmental Planning that includes copies of all observations and the tests the soils engineer has made during construction and is stamped and signed, certifying that the project was constructed in conformance with the recommendations of the soils report.

   If the *Final Inspection Form* identifies any portions of the project that were not observed by the soils engineer, you may be required to perform destructive testing in order for your permit to obtain a final inspection. The soils engineer then must complete and initial an *Exceptions Addendum Form* that certifies that the features not observed will not pose a life safety risk to occupants

(over)

ATTACHMENT 4

ATTACHMENT 4

ROGERS E. JOHNSON & ASSOCIATES
CONSULTING ENGINEERING GEOLOGISTS
41 Hangar Way, Suite B
Watsonville, California 95076-2458
e-mail: rogersjohnson@sbcglobal.net
Ofc (831) 728-7200 • Fax (831) 728-7218

2007 OCT 1 PM 3 39

28 September 2007

Project No. G06012-36

South County Housing
9015 Murray Avenue, Suite 100
Gilroy, California 95020

Attn: Andy Lief

Re: Proposed Low Cost Housing Development Site
Felton, California
Santa Cruz County APN's 071-331-05 & -06

Dear Mr. Lief:

This letter report with attached graphics describes our evaluation of the Mt. Herman Road fill slope and adjacent natural slope located above Units 25 through 32 of the proposed residential development. Because these proposed units are positioned adjacent to the base of these slopes and because of the presence of an old slump on the natural slope we were obligated to evaluate the current stability of the slopes.

We identified a shallow slump, approximately 100 feet long by 40 feet wide, during our 1997 investigation of the site. This slump is located on the natural slope adjacent to a man-made drainage swale formed by the placement of fill for Mt. Herman Road on the natural slope (see Figure 1, a portion of our 1997 Geologic Map).

Due to heavy vegetative cover, it was necessary to clear areas on the slopes to determine if there were other areas of obvious instability on either the Mt. Herman Road fill slope or the adjacent natural slope on which we mapped the slump. Excluding the aforementioned slump, our field mapping did not reveal any evidence of instability.

We decided that the prudent course of action was to determine if debris from the old slump or other possible source areas had encroached onto the area where residential units are proposed. Based on the information obtained, we could recommend a setback from the base of the slope.

We excavated two backhoe-dug test pits below the break-in-slope at the base of the man-made drainage swale (see Figure 1 for the location of the exploratory test pits). Plate 1 is a graphic log of the two test pits. The pits revealed very old soils, showing an A-E soil profile, overlying one possible debris flow package, about 6 to 8 inches thick, which was only exposed in the lower test pit (TP-2). We could not determine with certainty if this unit represents a debris flow package or

ATTACHMENT 3

is simply a colluvial wedge. If it is a debris flow, it is very old (several thousand years?) and its source would be a drainage which is now cut off from the property by Mt. Herman Road. We saw no evidence of encroachment of debris from the old slump into the proposed development area.

Based on our field mapping and exploratory trenching, we have concluded the potential for large scale slumping or debris flows to encroach far out into the proposed development area is low.

In addition to the information we have developed, we understand that Tharp and Associates, the project soil engineers, have recently completed an evaluation of the Mt. Herman Road fill slope (personal communication, Don Tharp). Their evaluation, which included subsurface work at the base of the slope, concluded that the fill slope appears to be stable.

RECOMMENDATIONS

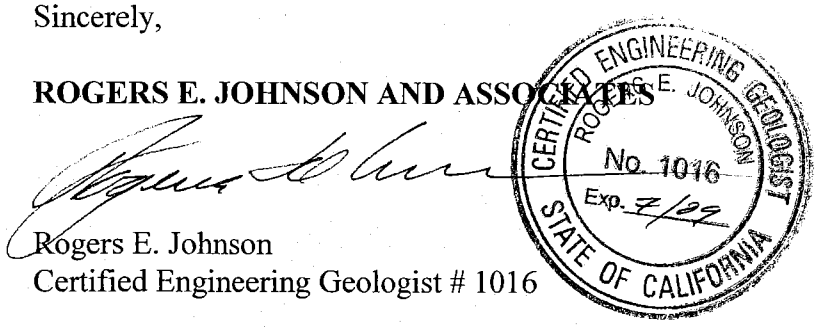
Because there is some potential for renewed slumping to occur within the artificial swale area, we recommend that a 25 foot development setback be observed from the break-in-slope below the swale. Figure 2 shows the area where the 25 foot setback should be maintained.

We must inspect any cuts graded into the slopes above Units 25 through 32. If any unexpected or undesirable conditions are encountered, we may have to provide supplemental recommendations.

Please call if you have questions; thank you for your patronage.

Sincerely,

ROGERS E. JOHNSON AND ASSOCIATES



Rogers E. Johnson
Certified Engineering Geologist # 1016

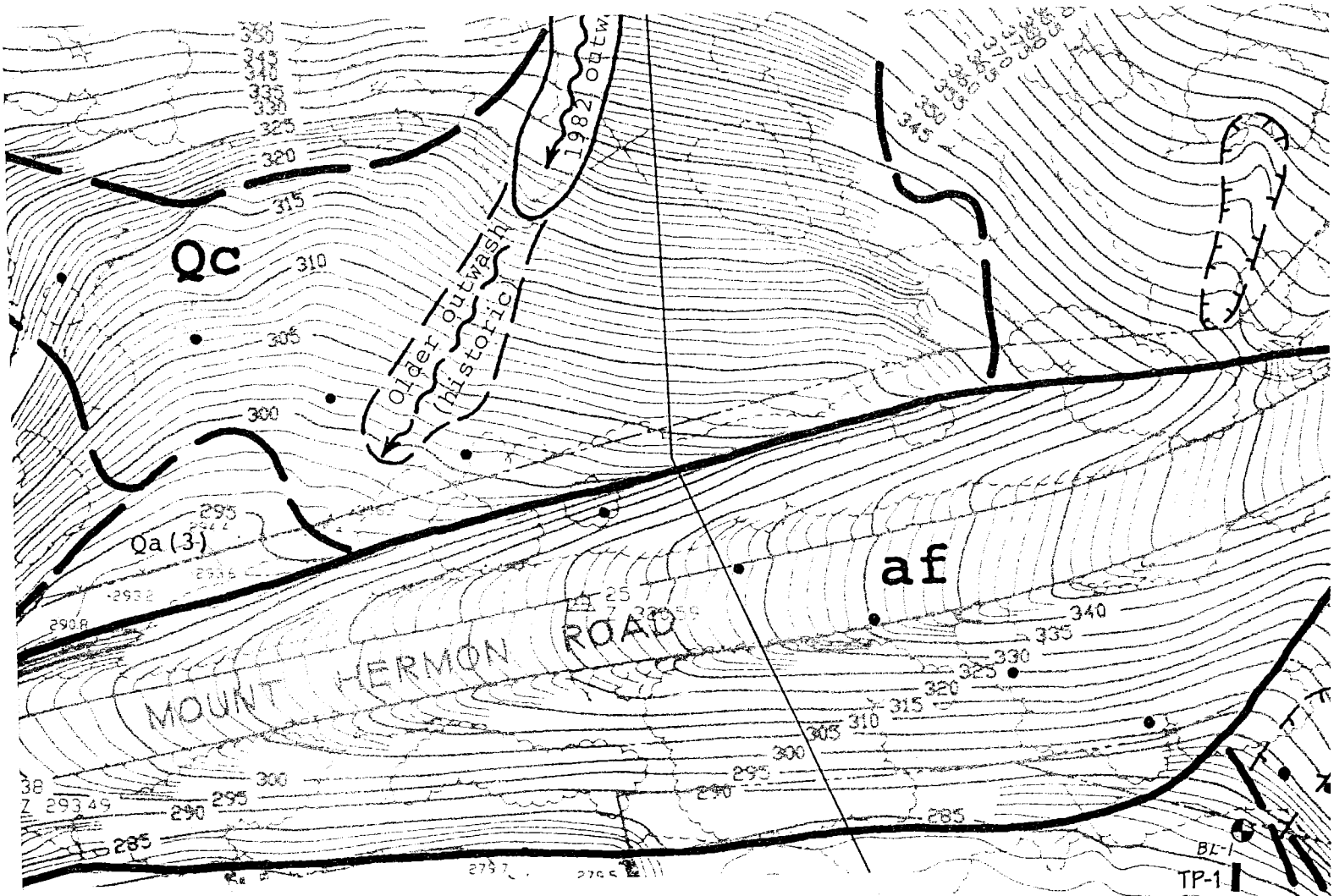
Copies: addressee (5)
Fall Creek Engineering (1)
Tharp and Associates (1)

Attachments: Figure 1: Portion of 1997 Geologic Map
Figure 2: Map Showing 25 Foot Setback for Proposed Development
Plate 1: Log of Exploratory Test-Pits

Reference

Rogers E. Johnson and Assoc., 1997, Addendum Geologic Report, Redtree Properties, Mt. Herman Road, Felton, California, Santa Cruz County APN's 71-201-43 and 71-331- 05 & 06, 11 November 1997, Job # G94010-41.

ATTACHMENT 3



GEOLOGIC MAP EXPLANATION

Symbols

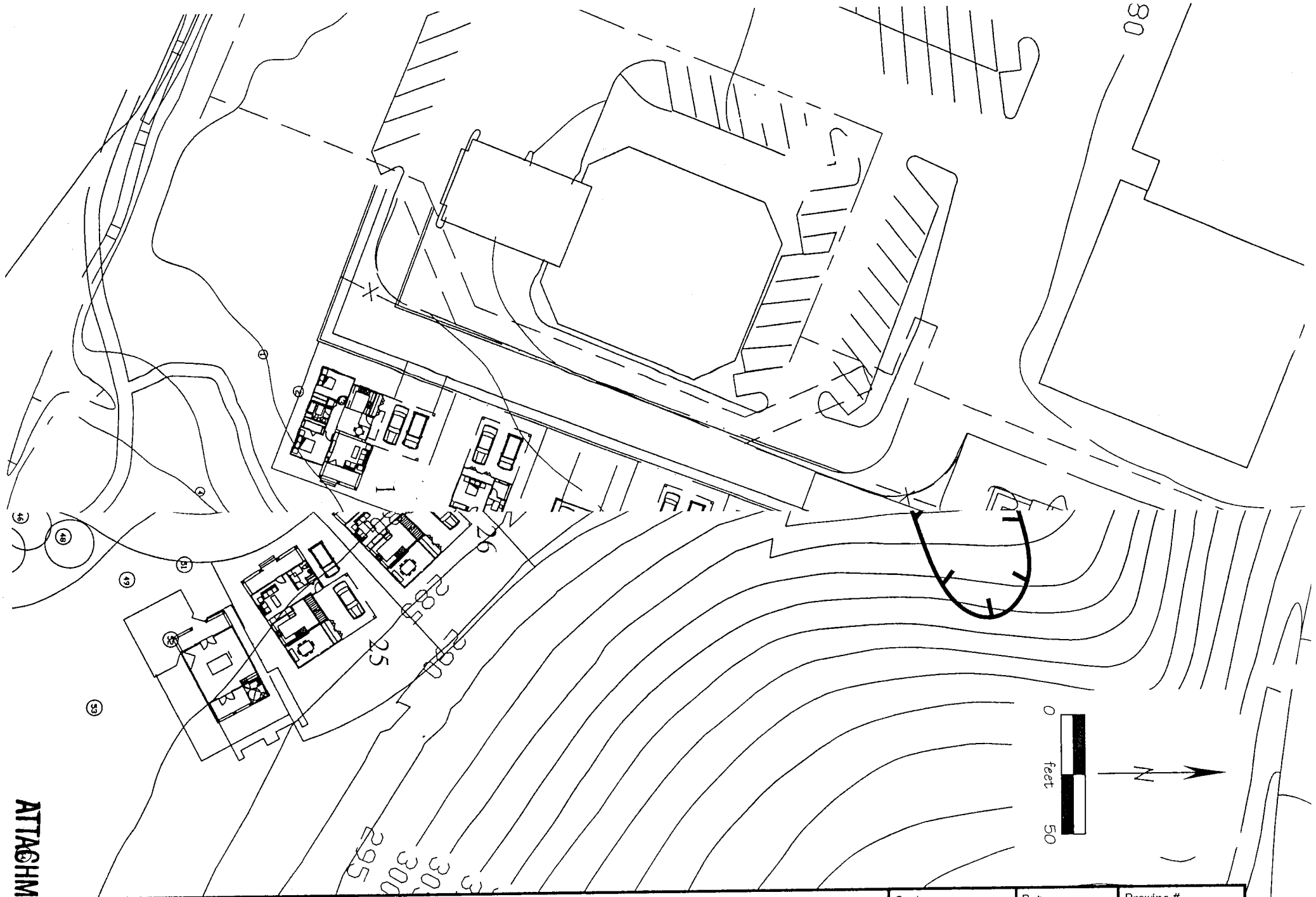
	Geologic contact; long dash where located approximately; short dash where located very approximately
	Gradational geologic contact
	Fault; dashed where located approximately; dotted where concealed
	Old slump
TP-2	Exploratory test-pit, excavated 23 August 2007

Earth Materials

af	Artificial fill
Qdf	Debris flow (Holocene)
Qc	Colluvium
Qc/Qa	Colluvial veneer over alluvium (Holocene)
Qa	Alluvium (Holocene); 1=youngest terrace; 3=oldest terrace
Tm	Monterey Formation (middle Miocene)
Tlo	Lompico Sandstone (middle Miocene)

Quaternary geology mapped by aerial photographic interpretation with field-checking; bedrock geology modified from Clark (1981)

ATTACHMENT 5



ATTACHMENT 3

ROGERS E. JOHNSON & ASSOCIATES
Consulting Engineering Geologists
41 Hangar Way, Suite B
Watsonville, California 95076
(831)728-7200 FAX (831)728-7218

MAP SHOWING 25 FOOT SETBACK
FOR PROPOSED DEVELOPMENT
South County Housing Site
Felton, California
Santa Cruz County APNs 071-331-05 and -06

Scale:	Date:	Drawing #
1"= 50'	9/27/07	Figure 2
Drawn By:	Revised:	Project #
GFE, gfe		G06012-36

ROGERS E. JOHNSON & ASSOCIATES
Consulting Engineering Geologists
41 Hangar Way, Suite B
Watsonville, California 95076
(831)728-7200 FAX (831)728-7218

MAP SHOWING 25 FOOT SETBACK
FOR PROPOSED DEVELOPMENT
South County Housing Site
Felton, California
Santa Cruz County APNs 071-331-05 and -06

Scale:	Date:	Drawing #
1"= 50'	9/27/07	Figure 2
Drawn By:	Revised:	Project #
GFE, gfe		G06012-36

GEOLOGIC MAP EXPLANATION

Symbols

- Geologic contact; long dash where located approximately; short dash where located very approximately
- Gradational geologic contact
- Fault; dashed where located approximately; dotted where concealed
- Old slump
- TP-2 — Exploratory test-pit, excavated 23 August 2007

Earth Materials

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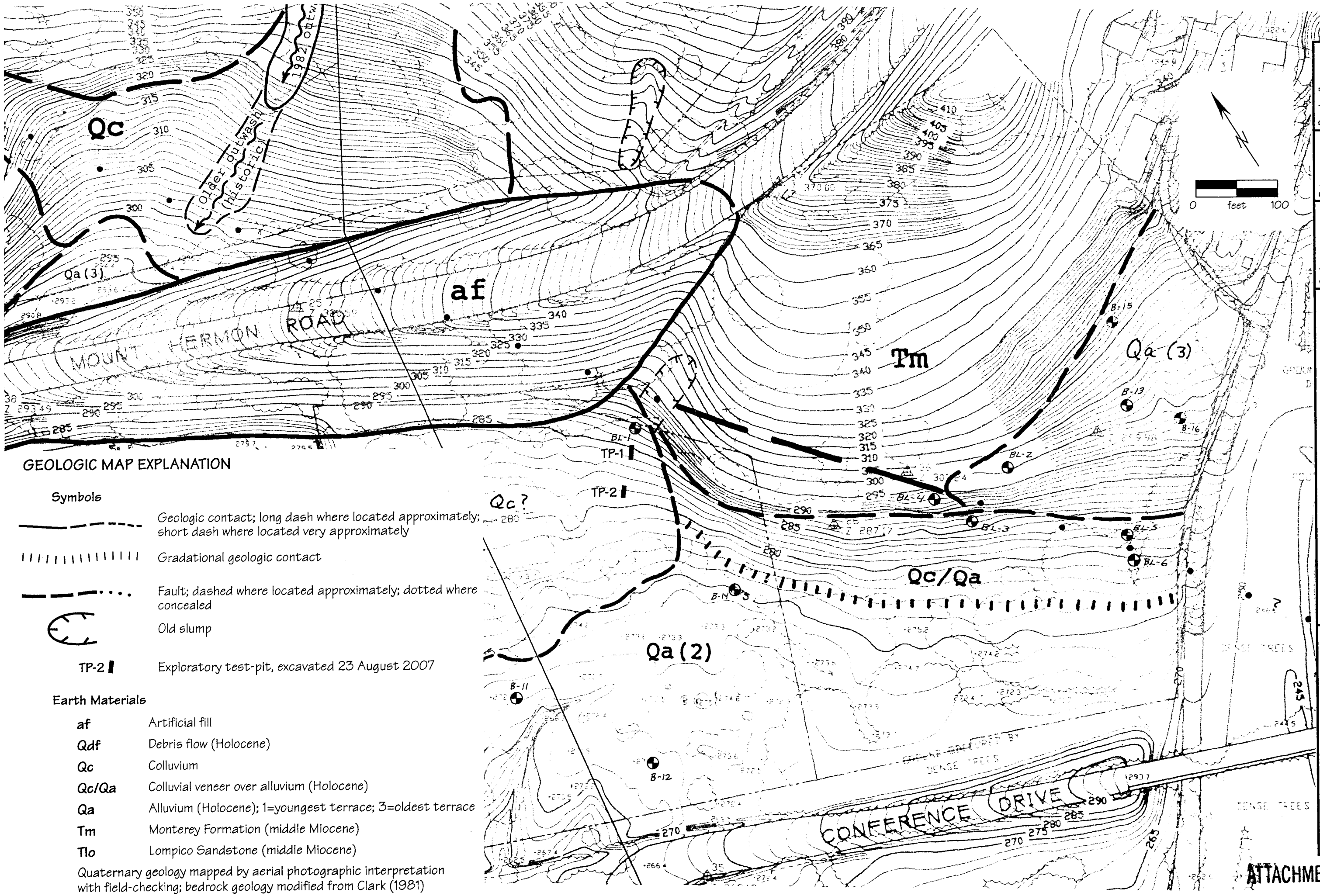
Qc/Qa	Colluvial veneer over alluvium (Holocene)
Qa	Alluvium (Holocene); 1=youngest terrace; 3=oldest terrace
Tm	Monterey Formation (middle Miocene)
Tlo	Lompico Sandstone (middle Miocene)

Quaternary geology mapped by aerial photographic interpretation with field-checking; bedrock geology modified from Clark (1981)



PORTION OF 1997 GEOLOGIC MAP
South County Housing Site
Felton, California
Santa Cruz County APNs 071-331-05 and -06

Scale: 1" = 100'	Date: 9/27/07	Drawing # Figure 1	Project # G06012-36
Drawn By: GFE, gfe	Revised:		

ROGERS E. JOHNSON & ASSOCIATES
Consulting Engineering Geologists
41 Hangar Way, Suite B
Watsonville, California 95076
(831)728-7200 FAX (831)728-7218

ATTACHMENT 5

RI Engineering, Inc.

PRELIMINARY DRAINAGE REPORT

for

Mt Hermon New Property Development

at

Conference Drive
Santa Cruz, CA 95062
APN 071-331-05 & 06

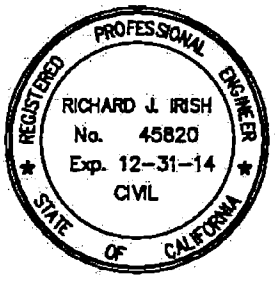
Application #131234

August 22, 2013
Revised December 6, 2013

Prepared For:
Mt Hermon Association, Inc

Prepared By:
RI Engineering, Inc.

Project Number 13-034-1



ATTACHMENT 6

Mt Hermon New Property Development
Conference Drive, Mt Hermon, CA 95062
November 2013

Design Criteria

- *Santa Cruz County, Design Criteria, March 2012 edition*

Project Description

The project is located off of Conference Drive near the intersection with Graham Hill Road. The Mt. Hermon Association is planning to develop the area as a center for activities and adventure sports. The proposed improvements include construction of multiple bike tracks, playgrounds, sports/activity fields, retail building, activity center, parking lots, and pedestrian walkways.

Drainage Methodology

The rational method has been used to compute drainage runoff per Santa Cruz County (SCCO) design criteria. A weighted C-value for each drainage basin was calculated using the bulleted values shown below. C-values for each drainage basin in the project are provided in their respective sections below.

- C=0.30 for slopes steeper than 20%
- C=0.20 for slopes less than 20%

Time of concentration for both basins has been computed using *USDA TR-55* methods in Chapter 3. *TR-55* specifies to use a 2-year 24-hour design storm for sheet flow calculations in the time of concentration calculations. Per *TR-55* this design storm has been used to calculate sheet flow across a range of design storms. Sheet flow and shallow concentrated flow has been used to calculate time of concentration (Table 1.) Post-development times of concentration were calculated to be greater than the pre-development time of concentration due to meandering flow paths. The pre-development time of concentration has been used for both pre and post-development calculations instead of a longer post-development time of concentration.

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Existing Conditions

The site is currently a vegetated vacant lot. The property is a total area of 14.86 acres. The site is divided into two drainage basins; Basin A to the West of the site, and Basin B to the East of the site (see Existing Drainage Map).

Based on the USDA Web soil survey, listed below are the types of soil by percentage within the area of improvements. The Soquel Loam soil covers most of the flatter portion of the site where the improvements are proposed.

- Less then 0% - Elder Sandy Loam 0 to 2 percent slopes
- 5.1% - Elder Sandy Loam 2 to 9 percent slopes
- 23.0% - Elkhorn-Pfeiffer complex, 30 to 50 percent slopes
- 71.9% - Soquel Loam, 2 to 9 percent slopes.

A saturated soil permeability rate (Ksat) of 0.57 inches per hour has been used for percolation calculations within the Soquel Loam portion of the site. This rate has been established by a combination of data from the *USDA Websoil Survey* and multiple percolation tests performed on the site. *USDA Websoil Survey* states the capacity of the most limiting layer to transmit water (Ksat) to be between 0.20 to 0.57 inches per hour. The high value of this range has been used for drainage calculation because the percolation tests performed for septic system design suggest faster permeability rates than the USDA values. The percolation tests were performed per the County of Santa Cruz Health Services Agency guidelines for Soils Evaluation and Testing Procedures. RI Engineering has data for fifteen percolation tests that have been performed from 1995 to 2013. To convert the percolation test rate to a saturated soil permeability rate, the percolation rate from these tests must be adjusted to account for the discharge of water from both the sides and bottom of the test hole. The percolation rate determined from the septic testing must be divided by a reduction factor to be used as a permeability rate. The reduction factor is typically in the range of 2-4. This reduction factor is a function of the initial water depth, average water level drop, and the diameter of the percolation hole. Since all data is not known for all of testing performed, a conservative reduction factor of 4 was applied to all percolation rates to determine a soil permeability rate. The reduced soil permeability values were all higher than the range of 0.20-0.57 inches per hour given by *USDA Websoil Survey.* For that reason RI Engineering determined 0.57 inches per hour to be an appropriate and conservative saturated soil permeability rate (Ksat) for use in all calculations involving infiltration into the onsite Soquel Loam. For details on the percolation testing rates and locations see Table 2 and attached figure "Percolation Testing for Septic Design".

Basin A – Existing Conditions

Basin A encompasses the western side of the project site. Stormwater runoff in the western portion of Basin A is conveyed to the southwest corner of the site to an existing well defined swale. Stormwater runoff from the eastern portion of Basin A flows southerly to a roadside swale flowing west along Conference Drive. The well defined swale and roadside swale meet at an existing swale flowing westward parallel to Graham Hill Road. This swale discharges to a 16" HDPE stormdrain that connects to a catch basin in Graham Hill Road at the entrance to the Felton Faire shopping center entrance. The catch basin outlets to a 24" RCP culvert that conveys water under Graham Hill Road and outlets to an

existing roadside swale along Covered Bridge Road. The swale terminates at the San Lorenzo River, adjacent to the Felton Covered Bridge.

The 2-year, 10-year, and 100-year storms were analyzed for the proposed development. The table below shows the existing weighted C-value, time of concentration, and peak runoff volumes for Basin A. See tables 4-6 for detailed calculations.

Existing Basin	Weighted C-value	Time of Concentration	$Q_{2\text{-year}}$	$Q_{10\text{-year}}$	$Q_{100\text{year}}$
Basin A	0.23	21	1.59	4.81	9.01

Basin B – Existing Conditions

Basin B encompasses the eastern side of the project site. Stormwater runoff from basin B drains eastwardly to an existing roadside swale along East Zayante Road. The swale conveys water to the south along the roadway. The roadside swale transitions to roadway gutter flows along East Zayante Road just south of the Conference Drive Bridge. Runoff flows along the curbline of East Zayante Road to a catch basin at the intersection with Graham Hill Road. Runoff is conveyed by stormdrain to Zayante Creek via an outlet under the Graham Hill Road Bridge. Zayante Creek meets the San Lorenzo River approximately 1,000' downstream of the East Zayante Road and Graham Hill Road intersection.

The 2-year, 10-year, and 100-year storms were analyzed for the proposed development. The table below shows the existing weighted C-value, time of concentration, and peak runoff volumes for Basin B. See tables 14-16 for detailed calculations.

Existing Basin	Weighted C-value	Time of Concentration	$Q_{2\text{-year}}$	$Q_{10\text{-year}}$	$Q_{100\text{year}}$
Basin B	0.25	19	1.03	3.23	6.05

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Proposed Development

The proposed development includes construction of bike trails, a retail activity center and daycamp buildings with pervious paver patios, decomposed granite walkways, pervious concrete access road, and gravel parking lots. To implement Low Impact Development (LID) standards, impervious surfaces on the site have been minimized to the maximum extent practicable. On-site impervious areas are only for buildings and sheds. Impervious improvements in the Santa Cruz County right-of-way include a concrete sidewalk along Conference Drive, and the asphalt paved entrance at Conference drive. 19,142 square feet of impervious area is proposed in Basin A for this project. 500 square feet of impervious area is proposed in Basin B.

Basin A – Proposed Conditions

C-value

A new weighted C-value of 0.37 has been used for post-development runoff calculations. The values used for the weighted C-value calculation are shown below.

Land Cover	Areas	C-value
Impervious Surface	Buildings, Sidewalk,	0.9
Disturbed and Compacted Areas	Bike Trails, Magic Carpet	0.6
Gravel, Paver, Pervious Concrete	Parking lots, Walkways	0.6

Peak Runoff Rates

A summary of pre vs. post-development runoff rate calculations are shown below.

BASIN A	C-value	Tc	$Q_{2\text{-year}}$	$Q_{10\text{-year}}$	$Q_{100\text{year}}$
Pre-Development	0.23	21	1.59	4.81	9.01
Post-Development	0.37	21	2.54	7.67	14.38
		Q Increase=	0.95	2.86	5.37

Drainage Design

The runoff from Basin A will be directed toward the well defined swale at the southwest corner of the site, as per existing conditions. Most of the runoff will overland flow in grass lined swales. Concentrated runoff from impervious surfaces and swales will be directed to six percolation pits located in Basin A to retain water and promote infiltration. Infiltration of stormwater will also be achieved in the subgrade below pervious pavers and pervious concrete. Runoff discharged from driving surfaces and parking lots will be conveyed to biofiltration swales and catch basins with silt and grease traps which will provide quality treatment. An earth embankment with outlet control is proposed at the downslope edge of the well defined swale. The embankment will serve to detain the increase in runoff generated from the proposed development within the existing drainage swale. An outlet control structure for the detention area will serve to discharge at predevelopment rates for a variety of design storms. The modified rational

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method has been used to determine the required storage volume for the detention area (Tables 8 and 9). The required volume has been checked against the actual storage volume in the detention area in Table 10.

Runoff Retention and Percolation

The site has been designed to maintain predevelopment permeability rates and percolate runoff back into the groundwater. The proposed drainage design emphasizes surface flow conveying water. Much of the stormwater runoff will be conveyed through the site in shallow grass lined swales. Rock check dams are proposed in several locations along the surface swales to slow flow, settle out suspended solids, and allow for further infiltration in the pooled water upstream of the check dams. Both large parking lots are sloped to drain into biofiltration swales. The biofiltration swales offer water quality treatment and further opportunity for infiltration.

Maintaining percolation rates and groundwater recharge for the 2-year 120-minute design storm will be provided by several infiltration BMPs. Runoff will be infiltrated by six gravel filled percolation pit BMPs, infiltration into subgrade below pervious concrete and paver areas, and an area of the well defined swale located below the outlet. The percolation pits will be approximately 8 feet in diameter and excavated to an estimated depth of 9 feet. The actual depth of excavation during construction will be subject to approval by the geotechnical engineer to ensure the pits encounter permeable soils. Channelized runoff from the site will be directed toward the percolation pits around the site. The impervious daycamp building and retail building will have the gutter downspouts connected to a perimeter storm drain that will be directly routed to separate percolation pits. The baserock below pervious concrete and pavers will be used to store runoff and percolate it back into the uncompacted subgrade. The subgrade below these parking lots will be constructed with a fairly level slope and 8 inches of minimum storage below any adjacent subdrains to facilitate percolation.

Quantified calculations are included to demonstrate the ability of the onsite infiltration BMPs to maintain pre-development percolation rates for the 2-year 120-minute design storm (see Table 7). Calculations were performed according to SCCO Design Criteria, Section I, Runoff Retention by Storage Percolation Method. The BMPs have enough storage to retain the increased runoff from the design storm so that it can be infiltrated back into the groundwater. Each of the BMPs structures will drain in less than 24 hours.

Runoff Detention and Wetland Enhancement

The additional runoff created from larger design storms will be detained in a proposed stormwater detention area to be constructed in the well defined swale at the southwest corner of the site. The detention facility has been sized to store runoff from a range of design storms up to the 100-year design storm. An embankment will be constructed with an outlet control structure. The proposed outlet control structure will be a steel plate with a rectangular weir discharge below a triangular weir on top. The design discharge is a function of water head in the storage area and will stage discharge proportionally for different amounts of runoff entering the detention area. The proposed outlet control structure will discharge water through the embankment at predevelopment flow rates for a range of storms, most specifically the 10-year, and 100-year design storms (see Table 11). The outlet structure will release runoff to the existing swale along Graham Hill Road that leads to the 16" HDPE. Once runoff enters the swale, the downstream runoff pattern remains unchanged.

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To minimize the amount of sediment from the bike pump tracks piped to the detention and wetland enhancement area, the runoff leaving this area will be treated by multiple sediment traps prior to entering the stormwater management area. The sediment traps have almost double the capacity required by Santa Cruz County's standards for construction site management. The current design is very conservative and provides additional volume beyond what is normally required for construction projects. See Table 12.

Basin B – Proposed Conditions

Through LID development strategies, the proposed design minimizes impervious surfaces in Basin B to 500 square feet out of total 278,683 square feet. A new weighted C-value of 0.30 has been used for post-development runoff calculations in Basin B. A summary of pre vs. post-development runoff calculations is shown below. See tables 14-16 for detailed calculations.

BASIN B	C-value	Tc	$Q_{2\text{-year}}$	$Q_{10\text{-year}}$	$Q_{100\text{year}}$
Pre-development	0.25	19	1.03	3.23	6.05
Post-development	0.30	19	1.26	3.92	7.35
		Q Increase=	0.22	0.69	1.29

Bike Trails

The flow bike trails in Basin B may increase runoff because they are converting native grass areas into compacted trails void of vegetation. Runoff from the bike flow trails will be captured in swales running along the trails. The swales terminate into riprap pads or flow into culverts with riprap pads at the outlets to help disperse energy and spread out flows. The majority of runoff from the bike trails discharged to infiltration trenches that also serve as level spreaders. The infiltration trenches will help to retain the 2-year 120-minute design storm on-site (see table 17).

ADA Walkway to Pedestrian Bridge

Runoff flowing off the ADA walkway from the paintball area to the pedestrian bridge will be directed toward a percolation pit serving to store and infiltrate runoff. This percolation pit is similar in design to those proposed for Basin A. The percolation pit will help to retain the 2-year 120-minute design storm on-site (see table 17). If the percolation pits fills with water during larger design storms, it will bubble out continue to discharge into the existing swale along East Zayante Road. Existing eroded portions of the roadside swale will be repaired as part of the project.

Paintball Area

The paintball course area is hydraulically isolated from the majority of the site. Runoff from the rest of the site is channeled away from the area. To mitigate any possible concerns about stormwater runoff from the paintball area, a one foot high earth berm will be constructed along the downstream edge of the field. The berm will contain runoff and help to percolate the 2-year 120-minute storm back into the groundwater. This mitigation will disconnect the paintball area runoff from discharging directly to the eroded roadside swale that ultimately discharges to Zayante Creek.

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Runoff Retention and Percolation

The site has been designed to maintain predevelopment permeability rates and percolate runoff back into the groundwater. Maintaining percolation rates and groundwater recharge for the 2-year 120-minute design storm will be provided by several infiltration BMPs. Runoff from the bike flow trails will be directed to infiltration trenches that will also serve as level spreaders. The infiltration trenches will store runoff and also it time to infiltrate into the surrounding groundwater. If the trenches overflow during larger storms, the water will bubble out of the level spreader and flow downslope. A percolation pit is also proposed by the pedestrian walkway to the bridge of Zayante Road. The earth berm in the paintball area will also serve to retain water in a portion of the paintball field.

Quantified calculations are included to demonstrate the ability of the onsite infiltration BMPs to maintain pre-development percolation rates for the 2-year 120-minute design storm (see Table 17). Calculations were performed according to SCCO Design Criteria, Section I, Runoff Retention by Storage Percolation Method. The BMPs have enough storage to store the increased runoff from the design storm so that it can be infiltrated back into the groundwater. Each of the BMPs structures will drain in less than 24 hours.

Conclusion

The project minimizes impervious surfaces to the maximum extent practicable, with 19,375 square feet of new impervious area proposed. The increase in runoff will be mitigated by a detention storage area that is designed to release runoff at predevelopment conditions. Biofiltration swales will filter runoff from driveways and parking lots. Predevelopment permeability rates will be maintained by proposed BMPs. Level spreaders will disperse and infiltrate runoff from the bike trails. As the predevelopment discharge rates are being maintained, additional negative downstream impacts are not anticipated with this project.

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RI Engineering, Inc.

DOWNSTREAM DRAINAGE ASSESSMENT

for

Mt Hermon New Property Development

at

Conference Drive
Santa Cruz, CA 95062
APN 071-331-05 & 06

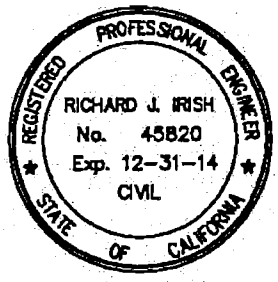
Application #131234

November 26, 2013

Prepared For:
Mt Hermon Association, Inc

Prepared By:
RI Engineering, Inc.

Project Number 13-034-1



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Mt Hermon New Property Development – Downstream Drainage Assessment
Conference Drive, Mt Hermon, CA 95062
November 2013

Downstream Assessment

In response to the request by the Santa Cruz County Department of Public Works, RI Engineering prepared a downstream impact assessment for the Mt Hermon New Property Development along Conference Drive. The property has two distinct drainage basins, referred to as Basin A and Basin B.

Basin A

Basin A encompasses the western portion of the Mt Hermon project site and the adjacent areas of Felton Faire shopping center, Conference Drive, Graham Hill Road, Covered Bridge Road and Covered Bridge Park. The majority of stormwater runoff from the eastern side of the Mt Hermon project site flows downslope to an existing well-defined swale in the Southwest corner of the project site. No active drainage erosion was noted during the site visit. See photo #1 included in the attached *Basin A – Downstream Drainage Photos*, taken October 18th, 2013. Stormwater runoff from the western side of the Mt Hermon project site within Basin A flows southerly to Conference Drive. A shallow, grass-lined swale along Conference drive captures the runoff and conveys flow westward along the roadway (photo #2). The roadside swale is vegetated and no active drainage erosion was noted. The well defined swale and roadside swale combine and flow westward in the field parallel to Graham Hill Road.

The combined swale discharges into a 16 inch HDPE stormdrain with a concrete headwall in the field adjacent to Graham Hill Road (photo #3). At this point the downstream drainage path is within the FEMA floodplain AE. An additional 12 inch HDPE culvert outlets into this swale just upstream of the headwall. This culvert's orientation suggests it is draining an unknown area of the Felton Faire shopping center. A 100 foot long 16 inch HDPE connects the headwall inlet to a drainage inlet along the curbline of Graham Hill Road at the entrance to the shopping center. Another 24 foot long 16 inch HDPE discharges from the curb inlet to a grated inlet in the entrance lane to the shopping center (photo #4). It is assumed that this catch basin serves as a junction box with an additional stormdrains from the shopping center's parking lot drainage system.

The grated inlet in the paved entrance discharges to a 24 inch RCP culvert that conveys water under Graham Hill Road and outlets to an existing roadside swale along the west side of Covered Bridge Road. The outlet of the 24 inch RCP pipe is partially blocked with sediment buildup (photo #5). At this point the downstream runoff enters the FEMA floodway. Runoff travels along a roadside swale of Covered Bridge road for approximately 100 feet before entering an 18 inch RCP culvert at the paved entrance to a gas station (photos #6-7). This gas station culvert's outlet is also partially blocked with sediment buildup (photo #8). The grass lined swale along Covered Bridge Road continues approximately 350 feet southwesterly before entering a concrete headwall with a 24 inch CMP culvert under a concrete pedestrian bridge to the Covered Bridge Park (photos #9-11). The pipe outlets to a swale that conveys water adjacent to the Felton Covered Bridge and into the San Lorenzo River (photo #12-14). Analysis of Basin A concludes at the confluence of this swale with the San Lorenzo River.

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Mt Hermon New Property Development – Downstream Drainage Assessment
Conference Drive, Mt Hermon, CA 95062
November 2013

The existing downstream drainage system in Basin A was analyzed for the 10-year, 25-year, and 100-year design storms by SCCO SWM fig. 6. All downstream pipes and swales have been analyzed along the downstream flowpath to the San Lorenzo River. The results of the drainage system analysis are shown in the table below, for detailed calculations see attached calculations. Notation of "W.S. Overtops" below indicates that the inlet is submerged to the extent that the water surface overtops the inlet grate or adjacent top of bank.

Junction	Type	Location	10-year	25-year	100-year
A-swale	Grass Lined	Leaving project site			
B-pipe	16" HDPE	Graham Hill Road			W.S. Overtops
C-pipe	16" HDPE	Graham Hill Road			W.S. Overtops
D-pipe	24" RCP	Graham Hill Road			W.S. Overtops
E-swale	Grass Lined	Covered Bridge Road			W.S. Overtops
F-pipe	18" RCP	Covered Bridge Road	W.S. Overtops	W.S. Overtops	W.S. Overtops
G-swale	Grass Lined	Covered Bridge Road			W.S. Overtops
H-pipe	24" RCP	Covered Bridge Road			W.S. Overtops
J-swale	Bare Earth	San Lorenzo River			W.S. Overtops

The results of the analysis are discussed below.

- The existing culvert at the gas station does not have capacity to convey the 10-year or greater design storm.
    - Runoff will overtop the entrance and re-enter the swale downstream of the gas station.
- All of the remaining culverts have their entrance grates overtopped during the 100-year design storm.
    - All of the culverts are within the FEMA 100-year Floodplain AE, and the entire area is likely to be inundated with water.
    - Drainage features south of Graham Hill Road are located within the FEMA 100-year floodway.
    - Drainage features are expected to be operating in a submerged condition and unable to pass 100–year design flow without overtopping.
- The existing drainage conditions of the San Lorenzo River Basin cause the area to be inundated with water during the 100-year storm event, and localized drainage improvements would have minimal little effect on the overall flooding.

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Basin B

Basin B encompasses the eastern side of the proposed site, portions of East Zayante Road, and a low-density residential area north of the project site. Runoff from Basin B drains southeastwardly to an existing roadside swale along East Zayante Road (Basin B photos #2-8). The swale conveys water south along the roadway. Portions of the swale have the eroded away and exposed rocks below the erodible soil (photos #4-6). The roadside swale transitions onto the roadway and gutter flows along East Zayante Road just south of the Conference Drive Bridge (photo #9). Runoff then flows along the curbline of East Zayante Road to a catch basin at the Northwest corner of the intersection with Graham Hill Road (photo #10). Runoff is routed from to another catch basin on the southwest corner of the intersection, and then to another catch basin at the southeastern corner of the intersection. No information about culvert sizes was found on Santa Cruz County GIS. They are assumed to be 24 inch RCP pipes. Runoff is conveyed by a stormdrain from this catch basin to Zayante Creek via an outlet under the Graham Hill Bridge. The outlet stormdrain is a 24 inch pipe (photo #11-12). Analysis of Basin B concludes at outfall of this 24 inch stormdrain into Zayante Creek. Zayante Creek meets the San Lorenzo River approximately 1,000 feet downstream of the East Zayante Road and Graham Hill Road intersection.

The existing downstream drainage system in Basin B was analyzed for the 10-year, 25-year, and 100-year design storms by SCCO SWM fig. 6. All downstream pipes have been analyzed along the downstream flowpath to Zayante Creek. The results of the drainage system analysis are shown in the table below, for detailed calculations see attached calculations. Notation of "W.S. Overtops" below notes that the inlet is submerged and the water surface is over the inlet grate elevation.

Junction	Type	Location	10-year	25-year	100-year
A-pipe	24" RCP	Graham Hill Road			W.S. Overtops
B-pipe	24" RCP	Graham Hill Road			W.S. Overtops
C-pipe	24" RCP	Graham Hill Road			W.S. Overtops

Results of Analysis

- The roadside swale along E Zayante Road is showing signs of erosion
- The downstream drainage facilities have capacity for the 10-year and 25-year design storms
- The downstream drainage facilities are located within the FEMA floodplain AE
    - They are anticipated to be inundated with floodwater during the 100-year flood
- The downstream drainage facilities do not have the capacity to convey the 100-year design storm because the outlet control will be submerged to a depth approximately equal to the top of grate elevations for the catch basins in Graham Hill Road
- The existing drainage conditions of the Zayante River Basin cause the area to be inundated with water during the 100-year storm event, and localized drainage improvements would have minimal effect on the overall flooding.

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ATTACHMENT 2

SUGGESTED PLANT LIST

TREES

SYM	BOTANICAL AND COMMON NAMES	SIZE
	CANOPY TREES	
	• ACER MACRORUM X VAR. CALIFORNICUM - CALIFORNIA BOX ELDER	
	• PISTACHIA ATLANTICA 'KATWOOD' - LONDON PLANE TREE	
	• QUERCUS AGRIFOLIA - COAST LIVE OAK	
	• QUERCUS KELLOGGII - VALLEY OAK	
	ORNAMENTAL FLOWERING TREES	
	• ARBUTUS UNEDO 'E.C. - MADRONE	
	• CERCIS OCCIDENTALIS - WESTERN REDBUD	
	• LAGERSTROEMIA INDICA 'TUSCARORA' - CRAPE MYRTLE	
	• PRUNUS CERASIFERA - CHINESE PISTACHE	
	CONIFEROUS TREES	
	• SEQUOIA SEMPERVIRENS - COAST REDWOOD	

SHRUBS

SYM	BOTANICAL AND COMMON NAMES	SIZE
	2' - 3' ACCENT SHRUBS	
	• ACHILLEA MILLEFOLIUM - YARROW	
	• ARCTOSTAPHYLOS 'MONTEREY CARPET' - MANZANITA	
	• ARCTOSTAPHYLOS 'SUNJUNIPER' - MANZANITA	
	• CALIFORNIA ROSEA - ROSA CALIFORNIA	
	• CORREA 'DUSKY BELLS' - DUSKY BELLS CORREA	
	• DRYOPTERIS ARGATA - WOOD FERN	
	• POLYSTICHUM MUNITUM - SWORD FERN	
	• PTERIDIUM AQUILINUM - BRACKEN FERN	
	• RIBES VIBURNIFOLIUM - EVERGREEN CURRANT	
	3' - 4' FLOWERING EVERGREEN SHRUBS	
	• BERBERIS THUNBERGII - BARBERRY	
	• LAVANDULA AUGUSTIFOLIA - ENGLISH LAVENDER	
	• SALVIA CLEVELANDII - CLEVELAND SAGE	
	• RIBES CALIFORNICUM - FLOWERING CURRANT	
	3' - 6' EVERGREEN SHRUBS	
	• ARCTOSTAPHYLOS 'HOWARD MCMINN' - HOWARD JAMINN MANZANITA	
	• CEANOTHUS THYRSIFLORUS - BLUE BLOSSOM	
	• CISTUS 'BLANCHE' - ROCKROSE	
	• HETEROMELES ARBUTIFOLIA - TOYON	
	EPHEMERAL DRAINAGE AND RIPARIAN CORRIDOR ENHANCEMENT PLANTS	
	CREEK BOTTOM/TOP OF CHANNEL	
	• MUGWORT (ARTEMISIA DOUGLASIANA)	
	• SPEARMINT (MENTHA SPICATA)	
	CHANNEL BANK AND TOP OF BANK	
	• COFFEE BERRY	
	• RIBES SANGUINEUM - FLOWERING CURRANT	
	• ROSA CALIFORNICA - CALIFORNIA ROSE	
	• SAMBUCUS MEXICANA - BLUE ELDERBERRY	

GROUNDCOVERS

SYM	DESCRIPTION
	MEADOW GRASSES - AGROSTIS PALLENS - NATIVE BENTGRASS
	SOD TURF - BLUE GRASS / RYE MIX - 60% / 20%
	NATIVE MOW FREE FESCUE MIX TURF
	CALIFORNIA COASTAL WILDFLOWER MIX • ANAGALLIS MONELLI - BLUE PIMPERNEL • CLARKIA AMOENA - GODETIA • CLARKIA UNGUICULATA - GODETIA, MOUNTAIN GARLAND • COLLINSIA HETEROPHYLLA - CHINESE HOUSES • DIMORPHOTHECA SINUATA - AFRICAN DAISY • ESCHSCHOLZIA CALIFORNICA - CALIFORNIA POPPY • GILIA CAPITATA - GLOBE GILIA • GILIA TRICOLOR - GILIA, BIRD'S EYES • LASTHENIA GLABRATA - GOLDFIELDS • LAYIA PLATYGLOSSA - TIDY TIPS • LINANTHUS PARVIFLORUS - SWEET ALYSSUM • LUPINUS BICOLOR PEDAT - LEAF LUPINE • LUPINUS HIRSUTISSIMUS - YELLOW LUPINE • LUPINUS SUCTUSENTUS - ARROYO LUPINE • MALCOMIA MARITIMA - VIRGINIA STOCK • NEMOPHYLA MACULATA - FIVE SPOT • NEMOPHILA MENZIESII - BABY BLUE EYES • OENOTHERA CHEIRANTHIFOLIA - BEACH EVENING PRIMROSE • OENOTHERA HOOKERI - EVENING PRIMROSE
	EXISTING NATIVE GRASSES
	EXISTING EPHEMERAL DRAINAGE AND RIPARIAN CORRIDOR PLANTING - REFER TO BIOLOGICAL REVIEW REPORT - FIGURE 1
	EXISTING NATIVE GRASS GRASSLAND AREA - REFER TO BIOLOGICAL REVIEW REPORT - FIGURE 1
	STIPA PULCHRA - PURPLE NEEDLE GRASS - MITIGATION PLANTING FOR REMOVE NEEDLE GRASS

TREE REMOVAL LEGEND

- LIMIT OF WORK
- TREES TO BE REMOVED
- TREES TO REMAIN AND BE PROTECTED

TREE NO.	BOTANICAL/COMMON NAME	DIA. @ 54"	CONDITION	CRITICAL ROOT ZONE FOOTAGE
3	BOX ELDER	11.2"	GOOD	5
4	VALLEY OAK	13 & 13	FAIR	9
16	COASTAL LIVE OAK	14.6"	GOOD	7
33	COASTAL LIVE OAK	(3) -13" TRUNKS	GOOD	15
34	BOX ELDER	10 STEMS	GOOD	15
40	BOX ELDER	(5) - 8"	FAIR	10
42	BOX ELDER	2 STEMS	FAIR	10
46	INTERIOR LIVE OAK	24" - 14"	GOOD	10
47	BOX ELDER	6" - 6"	FAIR	10
48	BOX ELDER	9"	FAIR	5
49	BOX ELDER	10 STEMS 6"-10"	FAIR	10
70	COTTONWOOD POOR CONDITION, NOT SUITABLE FOR PRESERVATION / REMOVE	11"	POOR	8
103	BOX ELDER POOR CONDITION, NOT SUITABLE FOR PRESERVATION / REMOVE	MULTI	POOR	10

TREE NO.	BOTANICAL/COMMON NAME	DIA. @ 54"	CONDITION	CRITICAL ROOT ZONE FOOTAGE
134	BOX ELDER STANDING DEAD / REMOVE	9"	POOR	5
139	BOX ELDER STANDING DEAD / REMOVE	7" & 10.5"	POOR	7

NOTE:
BECAUSE OF THE LARGE QUANTITIES OF TREES TO REMAIN. REFER TO EXISTING PLANTING PLAN AND LEGEND.

SITE / MATERIAL LEGEND

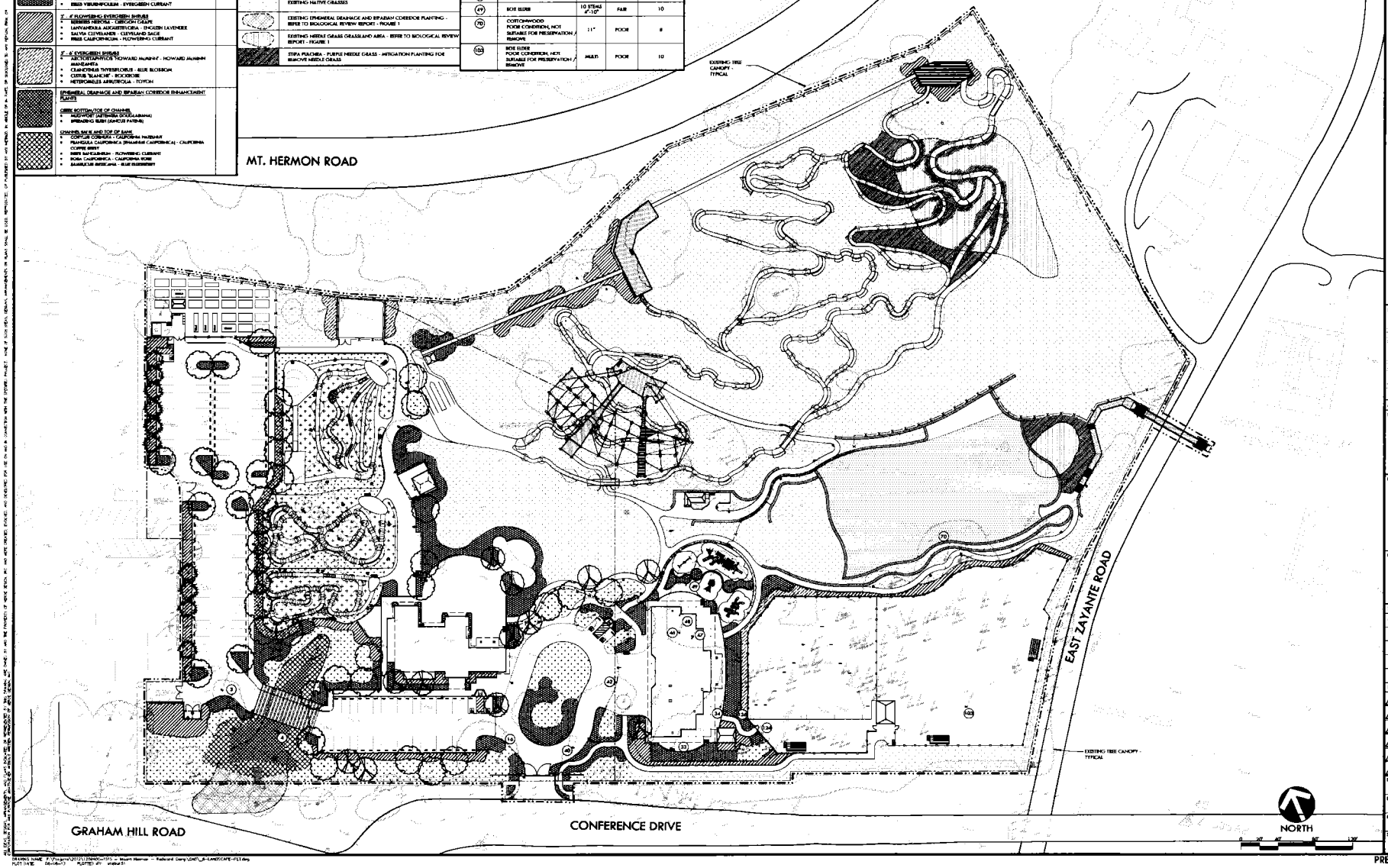
SYM	DESCRIPTION
	TRASH AND RECYCLING RECEPTACLES
	SHOTCRETE WALLS WITH STONE TEXTURE - FOR HEIGHT OF WALLS SEE SHEET C3 AND C4

PLANTING NOTES

1. CONTRACTOR SHALL PLACE PLANT MATERIALS SO THEY DO NOT INTERFERE WITH IRRIGATION SYSTEM OR INHIBIT REQUIRED COVERAGE. PLANT LOCATIONS MAY BE ADJUSTED AS LONG AS DESIGN INTENT IS NOT COMPROMISED. CONTRACTOR SHALL SET OUT PLANT MATERIAL AS PER PLAN AND RECEIVE ACCEPTANCE FROM OWNER'S REPRESENTATIVE WITH RESPECT TO PLANT HEALTH AND LOCATION PRIOR TO INSTALLATION. CONTRACTOR SHALL GIVE MINIMUM 2 WORKING DAYS NOTICE FOR OBSERVATION AND SHALL HAVE ALL PLANT MATERIAL ON SITE PRIOR TO OWNER'S REPRESENTATIVE.
2. ALL SHRUB PLANTING AREAS SHALL RECEIVE A 3" LAYER OF MULCH TOP DRESS UNLESS NOTED OTHERWISE, REFER TO SPECIFICATIONS.
3. WHEN WORK HAS TO OCCUR UNDER THE DRIPLINE OF EXISTING TREES NOT SCHEDULED FOR REMOVAL, THE CONTRACTOR SHALL USE ALL POSSIBLE CARE TO AVOID INJURY TO THE TREES AND TREE ROOTS. GRADE IN LINES RADIAL TO THE EXISTING TREES RATHER THAN TANGENTIAL. ALL PARTIAL CUTS OR TEARS THROUGH ROOTS TWO INCHES IN DIAMETER AND LARGER SHALL BE CUT CLEAN. TRENCHES WITHIN DRIPLINE OF TREES SHALL BE FILLED WITHIN 24 HOURS AFTER EXCAVATION, BUT WHERE THIS IS NOT POSSIBLE, THE SIDE OF THE TRENCH ADJACENT TO THE TREE AND ANY EXPOSED ROOTS SHALL BE KEPT SHADED AND MOIST WITH DAMPENED BURLAP OR CANVAS.
4. ALL TURF, SHRUB AND PLANTER AREAS TO RECEIVE SOIL AMENDMENTS AND SOIL PREPARATION AS SPECIFIED IN SOILS AND FERTILITY REPORT.
5. CONTRACTOR SHALL PROVIDE JUTE NETTING IN GRADED PLANTING AREAS OF 3:1. STAKE JUTE NETTING 36" ON CENTER.
6. ALL TREES ARE TO BE 15 GALLON UNLESS NOTED OTHERWISE, AND ALL SHRUBS ARE TO BE 5 GALLON UNLESS NOTED OTHERWISE.
7. AN ASTOMATICALLY TIMED IRRIGATION SYSTEM CONSISTING OF SPRAY AND DRIP COMPONENTS WILL BE USED.

TREE PROTECTION AND REMOVAL NOTES

1. WHEN CONSTRUCTION OR DEMOLITION WORK HAS TO OCCUR UNDER THE DRIPLINE OF EXISTING TREES NOT SCHEDULED FOR REMOVAL THE CONTRACTOR SHALL USE ALL POSSIBLE CARE TO AVOID INJURY TO THE TREES AND TREE ROOTS. GRADE IN LINES RADIAL TO THE EXISTING TREES RATHER THAN TANGENTIAL. ALL PARTIAL CUTS OR TEARS THROUGH ROOTS TWO INCHES IN DIAMETER AND LARGER SHALL BE CUT CLEAN. TRENCHES WITHIN DRIPLINE OF TREES SHALL BE FILLED WITHIN 24 HOURS AFTER EXCAVATION, BUT WHERE THIS IS NOT POSSIBLE, THE SIDE OF THE TRENCH ADJACENT TO THE TREE AND ANY EXPOSED ROOTS SHALL BE KEPT SHADED AND MOIST WITH DAMPENED BURLAP OR CANVAS.
2. PRIOR TO ANY DEMOLITION WORK, THE CONTRACTOR SHALL PROTECT ALL EXISTING PLANT MATERIAL NOT SCHEDULED FOR REMOVAL BY INSTALLING TEMPORARY SIX (6) FOOT HIGH "CHAIN LINK" CONSTRUCTION SAFETY FENCING AT THE TREE DRIPLINES OR THE PERIMETER OF THE TREE GROUPINGS. THE FENCING SHALL BE SECURED WITH DRIVEN METAL STAKES. ALL TREE PROTECTION WORK SHALL BE SUBJECT TO THE DISCRETION OF THE PROJECT ARBORIST.
3. CONTRACTOR SHALL REMOVE TREES AND ROOTBALLS INDICATED FOR REMOVAL. ALL ROOTBALLS SHALL BE MECHANICALLY DUG OR PULLED OUT.
4. CONTRACTOR SHALL CUT TREE AT GRADE AND REMOVE TREE, LIMBS AND ANY DEBRIS FROM TREE CREATED DURING TREE REMOVAL. CONTRACTOR SHALL REMOVE ROOTBALL BY GRINDING TO A MINIMUM DEPTH OF 24", REMOVE ALL SHARPNESS AND FILL VOID WITH COMPACTED SOIL. NOT SHAVINGS OR CHIPPED WOOD.
5. CONTRACTOR TO REMOVE ALL SAPLINGS OR SUCKER GROWTH AROUND TREES TO REMAIN.
6. ARBORIST WILL FLAG OR DESIGNATE TREES TO REMAIN, AND BE REMOVED.
7. CONTRACTOR TO SUPPLY AND INSTALL FENCE AND GATE THAT SECURES SITE AT ENTRY TO ELIMINATE SITE ACCESS BY THE PUBLIC. KEY OR LOCKING DEVICE TO BE PROVIDED TO CITY.



VERDE DESIGN
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
SPORT PLANNING & DESIGN
2444 Main Street
Santa Cruz, CA 95060
tel: 831.786.7300
fax: 831.786.7304
www.VerdeDesign.com

STAMP

REGISTERED LANDSCAPE ARCHITECT — JAMES BURR — No. 4148 — EXPIRATION DATE 08-31-13 — STATE OF CALIFORNIA

CONSULTANT

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-331-05, 06

SHEET TITLE
PRELIMINARY LANDSCAPE PLAN

PROJECT NAME
MOUNT HERMON NEW LAND DEVELOPMENT

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
COUNTY PLANNING SUBMITTAL	08/06/13

NO.	REVISIONS	DATE

DRAWN BY	CHECKED BY
RK	DM / CMS
DATE ISSUED: 08/06/13	SCALE: 1"=40'-0"

PROJ. NO. 1209400-1515

SHEET NO. L6.0 OF SHEETS

PRELIMINARY LANDSCAPE PLAN

DRAWING NAME: P:\projects\2012\1209400-1515 - Mount Hermon - Redwood Camp\CAD_LS-LANDSCAPE-PLT1.dwg
PLOT DATE: 08-06-13 PLOTTED BY: shadow21

mount**hermon**
lives transformed.

June 28, 2013

SUBJECT: GOOD FAITH PROMISE TO PROVIDE WATER SERVICE TO:
APN's: 071-331-05, 071-331-06

The proposed development currently being planned for parcels 071-331-05 and 071-331-06 by the Mount Hermon Association, Inc., will be connected to the existing water system owned and operated by the Mount Hermon Association, Inc. This connection will provide service for domestic uses and fire suppression.

If you have any further questions, please call me at 430-1204.

Sincerely yours,

Dale Pollock
Mount Hermon Water System
37 Conference Drive
Mount Hermon CA 95041
CDPH System # 4410008

ATTACHMENT 8

Site Assessment
For
Onsite Wastewater System
Zayante Oaks Affordable Housing Project
Felton, California

Prepared for:

South County Housing
Attn: Andy Lief
9015 Murray Avenue, Suite 100
Gilroy, CA 95020

February 2008

FALL CREEK ENGINEERING, INC.
CIVIL • ENVIRONMENTAL • WATER RESOURCE ENGINEERING AND SCIENCES

TEL. (831) 426-9054 P.O. Box 7894, SANTA CRUZ, CA 95061 FAX. (831) 426-4932

ATTACHMENT 8

Site Assessment
For
Onsite Wastewater System
Zayante Oaks Affordable Housing Project
Felton, California

Prepared for:

South County Housing
9015 Murray Avenue
Gilroy, California

Prepared by:

PETER HAASE, P.E.
Principal Engineer

February 2008

ATTACHMENT 9

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1. INTRODUCTION

South Country Housing is proposing to develop an affordable housing complex on their property located adjacent to the Felton Fair Shopping Center between Graham Hill Road, Conference Road, and Mount Herman Road. Figure 1 shows a vicinity map. Fall Creek Engineering, Inc. (FCE) has been retained to evaluate the site to determine the feasibility of installing an onsite wastewater system for the proposed development.

The property is currently undeveloped land, with meadows and oak woodland on the lower areas and chaparral on the hillsides.

The site is made up of two parcels 071-331-05 and -06 that comprise approximately 15 acres. The flat field area adjacent to the Felton Fair Shopping center is the proposed housing development location. The development will include 31 single family dwellings and a senior residence building with 23 single (1-bedroom) apartments and 1 double (2-bedroom) apartment.

2. KEY REGULATORY ISSUES

Several regulatory issues must be addressed to assess the technical viability of onsite wastewater treatment and disposal at the property:

1. Demonstrating that there is adequate separation between groundwater and the proposed leach field trenches or alternative land disposal system;
2. Determining that the soil conditions are adequate for wastewater disposal;
3. Demonstrating that the disposal area will meet setback requirements from surface water resources (springs, rivers and drainage courses), the proposed water supply well, and other site improvements; and
4. Demonstrate that there is sufficient area to construct a leachfield disposal area, including the required expansion area.

The following sections summarize the results of the assessment study which address these issues.

2.1. Groundwater Separation

Maintaining adequate separation between the depth that wastewater is applied to soil and shallow groundwater is a key environmental and public health concern. Santa Cruz County Environmental Health Service's (SCCEHS) On-site Sewage Disposal System Groundwater Separation Requirements establishes minimum groundwater separation values for specific environmental conditions. For the disposal of treated wastewater, that is at least 100 feet from a water body (such as spring, stream, or other) and wells, the minimum separation to groundwater shall be at least three (3) feet.

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Winter water testing was conducted this season in the vicinity of the proposed leachfield area. The winter water testing completed in January and February 2008 indicate that there is over three feet of separation between the bottom of the leachfield trench and groundwater. The results of the site investigation are presented in Section 3.

2.2. Capacity of Soil to Accept Wastewater

The County of Santa Cruz establishes requirements for soil suitability based on percolation tests. A soil is considered to be suitable for subsurface disposal of wastewater if the soil has a percolation rate between a lower and upper limit (such as 1 minute per inch (mpi) to 120 mpi). Percolation tests were conducted in the vicinity of the proposed leachfield at several depths on the site. The results indicate that soils were found to have moderate percolation rates that are suitable for disposal of wastewater. The results of the percolation tests are summarized in Section 3.

2.3. Potential Impacts to Surface Water Quality

The property contains numerous seeps and springs that flow across the lower parts of the site during winter and spring months. The origin of the seepage issuing from such seeps and springs appears to be local shallow saturated soils or perched groundwater. Santa Cruz County EHS requires that disposal areas be setback a minimum of 100 feet from streams, wells, springs, and water courses. The active springs and seeps have been identified and marked during the site assessment (see Figure 4). A "spring line" has been demarcated on the map and the proposed leachfield area is setback a minimum of 100 feet from this line. No springs or seeps have been encountered in the area of proposed leachfield. This site was evaluated and found to be suitable for disposal of wastewater and it would meet the setback requirements needed to protect surface water resources on the site.

Zayante Creek is also in close proximity to the south side of the property. Any proposed leachfield will need to be installed at least 100 feet from the Creek. Both the primary and expansion leachfield areas are over 100 feet from Zayante Creek.

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3. SITE ASSESSMENT

This section presents the results of the site assessment study conducted at the project site. The following sections present information on projected water use and soil and groundwater conditions.

3.1. Setting

The property is located adjacent to the Felton Fair Shopping Center between Graham Hill/Conference Road and Mount Herman Road. The site and surroundings are shown on Figure 1, a vicinity map. The land is undeveloped open space.

The site is comprised of two parcels 071-331-05 and -06, with an area of approximately 15 acres. The majority of the land is meadows, with areas of brush and trees as shown on Figure 2. The project site was used historically for grazing horses and cattle.

3.1.1. Topography

The topography of the site is split along three distinct slope types. More than half the property is less than 15% slope. The balance of the property is predominantly between 15 and 30% with a small percentage of slope above 30%. The slopes of 15% and greater are all in the north east quadrant of the site. Figure 3 shows the slope zones. The area of the proposed leachfields is located on the site with less than 5 percent slopes.

3.2. Wastewater Flow Projections

The amount of wastewater generated by the proposed project is an important factor in the site evaluation phase of the project because the daily wastewater flow determines the amount of area required for land disposal. And the results of the site assessment work should determine if there is sufficient land available to accommodate the planned development.

Currently, the planned development will include up to 31 single family homes, 23 single residence senior apartments and one double occupancy apartment. Based on information provided by South County Housing the 31 single family homes will range from 2 to 4 bedroom homes with an average occupancy of 4 per unit. Wastewater flow projections have been made using unit flow values adopted by the County of Santa Cruz for residential developments equal to 75 gallons per person per day. Based on this per capita unit flow rate, the total daily projected wastewater flow from the planned development is approximately 12,075 gallons per day. Table 4 summarizes the calculations used to complete the projected wastewater flow estimates.

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Table 1. Wastewater Flow Estimates for the Development Project

Projected Wastewater Production					
Source	Units	Person/ Unit	Total Occupant	Wastewater/ Occupant day (g)[1]	Total Daily Wastewater (g)
Homes	31	4	124	75	9,300
Elder Units	23	1.5	34.5	75	2,588
	1	2.5	2.5	75	188
Total	55		161		12,075

[1] From Santa Cruz County Environmental Health Services

3.3. Subsurface Investigation

FCE has conducted a subsurface investigation in the vicinity of the proposed leachfield area. In May 2007, FCE installed six (6) test pits using a backhoe. In August 2007, FCE installed four piezometers, and in January 2008, FCE completed percolation tests.

Test Pits. Six (6) test pits were dug in the area of the proposed leachfield area. The test pits were dug with a backhoe to a depth of approximately 13 to 14 feet. The location of the test pits is shown in Figure 4 and Logs of the test pits are presented in Appendix A.

In general, the pits all revealed that the surface soils 0 to 2.5 feet deep are dark brown loam top soil, indicative of a well developed A horizon. The B horizon material varied between silt to fine sand to a depth of 7 to 9 feet below ground surface (bgs). The deeper soils encountered from 7 to 14 feet bgs consisted primarily of medium to coarse sands with interbedded gravel and cobbles.

Piezometers. A total of four piezometers were installed on the site in the vicinity of the leachfield area in August 2007. The piezometers were installed using a nine inch auger attached to a backhoe. The piezometers were installed to depths of 20 to 22 feet and the piezometer logs are presented in Appendix B. The piezometers were installed to monitor the groundwater levels during winter wet weather conditions. Figure 4 shows the location of the piezometers. Since October 2007, FCE has conducted routine monitoring of the piezometers. The results of the testing is summarized in Table 2. Many groundwater observations were conducted with county staff.

The results of the groundwater monitoring information collected this winter and during the winter water test period indicate that leachfields can be installed in the proposed area and meet the groundwater separation requirements established by the County of Santa Cruz.

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Table 2. Piezometer Monitoring Data

Date	P11	P12	P13	P14
	Total Depth of Piezometer (ft)			
	20	27	31	22
	Depth to Water (ft)			
10/12/07	dry	dry	dry	18.2
10/15/07	dry	dry	dry	18.2
12/21/07	dry	dry	dry	17.8
01/07/08	dry	dry	dry	17.1
01/11/08	dry	dry	dry	16.8
01/29/08	17.00	13.35	17.60	15.75
01/30/08	NM	13.55	NM	NM
01/31/08	15.85	13.60	17.40	15.60
02/05/08	13.20	12.20	17.20	15.38

Percolation Testing. Three percolation tests were performed in the vicinity of the leachfield area at three soil depths (36", 60", and 84"). Figure 4 shows the locations of the percolation tests. The percolation tests were completed in accordance with the County of Santa Cruz requirements and witnessed by county staff. (Soil Evaluation and Testing Procedures EHS-72 [Rev 5/98]).

The test results indicate that the soils have moderate percolating soils ranging from 10 to 20 minutes per inch (MPI). The percolation test results indicate that the soils are suitable for the disposal of treated wastewater. The test results are summarized in Table 3 and a copy of the test results are shown in Appendix C.

Table 3. Percolation Testing Results (minutes/inch)

Test Hole	Depth (Ft)	Percolation Rate (min/in)
1	7	20
2	5	15
3	3	10

3.4. Disposal Area Requirements

The area required for disposal of wastewater is determined by several factors including the daily flow of wastewater, the characteristics of wastewater (treated or untreated), the soil conditions, wastewater application rate, and the dimensions of the disposal trench. Based on the results of the percolation tests, the soil conditions encountered, the intended disposal of treated wastewater, an application rate of 0.8 gallons per square foot of leachfield area was selected to size a leachfield system for the proposed project. Using this application rate and the peak daily flow of approximately 12,075 gallons per day of

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treated wastewater, approximately 15,094 square feet of leachfield trench will be required. Assuming that the trenches have an effective depth of 5 feet and are three feet wide, then approximately 1,161 lineal feet of trench or 12 trenches measuring 100 feet long would be required to dispose of the daily flow.

4. CONCLUSIONS

Based on the field work completed, FCE finds the following:

1. There are numerous springs located along the base of the hill slope that run along the east and southeast boundary of the property. Any leachfield will need to be setback at least 100 feet to protect these springs.

2. Soil conditions and groundwater monitoring in the vicinity of the proposed leachfields indicate this area is well suited for the disposal of treated wastewater.

3. The site assessment work indicates that there is sufficient area to install both primary and expansion leachfields in the area tested.

In conclusion, the results of the site assessment study indicate that the site has sufficient area, soil and ground water conditions that would support the on site disposal of 12,075 gallons per day. The results of the field tests are consistent with a previous study completed by Environmental Concepts in 1995, which found that the site was suitable for the disposal of approximately 14,400 gallons of treated effluent.

5. RECOMMENDATIONS

Based on the results of the site assessment work and in view of the proposed project, FCE recommends the following:

1. The proposed project should include an enhanced wastewater treatment system that will provide highly treated effluent to meet the County and State's requirements for over 50 % reduction of total nitrogen and will produce well treated effluent that substantially reduces the amount of solids discharged to any subsurface disposal system.

2. The on-site wastewater system should include a shallow drip dispersal system to reuse the treated effluent for landscape irrigation in the project. Based on the projected flow of 12,075 gallons per day, the project would require approximately 15,100 square feet or 0.35 acres of drip dispersal area to dispose of all of the wastewater on a daily basis.

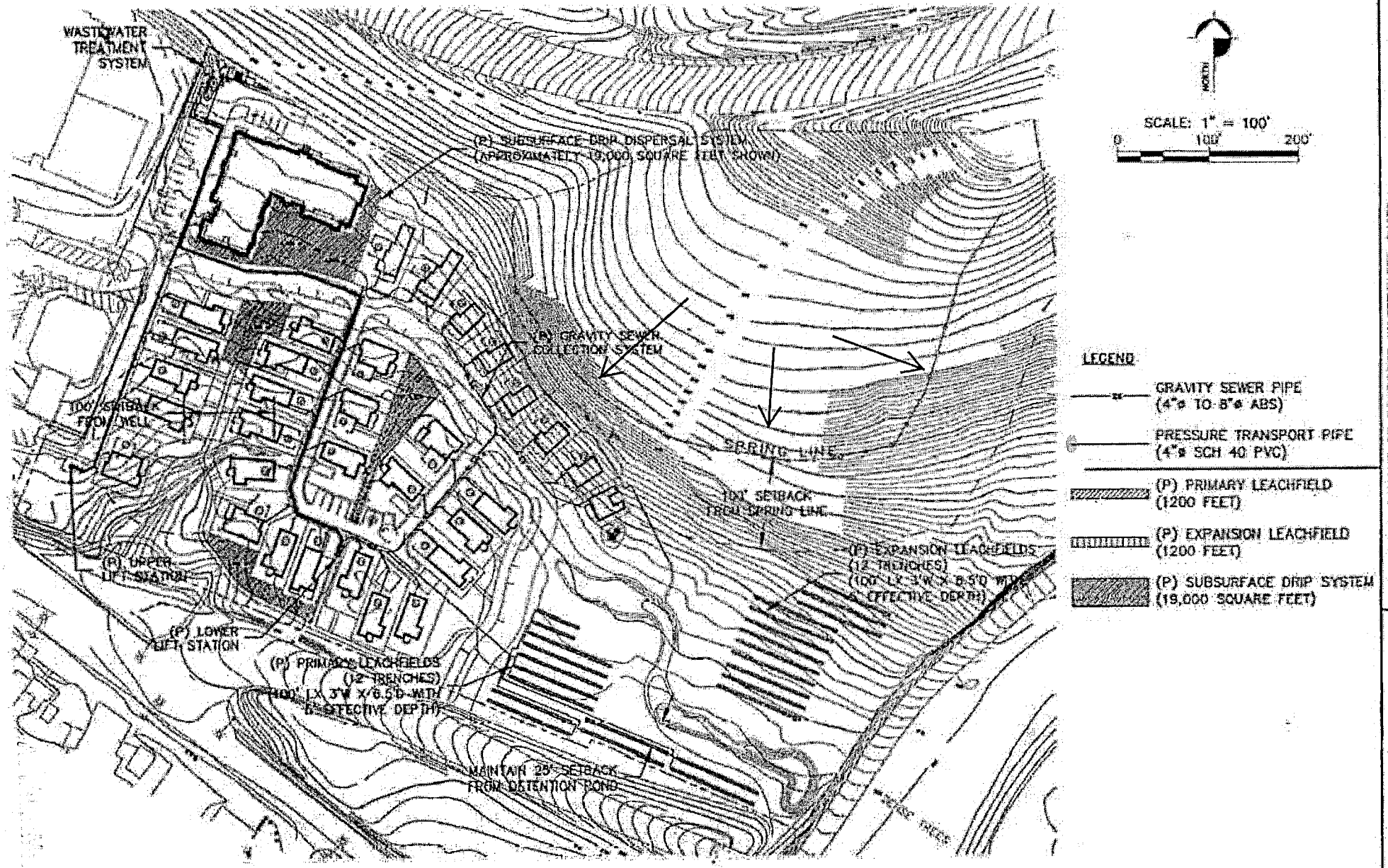

FIGURE 4, LAYOUT OF PROPOSED WASTEWATER SYSTEM
ZAYANTE OAKS AFFORDABLE HOUSING PROJECT,
FELTON, CALIFORNIA

FALL CREEK ENGINEERING, INC.
Civil • Environmental • Water Resource Engineering

Hatch Mott MacDonald
Delivering Solutions

MT. HERMON YOUTH RECREATION CENTER

FELTON, CALIFORNIA

TRAFFIC IMPACT ANALYSIS

Draft Report

Prepared For

Mt. Hermon Association

December 9, 2013

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Hatch Mott MacDonald
Delivering Solutions

MT. HERMON YOUTH RECREATION CENTER

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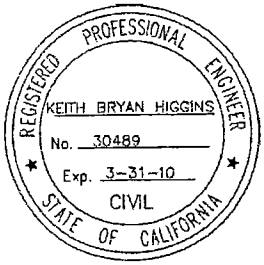

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1 INTRODUCTION

This Traffic Impact Analysis (TIA) presents an analysis of the traffic impacts for the proposed Mt. Hermon Youth Recreation Center residential development in Felton, Santa Cruz County, California. The proposed project would create a multi-activity recreation center on an existing vacant site that is accessed from Conference Drive. **Exhibit 1** shows the project location with respect to the local road network.

1.1 Project Description

The proposed project will develop a recreation center on property currently owned by the Mount Hermon Association. The activities at the center would include the following:

1. A mountain biking activity area (including a skills area, a large pump track and bike trails on slope);
2. A local community garden;
3. An adventure course;
4. A paint ball course; and
5. A youth education building.

All of the activities on the site would be open for public use, although they may be occasionally reserved for use by groups at the Mount Hermon Conference Center or other activities associated with the Mount Hermon Association.

The project would also have an off-site management office that would be located in the existing Felton Faire Shopping Center.

1.2 Scope of Work

The scope of work for this traffic study was developed to identify the potential traffic impacts that may be associated with the development of project site. This traffic study analyzed the anticipated project traffic impacts on the local roadways in the project area. The study analyzes traffic conditions under these development scenarios:

- Existing Traffic Conditions;
- Background Traffic Conditions;
- Background Plus Project Traffic Conditions;
- Cumulative Without Project Traffic Conditions; and
- Cumulative Plus Project Traffic Conditions.

This traffic study includes a traffic impact analysis on intersection traffic operations during typical weekday AM and PM peak hours based on morning and evening peak hour traffic volumes Recommendations for improvements and mitigation measures to offset the traffic impacts from the proposed project are provided.

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The following intersections were analyzed as a part of the study:

1. Graham Hill Road/Highway 9;
2. Graham Hill Road/Mount Hermon Road;
3. Graham Hill Road/Conference Drive;
4. Graham Hill Road/E. Zayante Road;
5. Graham Hill Road/Roaring Camp Road (North); and
6. Conference Drive/Project Access Driveway.

In addition, a review of on-site circulation and parking demand was performed, based upon the project site plan included as **Exhibit 2.**

1.3 Traffic Operation Evaluation Methodologies and Level of Service Standards

Quantitative Levels of Service (LOS) analyses were performed for the study intersections and highway segments, based on the *2000 Highway Capacity Manual* methodologies. Intersection operations were evaluated using the SYNCHRO, traffic analysis software.

Intersection traffic flow operations were evaluated using a Level of Service (LOS) concept. Intersections are rated based on a grading scale of LOS A through LOS F, with LOS A representing free flowing conditions and LOS F representing forced flow conditions. The County of Santa Cruz has established LOS C as the minimum acceptable LOS for overall intersection operations. However, Santa Cruz County does consider a LOS D where costs, right of way acquisitions, or environmental impacts of maintaining operational standards under LOS policy are excessive and the capacity enhancements infeasible. Generally, LOS F operations on the minor street approach of two-way or one-way stop controlled intersections are considered the threshold warranting improvements.

For signalized intersections, average control delay per vehicle is utilized to define intersection level of service. Delay is dependent upon a number of factors including the signal cycle length, the roadway capacity (number of travel lanes) provided on each intersection approach and the traffic demand. **Appendix A1** shows the relationship between vehicle delay and the signalized intersection level of service categories. The SYNCHRO software program was utilized to calculate signalized intersection levels of service.

At all-way and two-way stop controlled intersections, the operating efficiency of vehicle movements that must yield to through movements were analyzed. The level of service for vehicle movements on the controlled approaches is based on the distribution of gaps in the major street traffic stream and driver judgment in selecting gaps. **Appendix A2** shows the relationship between the vehicle delay and level of service for two-way stop controlled intersections. The 2000 HCM calculates the level of service of the minor street approaches. Using this data, an overall intersection level of service was calculated. Both are reported in this study because traffic on the minor street approaches has the lowest priority of right-of-way at the intersection and is the most critical in terms of

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delay. The SYNCHRO software program was utilized to calculate intersection levels of service for intersections that are one and two-way stop controlled.

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2 EXISTING CONDITIONS

Access to the project site is provided by **Graham Hill Road** which extends to Highway 9 in downtown Felton as well as Mt. Hermon Road. To the southeast of the project site, Graham Hill Road is a two-lane rural highway that also extends to Highway 1 and the City of Santa Cruz approximately five miles to the south of the project. Graham Hill Road is a commuter route between the City of Santa Cruz and San Lorenzo Valley.

2.1 Existing Road Network

Highway 9 extends from Highway 1 in Santa Cruz through the San Lorenzo River Valley and into Santa Clara County to the north. It is a major commuter route for the San Lorenzo Valley and for some traffic between Santa Cruz and Santa Clara Counties.

Mt. Hermon Road is a two-lane rural highway that extends from Graham Hill Road easterly through the City of Scotts Valley to Highway 17. It is a regional arterial that connects the San Lorenzo Valley with Highway 17 and serves as a major commuter route. Other streets in the study area include East Zayante Road, which extends northeast from Graham Hill Road into a large rural development area northeast of Felton.

Conference Drive represents the southerly boundary of the project site. It is a two-lane collector road that extends from Graham Hill Road into the Mt. Hermon Conference Center and residential community. Project access will be provided from Conference Drive.

Roaring Camp Road is a connector road between Conference Drive and Graham Hill Road and serves as one of the main access routes into the Mt. Hermon Conference Center and community.

Major signalized intersections in the project vicinity that are anticipated to be impacted by the project include Graham Hill Road intersections with Highway 9, Mt. Hermon Road and Zayante Road. Graham Hill Road un-signalized intersections that are expected to be impacted by the project include Conference Drive and Roaring Camp Road (North).

Observations of traffic in the project vicinity indicate that the congestion appears to primarily be related to limited capacity at the Highway 9/Graham Hill Road intersection. This intersection is under Caltrans jurisdiction. The signal operation at the Highway 9/Graham Hill Road intersection includes separate phases for all four legs of the intersection. In other words, each approach to this intersection is given a separate green light to serve lefts, through and rights on that approach while all other approaches are stopped. The one exception is the right turn movement from westbound Graham Hill Road to northbound Highway 9 that operates with an overlap with the southbound Highway 9 to eastbound Graham Hill Road left turn movement. Split phasing is utilized rather than providing the more typical protected left turn phases because the existing left turn lanes on each intersection approach are relatively short. The opportunity to provide

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additional capacity at the intersection is limited due to the proximity of existing development on each of the intersection four corners.

2.2 Existing Transit Service

Transit service in Santa Cruz County is provided by the Santa Cruz Metro Transit District. Transit service in the Felton area is provided by SCMTD Routes 33, 34 and 35/35A. These routes are shown on Exhibits **3A** and **3B**.

SCMTD Route 33 serves the Felton area including Lompico Road and Zayante Road, but operates only during the San Lorenzo Valley School term. The bus operates once during the morning peak and once during the afternoon (school dismissal) peak. Service is provided on Graham Hill Road between Zayante Road and Highway 9 with a stop at Felton Faire (Graham Hill Road at Mt. Hermon Road). At Felton Faire, Route 33 riders can transfer to Routes 34 and 35.

SCMTD Route 34 provides service between San Lorenzo Valley Elementary, Junior and High Schools and south Felton with a stop at Felton Faire. The service is provided only during the school term and operates once during the morning peak and once during the afternoon peak.

SCMTD Route 35 operates year around and provides service between Santa Cruz and San Lorenzo Valley. The bus operates at one-half hour headways throughout the day with a stop at Felton Faire, but no service is provided on Graham Hill Road east of Felton Faire.

2.3 Existing Traffic Data

Existing intersection traffic counts were performed during the weekday AM (i.e. 7:00 – 9:00am) and PM (i.e. 4:00 – 6:00pm) peak hours at existing study intersections. The traffic counts were performed at the study intersections between October 29, 2013 and November 6, 2013.

Traffic counts along the Graham Hill Road corridor vary for each quarter of the year. Based on the data obtained from the Santa Cruz County Transportation Commission a seasonal adjustment of 1.041 was applied to the existing traffic volumes to adjust the volumes to reflect peak volumes during the summer season. The existing AM and PM peak hour traffic volumes are presented on **Exhibits 4A and 4B** respectively.

2.4 Existing Conditions Intersection Operations

2.4.1 Intersection Operations

Intersection levels of service under existing conditions are summarized on **Exhibit 5A.** Recommended intersection improvements are summarized on **Exhibit 5B.** Warrant

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worksheets are included within **Appendix B**. The LOS calculations for Existing Conditions are provided in **Appendix C** through **G**.

Under Existing conditions, all of the study intersections operate at acceptable levels of service with the exception of the Graham Hill Road/Highway 9 intersection. The Graham Hill Road/Highway 9 intersection operates at a LOS D during AM peak hour and LOS F during the PM peak hour.

The Graham Hill Road/Conference Drive intersection operates at overall LOS A during each peak hour with a deficient side-street Level of Service F during the AM peak hour and LOS D during the PM peak hour.

The Graham Hill Road/Roaring Camp Road (North) intersection operates at overall LOS A during each peak hour with a deficient side-street Level of Service F during the AM peak hour and LOS D during the PM peak hour.

2.4.2 Intersection Improvements

Graham Hill Road/Highway 9

The Graham Hill Road/Highway 9 intersection operates at a LOS D during AM peak hour and LOS F during the PM peak under existing conditions.

As previously stated the opportunity to provide additional capacity at the intersection is limited due to the proximity of existing development on each of the intersection four corners. During the PM peak, the movement requiring additional capacity is the westbound to northbound right turn movement. Providing a free westbound right turn lane with a 25 feet curb radius for the westbound Graham Hill Road to northbound Highway 9 movement would improve PM peak hour operations to LOS D. Santa Cruz County considers LOS D acceptable where costs, right of way acquisitions, or environmental impacts of maintaining operational standards under the County's LOS policy are excessive. This improvement would require right-of-way acquisition on the east side of Highway 9 north of Graham Hill Road.

Despite the side street operations of LOS F, improvements are not required at the following intersections:

Graham Hill Road/Conference Drive

The Caltrans peak hour signal warrant is not met at this intersection, and therefore no improvements are recommended.

Graham Hill Road/Roaring Camp Road (North)

The Caltrans peak hour signal warrant is not met at this intersection, and therefore no improvements are recommended.

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3 BACKGROUND CONDITIONS

This section describes Background Conditions, which includes estimated traffic conditions in five years. A conservative regional traffic growth of 1.26% per year (overall growth rate 6.3%) applied to existing intersection traffic volumes would account for the background impacts for the study area in 2018. The Background AM and PM peak hour volumes are illustrated on **Exhibits 6A and 6B** respectively.

3.1 Background Conditions Intersection Operations

3.1.1 Intersection Operations

Intersection levels of service under Background conditions are summarized on **Exhibit 5A**. Recommended intersection improvements are summarized on **Exhibit 5B**. Warrant worksheets are included within **Appendix B**. The LOS calculation worksheets are provided in ***Appendix C through G***.

All intersections operate overall at satisfactory levels under Background Conditions except the Highway 9/Graham Hill Road intersection, which operates at LOS D during the AM peak hour and LOS F during the PM peak hour.

The Graham Hill Road/Conference Drive intersection operates at LOS A overall during AM and PM peak hours with a deficient LOS F operation during the AM peak hour and LOS E during the PM peak hour on the northbound side street approach.

The Graham Hill Road/Roaring Camp Road (North) intersection operates at LOS A overall during both peak hours, but experiences LOS F operations on both side street approaches during the AM peak hour.

3.1.2 Intersection Improvements

Graham Hill Road/Highway 9

The Graham Hill Road/Highway 9 intersection operates at a LOS D during AM peak hour and LOS F during the PM peak.

The previously-recommended improvement at this intersection – provide a free right turn movement from westbound Graham Hill Road to northbound Highway 9 – would not fully improve operations to acceptable levels of service under Background conditions. In addition, it is recommended that a left turn lane be provided on the eastbound Felton Empire Road approach to Highway 9. This would require eliminating the on-street parking located on the south side of Felton Empire Road. This intersection would operate at a LOS D during both the AM and PM peak periods by implementing these improvements. Santa Cruz County considers LOS D acceptable where costs, right of way acquisitions, or environmental impacts of maintaining operational standards under the County's LOS policy are excessive.

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Despite operations of LOS F on the side streets, improvements are not recommended at the following intersections:

Graham Hill Road/Conference Drive

The Caltrans peak hour signal warrant is not met at this intersection, and therefore no improvements are recommended under Background conditions.

Graham Hill Road/Roaring Camp Road (North)

The Caltrans peak hour signal warrant is not met at this intersection, and therefore no improvements are recommended under Background conditions.

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4 BACKGROUND PLUS PROJECT CONDITIONS

This section provides a description of Background Plus Project conditions of the network, traffic volumes and intersection levels of service. The project trip generation, distribution and assignment are also addressed.

4.1 Project Description

The proposed project would be a recreation center on property currently owned by the Mount Hermon Association. The activities at the center would include the following:

1. A mountain biking activity area (including a skills area, a large pump track and bike trails on slope);
2. A local community garden;
3. An adventure course;
4. A paint ball course; and
5. A youth education building.

All of the activities on the site would be open for public use, although they may be occasionally reserved for use by groups at the Mount Hermon Conference Center or other activities associated with the Mount Hermon Association. The facility would be open seven days a week, although the education building would only operate on weekdays.

The mountain biking area, adventure course, paint ball area and community garden would operate between 8:00 AM and 8:00 PM during the summer months, and between 8:00 AM and 5:00 PM during other times of the year.

A total of 50 plots would be available at the community garden for use by the public.

During the summer months, the education building would operate as a day camp. The education building would be open between 7:00 AM and 7:00 PM with scheduled activities between 9:00 AM and 4:00 PM. During the school year there would be before and after school programs. As noted earlier, the education building would only operate on weekdays.

The project would also have an off-site management office that would be located in the existing Felton Faire Shopping Center. The office would be located near the eastern boundary of the shopping center, near the project site. Pedestrian access between the project site and the Felton Faire Shopping Center is possible via a gate in the fence located on the property boundary.

The facility as a whole would be aimed towards youth and young adults, although the facility would be open for use by patrons of all ages. Only the activities within the education building would be restricted to youth only.

At full project occupancy, the number of on-site patrons actively participating in on-site activities at any one time is summarized below in **Table 1,** itemized by project site area. This level of on-site activity could only occur during the summer months, which would represent the highest use period for the facility.

Table 1 — Proposed Number of Active On-Site Patrons at Any One Time (Full Occupancy)

Site Uses	On-Site Patron Population at Any One Time
Mountain Biking Area	
Skills Area	20 people
Pump Track	20 people
Bike Trails	60 people
Adventure Course	40 people
Paint Ball Area	20 people
Community Garden	10 people*
Education Building	100 people
Total:	**270 people**

The facility would also employ staff to oversee and manage each of the project site areas. A breakdown of the staffing for each project site area at full occupancy is summarized in **Table 2**.

Table 2 — Proposed Number of On-Site Employees at Any One Time (Full Occupancy)

Site Uses	On-Site Employee Population at Any One Time
Mountain Biking Area	5 staff
Adventure Course	9 staff
Paint Ball Area	4 staff
Community Garden	1 staff
Education Building	6 staff
Retail Area	4 staff
Total:	**29 staff**

The above staffing information is per shift. A total of two work shifts are expected per day. Again, this level of staffing is only expected during the summer months – lower staffing levels would occur during other times of the year, based upon the relative number of patrons visiting the site.

4.2 Project Trip Generation

A facility like the proposed project is unique; there are no standard trip generation rates for such a project. Therefore, a custom project trip generation was created using the project operating characteristics provided the Mount Hermon Association, along with assumptions developed by HMM.

Key trip generation assumptions include the following:

1) The trip generation, distribution, and assignment estimates have been prepared for a typical weekday during the summer months, which would represent the busiest time of the year for the facility. The trip generation estimate assumes full utilization of the facility.

2) Use of the mountain biking, adventure, and paint ball areas would be restricted to two-hour sessions. These sessions are assumed to continue back-to-back throughout the day.

3) Patrons will be allowed to use multiple project areas and attend multiple sessions at the same project area within the same visit.

4) It is assumed that only 75% of the community garden plots are visited each day, and that each of these visited plots are only visited once per day for approximately one hour.

5) The community garden would have an average activity level of 2 patrons per visited plot, with a maximum of 5 plots being visited at any one time. Patrons are assumed to remain on-site for approximately one hour per visit. Visits to individual plots are anticipated throughout the day, with the busiest time period expected to be in the morning hours (i.e. 8:00 AM to 11:00 AM).

6) The educational center is assumed to be at full capacity. All youth at the education building are assumed to be onsite during the period of scheduled activities (i.e. 9:00 AM to 4:00 PM).

7) Youth attending the education building would be attending elementary or middle school (i.e. ages 5 through 12).

8) Approximately 25% of all active patrons at the project would drive themselves and other patrons to the site, including young adults and high-school age attendees. The remaining 75% of patrons would be driven or dropped off by a parent or other relative/guardian who would not engage in any of the site activities.

9) The average youth occupancy (i.e. number of youth per car) is assumed as 1.5 youths per car.

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10) 5% of all patrons and employees are anticipated to walk to access the project site.

11) 10% of all patrons and employees are anticipated to bicycle or take public transit to access the project site.

12) All project site staff are assumed to be new staff, not currently employed by the Mount Hermon Association.

13) A total of two employee shifts are assumed for all areas of the site, which each shift comprised of an equal number of staff. Employee shift changes are assumed at the mountain biking, adventure, and paint ball areas and the retail area at approximately 2:00 PM and at the education building at 1:00 PM. Each staff member is therefore assumed to work a total of six hours per day.

14) Only one staff member will manage the community garden, and that staff member will only work during the morning shift.

15) Existing youth groups already at the Mount Hermon Conference Center (or engaged in an activity within Mount Hermon that is administered by the Mount Hermon Association) would only occasionally use the public amenities at the study project site, thus reducing the availability of some site activities to the public at large. A portion of these youth already in Mount Hermon area will walk to the site, thereby generating no vehicle trips when visiting the project site. The 5% reduction for walking trips includes these trips.

16) 50% of the Mountain Bike, Adventure Course and Paint Ball attendees would attend a second session.

Exhibit 7 depicts the project trip generation estimate. In total, during the summer months, the project would generate an estimated 1,321 weekday daily trips, with 211 trips during the weekday AM peak hour (137 in, 74 out) and 88 trips during the weekday PM peak hour (50 in, 38 out). Note that this would represent the highest level of potential project trip activity at the project site associated with full utilization of the project. During the school year, the site activity level would be considerably lower during school hours, thereby reducing the project trip activity accordingly. For example, the mountain bike, adventure course, and paint ball areas would likely only operate during the mid-to-late afternoon, between the end of the school day and 5:00 PM. On days of poor weather conditions, the outdoor activities would not be open.

4.3 Project Trip Distribution and Assignment

Exhibit 8 depicts the estimated project trip distribution and assignment during the summer months. The trip distribution was developed based upon the relative population of adjacent communities and their relative proximity to the project site. The bulk of the patrons are anticipated to come from the San Lorenzo Valley and Scotts Valley, although a smaller percentage would come from other areas within Santa Cruz County.

The project trip assignment was assigned along the major roadways in the area, including State Route 9, Mount Hermon Road, Graham Hill Road, Felton Empire Road, and East Zayante Road. Attendees using Graham Hill Road are anticipated to use both Conference Drive and Roaring Camp Road North to access the site from the east and west; all others would use the Graham Hill Road intersection with Conference Drive en route to the project site. All staff trips are assumed to travel to and from the offsite parking area.

To evaluate the potential traffic impacts Background Plus Project conditions were derived by adding the Background volumes to the study project trips. The Background Plus Project peak are illustrated on **Exhibits 9A and 9B** respectively.

4.4 Background Plus Project Conditions Intersection Operations

4.4.1 Intersection Operations

Intersection levels of service under Background Plus Project conditions are summarized on **Exhibit 5A**. Level of service calculation worksheets are presented in **Appendices C** through **H**. Recommended intersection improvements are summarized on **Exhibit 5B**. Warrant worksheets are included within **Appendix C**.

All intersections will operate at satisfactory levels of service overall except the Graham Hill Road/Highway 9 intersection, which will operate at LOS D during the AM peak hour and LOS F during the PM peak hour.

The Graham Hill Road/Conference Drive and Graham Hill Road/Roaring Camp Road intersections will operate at overall satisfactory levels of service during the AM and PM peak hours, but the side street approaches at these intersections will operate at LOS F.

4.4.2 Intersection Improvements

Graham Hill Road/Highway 9

The Graham Hill Road/Highway 9 intersection operates at LOS D during the AM peak hour and LOS F during the PM peak hour.

The intersection would operate at acceptable levels of service with the improvements identified under Background conditions – provide a free right turn lane from westbound Graham Hill Road to northbound Highway 9 and add a left turn lane to the eastbound intersection approach. With the implementation of these improvements, the Graham Hill Road/Highway 9 intersection would operate at a LOS D during both AM and PM peak hours. Santa Cruz County considers LOS D acceptable where costs, right of way acquisitions, or environmental impacts of maintaining operational standards under the County's LOS policy are excessive.

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Despite operations of LOS F on their side-street approaches, the following intersections would not require improvements:

Graham Hill Road/Conference Drive

The project will increase the volume of traffic on the Conference Drive approach to Graham Hill Road during the AM peak hour such that the Caltrans peak hour signal warrant would be met. However, most of the project traffic will turn right from Conference Drive to westbound Graham Hill Road and the southbound to westbound right turn movement will operate at LOS C during the AM peak hour. The AM peak hour volume of traffic turning left from Conference Drive to eastbound Graham Hill Road by itself would not be at levels that would meet the Caltrans peak hour signal warrant. Therefore, signalization of the Graham Hill Road/Conference Drive intersection is not recommended for the Background Plus Project condition.

Graham Hill Road/Roaring Camp Road (North)

The Caltrans peak hour signal warrant is not met at this intersection; therefore no improvements are required under Background Plus Project conditions.

4.5 Evaluation of Impact Significance

The County of Santa Cruz has established significance criteria for signalized intersections. This criteria defines a significant impact at a signalized intersection as occurring when the project would add traffic at intersections already at LOS E or F and the project traffic would result in a 1% increase in the volume/capacity (V/C) ratio of the sum of all critical intersection movements. Within this analysis, "pre-project" is represented by Background conditions, while "plus project" is represented by Background Plus Project conditions.

Exhibit 10 summarizes the calculation of the PM peak hour volume-to-capacity ratios and evaluation of significance at the Graham Hill Road/Highway 9 intersection. The Background condition v/c ratio is 1.26, which would require a .0126 change in the v/c ratio for the impact to be significant. The change in v/c between Background and Background Plus Project conditions for the Graham Hill Road/Highway 9 intersection is .0125. Therefore, the project would not represent a significant impact at the study signalized intersections, and would not be responsible for implementation of improvements under Background Plus Project conditions. It should be noted that the analysis models peak project utilization, which may occur during summer months. During the school year, and particularly during the winter months, attendance levels will be less than peak conditions. Further, it is not certain that the project will operate at peak attendance levels during the summer. Therefore, the impact of the project averaged over the year will be less than modeled in this traffic study.

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4.6 Project Parking Demand Estimate and Parking Supply Evaluation

A parking demand estimate has been prepared for the project for the peak summer month's conditions. The parking demand estimate assumes full project attendance as reflected in the trip generation estimate shown on Exhibit 7. **Exhibit 11** summarizes the estimate of peak parking demand.

The peak parking demand for both attendees and staff is 131 spaces at 1:45 pm and 2:15 pm. The project will provide 138 marked parking spaces on-site. Therefore, the project site will be able to accommodate all of its parking demand from both attendees and staff on the project site.

The peak parking demand consists of 50 staff and parking for 81 attendees. Note that the peak parking demand estimate includes an estimate of 28 vehicles that are dropping-off or picking-up attendees. Many of these vehicles would use the drop-off/pick-up area and would not park on the site for a very long period of time. The estimated peak parking demand for parking spaces in the project parking lot is 103 spaces, 35 less than the parking supply. The parking demand estimate for the parking lot excludes the drop-off/pick-up vehicles.

4.7 On-Site Circulation and Access

The project will have its primary access via Conference Drive at a location about 200 feet east of Graham Hill Road. Conference Drive provides one travel lane in each direction at the project entrance. A flush median is currently provided on Conference Drive. The median is 13 feet wide at the proposed project entrance and tapers to a width of 8 feet at Graham Hill Road. It is recommended that a left turn lane 100 feet in length be provided on eastbound Conference Drive at the project access driveway.

A loop driveway extending from the Conference Drive project access driveway is provided for pick-ups and drop-offs. The project site plan shows three marked parking spaces on the loop driveway defined by curbs at each end of the parking area. These curbs should be removed and a smooth transition provided at each end of the parking area to promote efficient access into and egress from these parking spaces.

It is recommended that only short-term parking be allowed on the loop road. It is recommended that additional curb spaces be provided on the loop road. The loop road should be designed with adequate width to allow vehicles to circulate past vehicles parked at the curb for loading and unloading. The adequacy of the loop driveway width should be verified by using vehicle wheel path turning templates.

It is recommended that the entrance area of the project be redesigned to allow direct access between the Conference Drive access driveway and the parking area located west of the entrance driveway. The pick-up/drop-off loop road should be designed, signed and marked for one-way, counter-clockwise traffic flow. However, two-way circulation should be provided between the access driveway and the parking lot such that inbound vehicles

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destined for the parking lot would not need to travel through the pick-up/drop-off loop. The section of roadway that should be designed for two-way traffic flow is shown as location A on **Exhibit 2**. It is recommended that the roadway at location A be at least 22 feet wide. However, the adequacy of the roadway width between the project driveway and the parking lot should be verified by using emergency vehicle and passenger vehicle wheel path turning templates. The southbound approach of the loop driveway at location A should be STOP controlled.

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5 CUMULATIVE CONDITIONS

This section describes Cumulative Conditions, which includes estimated traffic conditions to year 2030. A regional traffic growth of 1.26% per year (overall growth rate 21.4%) at the study intersections to account for the cumulative impacts for the study area in 2030. The Cumulative without Project AM and PM peak hour volumes are illustrated on **Exhibits 11A and 11B** respectively.

The AM and PM peak hour traffic volumes projected under Cumulative Without Project conditions were added to the project trips to generate the Cumulative With Project volumes. The Cumulative Plus Project AM and PM peak hour volumes are illustrated on **Exhibits 12A and 12B** respectively.

5.1 Cumulative Without Project Conditions Intersection Operations

5.1.1 Intersection Operations

Intersection levels of service under Cumulative without Project conditions are summarized on **Exhibit 5A**. Recommended intersection improvements are summarized on **Exhibit 5B**. Warrant worksheets are included within **Appendix B**. Level of service calculation worksheets are presented in **Appendices C** through **G**.

The Graham Hill Road/Highway 9 intersection operates at LOS E during the AM peak hour and LOS F during the PM peak hour under Cumulative Without Project Conditions. The Graham Hill Road/Mt. Hermon Road intersection operates at LOS B during the AM peak hour and an unacceptable LOS D during the PM peak hour. The Graham Hill Road/Zayante Road intersection operates at LOS C during the AM peak hour and an unacceptable LOS D during the PM peak hour. The unsignalized Graham Hill Road intersections with Conference Drive and Roaring Camp Road operate at satisfactory levels of service overall, but will experience LOS F operations on the side street approaches.

5.1.2 Intersection Improvements

Graham Hill Road/Highway 9

The Graham Hill Road/Highway 9 intersection operates at a LOS F during both AM and PM peak hours under Cumulative Without Project conditions.

The improvements previously described under Background conditions would not be sufficient to improve Cumulative Without Project conditions to at least LOS D conditions. In addition to the improvements discussed under Background conditions, it would also be required to provide a second left turn lane from westbound Graham Hill Road to southbound Highway 9. This would require eliminating the existing northbound left turn lanes and requiring the northbound left turn and through movements to share one lane. This does not appear to be a significant issue because the northbound approach

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operates as a "split" signal phase and the volume of left turning vehicles is relatively low in the AM and PM peak hours. With the implementation of these improvements, the intersection would operate at LOS D during both the AM and PM peak hours. Santa Cruz County considers LOS D acceptable where costs, right of way acquisitions, or environmental impacts of maintaining operational standards under the County's LOS policy are excessive.

To efficiently operate, the storage area of the two westbound to southbound left turn lanes should be lengthened. At the current time, the width of the bridge over San Lorenzo River limits the ability to lengthen the left turn storage area for the existing left turn lane. Therefore, it is recommended that the Graham Hill Road bridge over San Lorenzo River be widened to increase the capacity of the westbound Graham Hill Road approach to Highway 9.

Graham Hill Road/Mt. Hermon Road

The Graham Hill Road/Mt. Hermon Road intersection would operate at LOS B during the AM peak hour and LOS D during the PM peak hour without the project developed. Providing additional capacity would require additional right-of-way that may not be obtainable given existing development adjacent to the intersection. Additional widening may create environmental impacts. For these reasons, LOS D is considered acceptable at this location. No improvements are recommended for the Graham Hill Road/Mt. Hermon Road intersection.

Graham Hill Road/Zayante Road

The Graham Hill Road/Mt. Hermon Road intersection would operate at LOS C during the AM peak hour and LOS D during the PM peak hour without the project developed. To provide significant additional capacity at the intersection, widening Graham Hill Road east of Zayante Road would be required. This would require widening the bridge located on Graham Hill Road west of Zayante Road. Given the costs associated with widening the bridge, LOS D is considered acceptable at this location. No improvements are recommended for the Graham Hill Road/Mt. Hermon Road intersection.

Despite side-street operations of LOS F, improvements are not recommended at the following intersections under Cumulative conditions:

Graham Hill Road/Conference Drive

The Caltrans peak hour signal warrant is not met at this intersection; therefore no improvements are required under Cumulative Without Project conditions.

Graham Hill Road/Roaring Camp Road (North)

The Caltrans peak hour signal warrant is not met at this intersection; therefore no improvements are required under Cumulative Without Project conditions.

5.2 Cumulative Plus Project Conditions Intersection Operations

5.2.1 Intersection Operations

Intersection levels of service under Cumulative without Project conditions are summarized on **Exhibit 5A**. Recommended intersection improvements are summarized on **Exhibit 5B**. Warrant worksheets are included within **Appendix B**. Level of service calculation worksheets are presented in **Appendices C** through **G**.

The Graham Hill Road/Highway 9 intersection operates at LOS E during the AM peak hour and LOS F during the PM peak hour under Cumulative Without Project Conditions. The Graham Hill Road/Mt. Hermon Road intersection operates at LOS B during the AM peak hour and an unacceptable LOS D during the PM peak hour. The Graham Hill Road/Zayante Road intersection operates at LOS C during the AM peak hour and an unacceptable LOS D during the PM peak hour. The unsignalized Graham Hill Road intersections with Conference Drive and Roaring Camp Road operate at satisfactory levels of service overall, but will experience LOS F operations on the side street approaches.

5.2.2 Left Turn Queues

Vehicle queues were analyzed at the Graham Hill Road/Conference Drive and Conference Drive/Project Access Driveway intersections using the Cumulative Condition With Project traffic volumes. The critical time period is during the AM peak hour when inbound traffic will be the highest compared to PM peak hour conditions. SimTraffic, a traffic simulation model, was used to estimate the vehicle queues at the two intersections.

Eastbound Graham Hill Road at Conference Drive Left Turn Queue

The SimTraffic calculation of the 95th percentile vehicle queue is 120 feet and the maximum vehicle queue is 131 feet during the AM peak hour for the eastbound Graham Hill Road to eastbound Conference Drive left turn. The storage length provided in the existing left turn lane is 115 feet. It is recommended that the left turn lane on the eastbound Graham Hill Road approach to Conference Drive be lengthened to at least 135 feet. This can be accomplished by restriping the median channelization striping on Graham Hill Road, west of Conference Drive.

Conference Drive Left Turn Queues

The SimTraffic calculation of the 95th percentile queue is 59 feet and the maximum queue is 74 feet for the southbound Conference Drive left turn to eastbound Graham Hill Road during the AM peak hour. For the eastbound Conference Drive left turn to the project driveway, the SimTraffic 95th percentile queue is estimated to be 43 feet and the maximum vehicle queue is 61 feet. The width of Conference Drive between Graham Hill Road and the project entrance will allow side-by-side striping of the left turn lane for the southbound Conference Drive approach to Graham Hill Road and the left turn lane for

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the eastbound Conference Drive approach to the project access driveway. This design will ensure there are no conflicts between vehicles entering the left turn lanes from opposite directions. Based on the SimTraffic analysis, it is recommended that the left turn lane on eastbound Conference Drive at the project access driveway be at least 65 feet in length.

5.2.3 Intersection Improvements

Graham Hill Road/Highway 9

The Graham Hill Road/Highway 9 intersection operates at a LOS E during the AM peak hour and LOS F during the PM peak hour under Cumulative Plus Project conditions at the Graham Hill Road/Highway 9 intersection. This is unchanged from Cumulative Without Project Conditions.

The intersection would operate at acceptable levels of service by implementing the improvements identified under Cumulative conditions. The improvements include a free right turn movement from westbound Graham Hill Road to northbound Highway 9, adding a left turn lane on the eastbound Felton Empire Road approach and adding a second left turn on the westbound Graham Hill Road approach. With the implementation of these improvements, the Graham Hill Road/Highway 9 intersection would operate at a LOS D during both AM and PM peak hours. Santa Cruz County considers LOS D acceptable where costs, right of way acquisitions, or environmental impacts of maintaining operational standards under the County's LOS policy are excessive.

Graham Hill Road/Mt. Hermon Road and Graham Hill Road/Zayante Road

LOS D is considered the minimum acceptable operating level of service for the Graham Hill Road/Mt. Hermon Road and Graham Hill Road/Zayante Road intersections given the costs to provide additional capacity at these intersections. No improvements are recommended for the Graham Hill Road/Mt. Hermon Road intersection.

Despite side-street operations of LOS F, improvements are not recommended at the following intersections under Cumulative conditions:

Graham Hill Road/Conference Drive

The project will increase the volume of traffic on the Conference Drive approach to Graham Hill Road during the AM peak hour such that the Caltrans peak hour signal warrant would be met. However, most of the project traffic will turn right from southbound Conference Drive to westbound Graham Hill Road and the southbound to westbound right turn movement will operate at LOS C during the AM peak hour. The AM peak hour volume of traffic turning left from Conference Drive to eastbound Graham Hill Road would not by itself be at levels that would meet the Caltrans peak hour signal warrant. Therefore, signalization of the Graham Hill Road/Conference Drive intersection is not recommended for the Cumulative With Project condition.

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Graham Hill Road/Roaring Camp Road (North)

The Caltrans peak hour signal warrant is not met at this intersection; therefore no improvements are required under Cumulative With Project conditions.

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6 SUMMARY OF RECOMMENDATIONS

Improvements recommended under one scenario are also recommended in all following scenarios; these improvements are not repeated below for the purpose of brevity. In addition, please note that the referenced directionality of Highway 1 is based upon the cardinal (or compass) direction of travel, rather than the signed interregional direction.

6.1 Improvements Recommended for Existing Conditions

The following are the improvements recommended under Existing conditions.

Graham Hill Road/Highway 9

1. Provide a free right turn lane from westbound Graham Hill Road to northbound Highway 9.

6.2 Improvements Recommended for Background Conditions

In addition to the improvements recommended for existing conditions, the following are the improvements recommended under Background conditions.

Graham Hill Road/Highway 9

1. Add a left turn lane to the Felton Empire Road approach to Highway 9.

6.3 Improvements Recommended for Background Plus Project Conditions

In addition to the improvements recommended for Background Conditions, the improvements listed below are improvements recommended under Background Plus Project conditions. The improvements listed below are recommended for implementation by the project. The study project would not cause a 1% increase in the volume-to-capacity ratio of the critical movements at the Graham Hill Road/Mt. Hermon Road intersection. Therefore, the project's impact to the intersection is not significant and hence is not responsible for improvements at the intersection.

Graham Hill Road/Conference Drive

1. Lengthen the left turn lane on eastbound Graham Hill Drive at Conference Drive to 135 feet.

Conference Drive Left Turn Lanes

1. Provide a left turn lane on the eastbound Conference Drive approach to the project access driveway that is at least 65 feet in length. This left turn lane should be provided to the side of the left turn lane on the southbound Conference Drive approach to Graham Hill Road.

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Project Site Plan

1. It is recommended that only short-term parking be allowed on the pick-up/drop-off loop driveway.
2. Additional parallel parking spaces should be provided on the loop driveway and the loop driveway should be designed with adequate width to allow vehicles to circulate past vehicles parked at the curb for loading and unloading. The adequacy of the width of the circulation aisle should be verified using vehicle wheel path turning templates.
3. Two-way circulation should be provided between the Conference Driveway access driveway and the parking lot (Location A on **Exhibit 2**). This section of roadway should be at least 22 wide. It is recommended that emergency vehicle and passenger vehicle turning templates be analyzed on the project site plan to verify the adequacy of lane widths.
4. The southbound approach of the loop driveway at location A on **Exhibit 2** should be STOP controlled.
5. The radius of the curb returns at each end of the loop driveway parking spaces should be reduced or removed and a smooth transition provided at each end of the parking area to promote efficient access into and egress from these parking spaces.

6.4 Improvements Recommended for Cumulative Without Project Conditions

In addition to the improvements recommended under Background conditions, the following improvements are recommended under Cumulative Without Project Conditions.

Graham Hill Road/Highway 9

1. Add a second left turn lane on the westbound Graham Hill Road approach to Highway 9.

6.5 Improvements Recommended for Cumulative with Project Conditions

No additional improvements are recommended under Cumulative Plus Project conditions other than the improvements recommended for consideration under Cumulative Without Project conditions and Background Plus Project condition.

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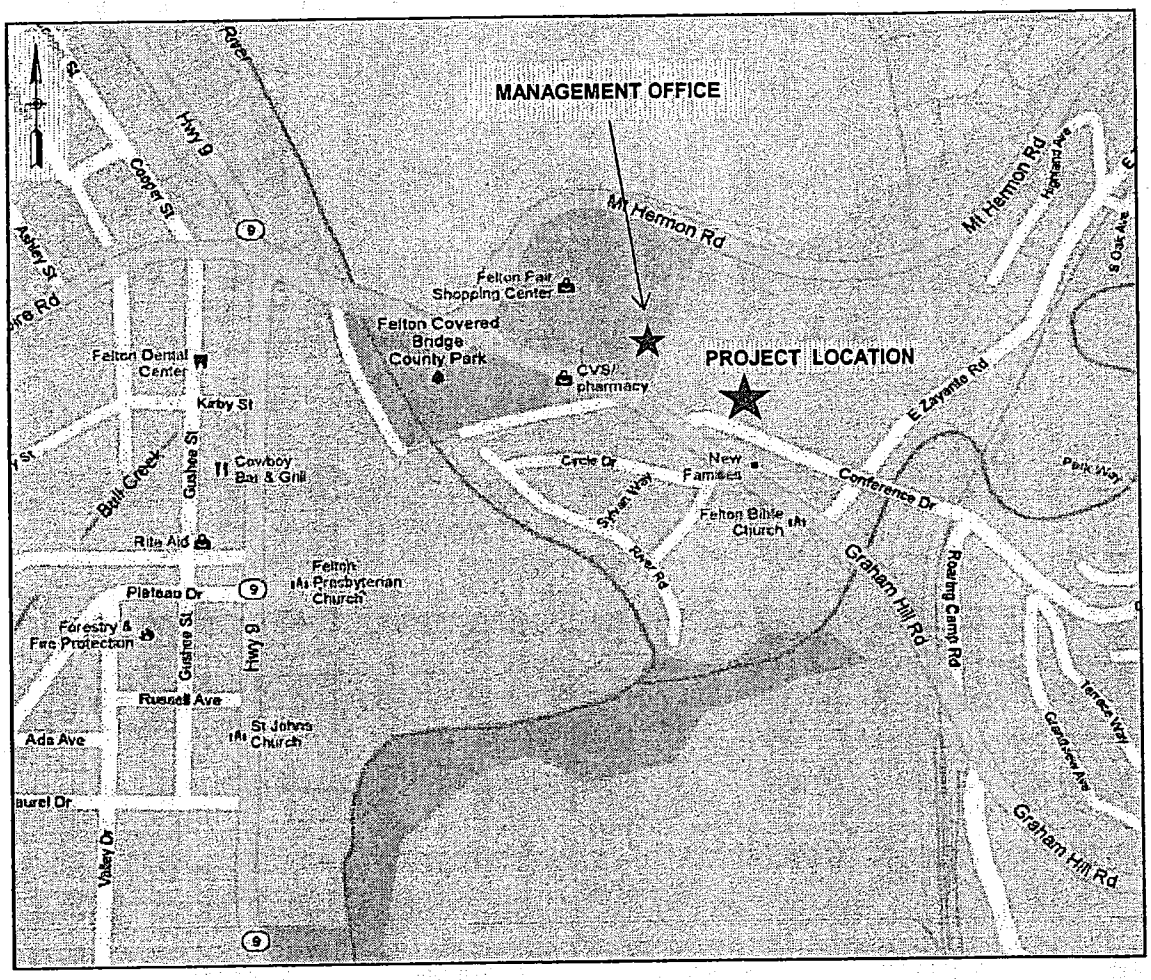

Map Source: Google Maps, 2013

Hatch Mott MacDonald

321956 Exhibits 120313 .xlsx
Vicinity Map

EXHIBIT 1
PROJECT LOCATION MAP

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Biotic Resources Group

Biotic Assessments ♦ Resource Management ♦ Permitting

December 5, 2013

Dale Pollock
Mt. Hermon Association
P.O. Box 413
Mt. Hermon, CA 95041

RE: Conference Drive Project: Review of Riparian and Needlegrass Grassland Mitigation and Restoration

Dear Mr. Pollock,

The Biotic Resources Group has reviewed the County's letter relative to the feasibility of establishing the required habitat restoration for riparian and needlegrass grasslands on the Conference Drive Project in Felton, as per your request.

Riparian Restoration
The Landscape Plan shows revegetation and restoration of the existing drainage swale as compensation for impacts to the swale from the detention basin, outfall, and the bridge. Direct impacts to vegetation growing within the swale encompass approximately 2,000 square feet. The Landscape Plan depicts approximately 7,000 square feet of native riparian plantings within the swale, thus achieving an approximately 3.5:1 impact to restoration ratio. The plantings will enhance the riparian qualities of the swale by increasing plant diversity, boosting structural diversity (adding trees and shrubs), and enhancing wetland habitat (planting wetland plants along the channel). As requested in the County's review, the final landscape/restoration plan will identify success criteria for the site and details on maintenance and monitoring. Maintenance will include the control/removal of invasive non-native plant species from the swale and measures to protect resources during construction and long-term use of the site.

Needlegrass Grassland
The Landscape Plan shows revegetation of hillside areas for needlegrass grassland. This revegetation is identified as compensation for impacts to the needlegrass grassland from the alpine bike park trails. Based on the most current grading plan, direct impacts to needlegrass grassland is approximately 12,000 square feet. The Landscape Plan depicts approximately 12,000 square feet of needlegrass revegetation, thus achieving an approximately 1:1 impact to restoration ratio. The project site offers additional areas that would be suitable for needlegrass grassland restoration, such as the slope south and southeast of the alpine bike park. This area could provide approximately 28,000 square feet of additional needlegrass grassland, such that the replacement ratio would be approximately 3:1. As requested in the County's review, the final landscape/restoration plan will identify success criteria for the site and details on maintenance and monitoring. Maintenance will include the control/removal of invasive non-native plant species from the revegetation area and measures to protect resources during construction and manage the grassland during long-term use of the site.

Sincerely,

Kathleen Lyons

Kathleen Lyons
Plant Ecologist

2551 S. Rodeo Gulch Road #12 ♦ Soquel, California 95073 ♦ (831) 476-4803 ♦ email: brg@cruzio.com

ATTACHMENT 11

Biotic Resources Group
Biotic Assessments ◆ Resource Management ◆ Permitting

June 6, 2013

Dale Pollock
Mt. Hermon Association
P.O. Box 413
Mt. Hermon, CA 95041

RE: MT. HERMON CONFERENCE CENTER – FELTON FAIRE PROPERTY: RESULTS OF BIOLOGICAL REVIEW

Dear Mr. Pollock,

The Biotic Resources Group, with Dana Bland & Associates, documented and evaluated the biological resources on the approximately 15-acre parcel located on Conference Drive in the Felton area of Santa Cruz County in April 2013.

Specific tasks conducted for this biological review include:

- Review previous biological report (i.e., Biological Report, H.T. Harvey & Associates, 2008)
- Characterize and map the current distribution of the major plant communities.
- Identify sensitive biological resources and sensitive habitat, including potential for species of concern, and County-regulated habitats.
- Evaluate the proposed recreational project and its potential effect on sensitive biological resources.

PROPOSED PROJECT AND BACKGROUND

The property owner (Mt. Hermon Association) is evaluating recreational and open space uses for the property. Proposed uses include various sports areas, a community garden, recreation center and educational buildings, parking and open meadows, as depicted on the Preliminary Site Plan (Verde Design, dated 6-5-13). The property is located on Conference Drive and abuts the Felton Faire Shopping Center, located along Graham Hill Road, as depicted on Figure 1. The site is currently undeveloped, yet remnants from previous land uses were observed (e.g., old concrete pad, old roads). Runoff will be contained on the site in bioswales; no outfalls to Zayante Creek are proposed for this project.

In 2008 South County Housing proposed 31 single family dwellings and a 24-unit apartment complex on the property. In 2006, H.T. Harvey & Associates conducted a delineation of potential Waters of the U.S., including wetlands. They documented six isolated seasonal wetland features and one ephemeral, un-named drainage in the southern-central portion of the property. The delineation was submitted to the U.S. Army Corps of Engineers (USACE) for verification; however, the USACE declined jurisdiction over these features, as per Section 404 of the Clean Water Act. The 2008 biological report prepared by H.T. Harvey & Associates incorporated findings of the 2006 wetland delineation, documented other biological resources, and evaluated the proposed development relative to sensitive features (H.T. Harvey & Associates, dated July 17, 2008). This report documented four habitat types on the property: California annual grassland, box elder/coast live oak forest, coyote brush chaparral/French broom thicket, and isolated seasonal wetlands.

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INTENDED USE OF THIS BIOLOGICAL REVIEW

The findings presented in this biological review are intended for the sole use of the Mt. Hermon Association and the County of Santa Cruz in evaluating the proposed land uses on the subject property. The findings presented by the Biotic Resources Group in this report are for information purposes only; they are not intended to represent the interpretation of any State, Federal or County law or ordinance pertaining to permitting actions within sensitive habitat or endangered species. The interpretation of such laws and/or ordinances is the responsibility of the applicable governing body.

METHODOLOGY FOR BIOLOGICAL REVIEW

The biological resources of the property were assessed through literature review and field observations. Site observations were made in April 2013 by Kathleen Lyons (plant ecologist) and Dana Bland (wildlife biologist). Vegetation mapping prepared by H.T. Harvey & Associates in 2008 was field checked and revised, as needed, to reflect current site conditions. To update the evaluation of the potential occurrence of special status species, two electronic databases were accessed to determine recorded occurrences of sensitive plant communities and sensitive species. Information was obtained from the California Native Plant Society's (CNPS) Electronic Inventory (2013), and California Department of Fish & Wildlife (CDFW) RareFind database (CDFG, 2013) for the Felton USGS quadrangle and surrounding quadrangles.

The extent of potential wetlands and stream/riparian vegetation and creek features were re-examined by reviewing the 2006 wetland report by H.T. Harvey & Associates, sampling vegetation within potentially wetland areas, and obtaining field data on soil and hydrology conditions. The extent of potential wetlands was determined by examining the presence of hydrophytic vegetation, hydric soils and wetland hydrology Act as outlined in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE, May 2010). As normal circumstances occur on site, all three of these parameters must be satisfied for an area to be considered a jurisdictional wetland as per the USACE and the County of Santa Cruz as per the Riparian Corridor and Wetlands Protection Ordinance. An area was considered to meet the wetland vegetation criteria when the plant community passes the dominance test. In this test more than 50 percent of the dominant plant species across all strata are rated as to their prevalence to occur in wetlands (plants coded as obligate [OBL]- typically always found in wetlands, facultative wet [FACW] – typically found in wetlands 75% of the time, or facultative [FAC] – typically found in wetlands 50% of the time). The hydrologic criterion was based on field indicators such as direct observation of surface water or groundwater, evidence of recent inundation (i.e., water marks, drift deposits, sediment deposits), and evidence of recent soil saturation (i.e., presence of oxidized rhizospheres within upper 12 inches). Hydric soil was documented in soil pits excavated to a depth of approximately 20 inches wherein soil texture and color were recorded and compared to a Munsell Soil Chart (1994) to designate hue, value and chroma. Indicators of hydric soil can include organic accumulations, iron reduction, translocation and accumulation and sulfate reduction. Field surveys in April 2012 used a series of quadrats, arranged along three transects, to document plant cover in areas supporting the annual grassland and rush-sedge meadow. Three transects (A, B, and C), with a total of 45-0.1 meter quadrats, were used to document vegetation (species and plant cover) and the presence of positive wetland vegetation. Four soil samples were obtained along these transects to document the presence of hydric soil and/or wetland hydrology. The location of the sampling transects and soil sample locations are depicted on Figure 1.

The ephemeral drainage was viewed for evidence of riparian and/or wetland plant species, field observations of the flow line, Ordinary High Water Mark, bankfull flow line, and slope. The data was

collected approximately one week following a 2"-rainfall event; however, to date, the 2012/2013 rainfall year is below normal (60%± of normal).

EXISTING RESOURCES

The property is located within the southeast portion of the *Zayanta* land grant within Township 10S, Range 2W, Mt. Diablo Meridian, within the unincorporated area of Felton within the Felton USGS quadrangle. The property does not contain any "blue-line streams as per the USGS topographic map. The closest "blue-line" stream is Zayante Creek, a perennial waterway located approximately 200 feet southeast of the property. The County GIS does not demarcate any streams on the property; however, the 2008 Biological Report identified an ephemeral drainage in the southwestern portion of the property. The elevations on the property range from approximately 240 feet (along Conference Drive) to 400 feet (ridge area abutting Mt. Hermon Road). The soils on the property are mapped as Elder sandy loam, 2-9 percent slopes, Elkhorn-Pfeiffer complex, 30-50 percent slopes and Soquel loam, 2-9 percent slopes (USDA/NRCS, 1980). These soils are well-drained; none of these soil types are considered hydric; however, if there are inclusions of other soil types present, the inclusions may be hydric.

Currently the parcel supports seven primary vegetation types: annual grassland, coast live oak – box elder woodland and tree groves, non-native tree groves, coyote brush scrub, riparian scrub, and patches of needlegrass grassland and rush-sedge meadow. The distribution of plant community types on the property is depicted on Figure 1. Each vegetation type, principal plant species, and state ranking (rarity) is listed in Table 1. The table also lists the habitat types delineated in the 2008 H.T. Harvey & Associates Biological Report.

Table 1. Vegetation Types within Conference Drive Property, Santa Cruz County, April 2013

Vegetation Type	Plant Association	State Ranking[2]	Nomenclature in 2008 Report
Annual Grassland	Wild Oat/Ripgut Brome	-	California Annual Grassland
Coast Live Oak – Box Elder Woodland and Tree Groves	Coast Live Oak/Box Elder	S4	Coast Live Oak/Box Elder Forest
Non-Native Tree Groves	Acacia	-	Coast Live Oak/Box Elder Forest
Coyote Brush Scrub	Coyote Brush/French Broom	S5	Coyote Brush Chaparral/French Broom Thicket
Riparian Scrub	Box Elder/ California Blackberry – Rushes	S3	-
Needlegrass Grassland	Purple Needlegrass/Wild Oat	S3	-
Rush-Sedge Meadow	Spreading Rush/Field Sedge/Velvet Grass	S4	Annual Grassland and Isolated Seasonal Wetlands

[1] – California vegetation code as per CDFG/CNDDB (2010); [2]- Vegetation types are ranked between S1 and S5. For vegetation types with ranks of S1-S3, all associations within the type are considered to be highly imperiled.

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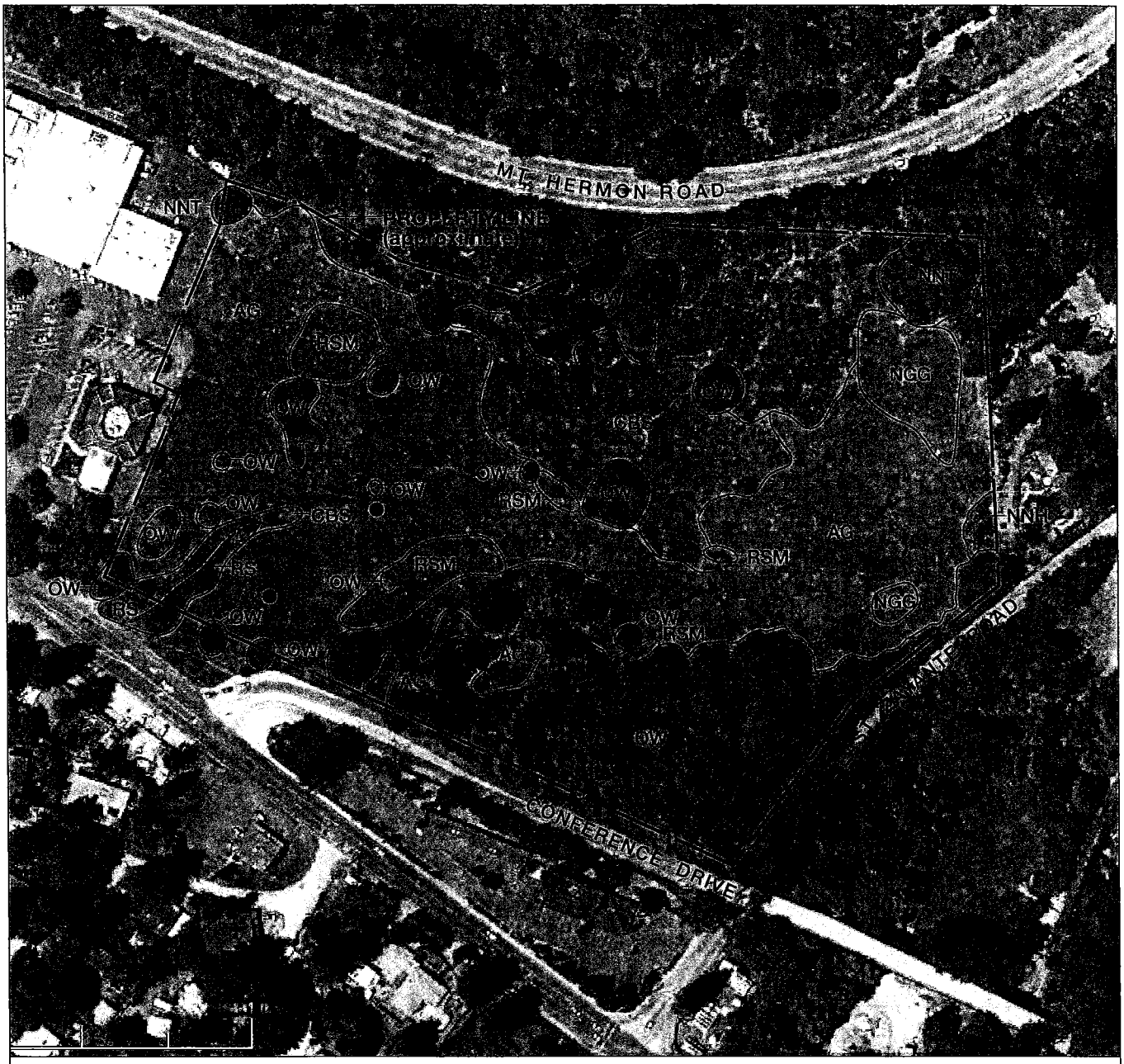

LEGEND

RSM Rush-sedge Meadow **CBS** Coyote Brush Scrub **NGG** Needlegrass Grassland **AG** Annual Grassland

RS Riparian Scrub **NNH** Periwinkle Patch **NNT** Non-native Tree Groves ● California Oatgrass (1-3 plants)

OW Coast Live Oak/Box Elder Woodland and Tree Groves

N

SCALE: 1" = 200'

0 200' 400'

Biotic Resources Group
2551 S. Rodeo Gulch # 12 ◆ Soquel, California 95073
(831) 476-4803 ◆ brg@cruzio.com

Mt. Hermon - Conference Drive Project
Vegetation Types

Figure 1
4/13
692-01

ATTACHMENT 11

The distribution and species composition of many of the vegetation types observed in 2013 is similar to that described in 2008; however, in 2013 needlegrass grassland was observed in the northeastern portion of the property and riparian scrub was found to occur along the ephemeral drainage. In addition, some of the areas previously mapped as annual grassland (2008 biological report) and all areas mapped as isolated seasonal wetlands (2006 wetland report) were re-classified as rush-sedge meadow. The 2013 site survey failed to find the three requisite positive wetland indicators for these areas to meet the current USACE definition of a wetland.

An update of site conditions from the 2013 field surveys is presented below.

Needlegrass Grassland

Needlegrass grassland was observed in the northeastern portion of the property (see Figure 1). The needlegrass grassland is characterized by the dominance of purple needlegrass (*Stipa pulchra)*, a native perennial bunchgrass. One patch on the lower portion of the grassland measures approximately 20 feet x 30 feet. A larger patch is located on the hillside, abutting the property line to the east and scrub and woodland to the west and north, respectively. This grassland type supports purple needlegrass, with lesser amounts of wild oat (*Avena spp.)*, ripgut brome (*Bromus diandrus)*, and Italian/slender thistle (*Carduus sp.)*. Other species observed include soap plant (*Chlorogalum pomeridianum)*, hill morning glory (*Calystegia macrostegia)*, vetch (*Vicia sp.),* California poppy (*Eschscholzia californica)*, and scarlet pimpernel (*Anagallis arvensis)*. Figure 2 shows the character of the needlegrass grassland area.

Needlegrass grassland is ranked S3 and is considered to be an imperiled community in California, as defined by CDFW (CDFG, 2010). As such, this grassland type would meet the requirements of a "sensitive habitat" as per the County of Santa Cruz Sensitive Habitat Ordinance and is subject to development restrictions (subject to confirmation by the County of Santa Cruz).

Figure 2. Needlegrass grassland on slope in northeast portion of property.

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Riparian Scrub

Riparian scrub was observed along the downstream portion of the ephemeral drainage. The vegetation is comprised of box elder *(Acer negundo)*, poison oak (*Toxicodendron diversilobum)*, coyote brush (*Baccharis pilularis)*, and California blackberry (*Rubus ursinus)*. The bed of the drainage was clear of vegetation, suggesting that it does receive surface flow after significant rainfall events. Flow from this drainage enters a roadside ditch that parallels Graham Hill Road, with flows directed westward to a street side culvert. The average slope within 30 feet of the riparian scrub is less than 10% and is comprised of grassland.

As the property is located within the rural urban boundary of Felton, the ephemeral drainage appears to be meet the requirements of an "arroyo" as per the County of Santa Cruz Riparian Corridor and Wetlands Protection Ordinance and subject to development setback requirements (subject to confirmation by the County of Santa Cruz). Upon review of the Santa Cruz Riparian Corridor and Wetlands Protection Ordinance for ephemeral streams within an arroyo within the Rural Services Line, the buffer to this drainage is 10 feet from the bankfull flowline, except where riparian woodland vegetation is present then the buffer is 50 feet from the vegetation. There is an additional 10-foot setback for any structures (subject to confirmation by the County of Santa Cruz).

Rush-Sedge Meadow

Portions of the annual grassland and the isolated seasonal wetlands previously identified in the 2006 H.T. Harvey & Associates wetland report and 2008 biological report were re-classified as rush-sedge meadow based on the 2013 field surveys. The rush-sedge meadow are areas dominated or co-dominated by spreading rush (*Juncus patens)*, clustered field sedge (*Carex pragracilis)*, and velvet grass (*Holcus lanatus)*, three seasonally wet-tolerant species. These areas were found to be floristically distinct from the surrounding annual grassland. Figure 1 depicts the location of rush-sedge meadow within the property.

This meadow type occupies portions of the lower terrace that appear to collect seasonal hillside runoff and/or subsurface seasonal moisture, as well as patches along the hillside that appear to receive seasonal hillside seepage in enough quantity to support these seasonally wet-tolerant plant species. Other plant species documented from the rush-sedge meadow include curly dock (*Rumex crispus)*, fiddle dock (*Rumex acetosella)*, geranium (*Geranium dissectum)*, vetch (*Vicia sativa),* California buttercup (*Ranunculus californica)*, and lesser amounts of foothill sedge (*Carex tumulicula)*, wild oat (*Avena spp.)*, ripgut brome (*Bromus diandrus)*, and soft chess (*Bromus hordeaceus)*.

Figures 3, 4, and 5 show the character of the various rush-sedge meadow areas on the property.

Biotic Resources Group

Biotic Assessments ♦ Resource Management ♦ Permitting

August 1, 2013

Dale Pollock
Mt. Hermon Association
P.O. Box 413
Mt. Hermon, CA 95041

RE: Conference Drive Project: Review of Grading and Landscape Plan

Dear Mr. Pollock,

The Biotic Resources Group conducted a review of the Grading and Landscape Plans (dated 6/26/13) prepared for the Conference Drive Project in Felton, as per your request. The review was conducted to provide certification that the project adheres to recommendations presented in the Biological Review Letter (dated 6/6/13) relating to sensitive habitats/species. The results of this review are described in this letter report.

Review of Grading and Drainage Plan, dated 6/26/13 and Landscape Plan
The Grading Plan depicts additional grading within the ephemeral drainage. This grading is for the construction of a detention basin and two outfalls. This grading is in addition to the approximately 4,000 square foot impact area identified in the Biological Review Letter. The Biological Review Letter recommended a 3:1 impact: revegetation ratio. This recommendation is still valid. The Landscape Plan depicts ephemeral drainage and riparian corridor enhancement areas, planted with native riparian plant species. These plantings are consistent with recommendations contained in the Biological Review Letter; however, the final plans should be sure that the 3:1 impact to revegetation ratio is achieved.

The Grading Plan depicts additional grading associated with the Alpine Bike Park that will have greater impacts to the needlegrass grassland than stated in the Biological Review Letter. The Biological Review Letter recommended a 3:1 impact: revegetation ratio. This recommendation is still valid. The Landscape Plan depicts planting of purple needlegrass within grassland areas disturbed by bike park construction as well as expanding the grassland to the northwest in areas now supporting coyote brush scrub. Additional plantings of purple needlegrass are proposed on the lower slope. These plantings are consistent with recommendations contained in the Biological Review Letter; however, the final plans should be sure that the 3:1 impact to revegetation ratio is achieved.

Please let me know if you have any questions on this review.

Sincerely,

Kathleen Lyons

Kathleen Lyons
Plant Ecologist

2551 S. Rodeo Gulch Road #12 ♦ Soquel, California 95073 ♦ (831) 476-4803 ♦ email: brg@cruzio.com

ATTACHMENT 11

A. FlowForm Features Schedule

Item #	Detail #	Description	Size	Notes
1	N/A	Scaffold platform for roll in to airbag jumps	8' H x 10' x 10'	Standard Pre-Engineered Scaffolding
2	5	FlowForm Launch Pad	M	Pre-Engineered Product - No Installation Necessary
3	5	FlowForm Launch Pad	XL	Pre-Engineered Product - No Installation Necessary
4	5	FlowForm Launch Pad	L	Pre-Engineered Product - No Installation Necessary
5	8	FlowForm Launch Pad w/ Landing	S	Pre-Engineered Product - No Installation Necessary
6	8	FlowForm Launch Pad w/ Landing	M	Pre-Engineered Product - No Installation Necessary
7	8	FlowForm Launch Pad w/ Landing	L	Pre-Engineered Product - No Installation Necessary
8	8	FlowForm Launch Pad w/ Landing	XS	Pre-Engineered Product - No Installation Necessary
9	8	FlowForm Launch Pad w/ Landing	S	Pre-Engineered Product - No Installation Necessary
10	8	FlowForm Launch Pad w/ Landing	M	Pre-Engineered Product - No Installation Necessary
11	4	FlowForm Log Ride	14'	Pre-Engineered Product - No Installation Necessary
12	7	FlowForm Shorebridge	S	Pre-Engineered Product - No Installation Necessary
13	3	FlowForm RollerCoaster	M	Pre-Engineered Product - No Installation Necessary
14	7	FlowForm Shorebridge	M	Pre-Engineered Product - No Installation Necessary
15	1	FlowForm Rainbow	M	Pre-Engineered Product - No Installation Necessary
16	2	FlowForm Sunset	M	Pre-Engineered Product - No Installation Necessary
17	1	FlowForm Rainbow	M	Pre-Engineered Product - No Installation Necessary
18	2	FlowForm Sunset	M	Pre-Engineered Product - No Installation Necessary
19	2	FlowForm Sunset	L	Pre-Engineered Product - No Installation Necessary
20	7	FlowForm Shorebridge	S	Pre-Engineered Product - No Installation Necessary
21	4	FlowForm Log Ride	20'	Pre-Engineered Product - No Installation Necessary
22	4	FlowForm Log Ride	20'	Pre-Engineered Product - No Installation Necessary
23	6	FlowForm Gangplank	XS	Pre-Engineered Product - No Installation Necessary
24	6	FlowForm Gangplank	S	Pre-Engineered Product - No Installation Necessary
25	6	FlowForm Gangplank	M	Pre-Engineered Product - No Installation Necessary

B. Velocity Bike Camp

2014 Interim Temporary Programming Schedule

Description: Mount Hermon Adventures hopes to be able to guide temporary instructional camps for young mountain bikers during spring and summer, 2014. No grading or permanent construction will be required on site. Minimum requirement is the child has ridden on his/her bike and can use both hand brakes. The goal is to improve their confidence and skill level on a mountain bike.

Site Preparation

March 1 – 15, 2014

Site Tear Down

July 31 – August 5, 2014

Staff Training Camp

March 15 - 25

Maximum Number of Campers: 32 per day

Maximum Number of Staff: 6 per day

Day Camp Details

Times: 9 - 3pm Daily

Drop off: 8:45 am

Pick up: 3:15 pm

Ages: 6-16 years old

Day Camp Dates:

March 31–April 4 – Spring Break Camp 1 (Santa Cruz County)

April 13–18 – Spring Break Camp 2 (San Jose County)

June 16-20 – Summer Day Camp 1

June 17-July 3 – Tuesday/Thursday - Locals Camp

(Smaller groups Felton/Scotts Valley Kids)

June 23-27 - Summer Day Camp 2

June 30-July 3 - Summer Day Camp 3

July 7-11 - Summer Day Camp 4

July 8-24 -Tuesday/Thursday - Locals Camp

(Smaller groups Felton/Scotts Valley Kids)

July 14-18 - Summer Day Camp 5

July 21-25 - Summer Day Camp 6

After School Program Details

Times: 1 – 4 pm

Drop Off: 12:45 pm

Pick up: 4:15 pm

Ages: 6-16 years old

After School Camp Dates:

Every Wed in May, 2014: May 7, 14, 21, 28.

mounthermon

ALPINE BIKE PARKS

8 - 1050 Miller Creek Road
Whistler, BC, V0N 1B1
1.888.263.9563

STAMP

CONSULTANT

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 871-231-03, 04

SHEET TITLE

TEMPORARY PROGRAMMING - FEATURES SCHEDULE & PROGRAMMING

PROJECT NAME

MOUNT HERMON NEW LAND DEVELOPMENT

PROJECT ADDRESS

CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE

NO.	REVISIONS	DATE

DRAWN BY DS CHECKED BY JD

DATE ISSUED 01/20/14 SCALE

PROJ NO

SHEET NO. P1.2 OF SHEETS

ATTACHMENT 11

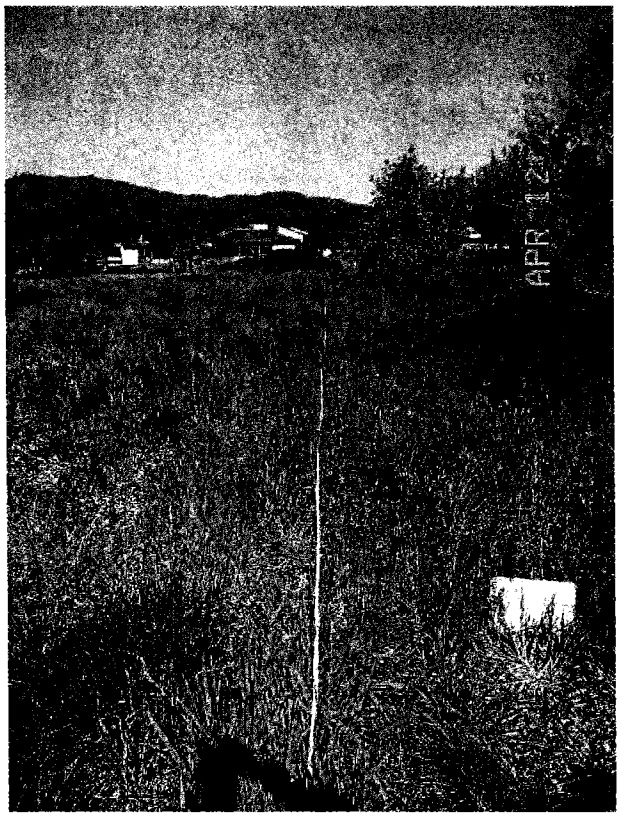

Figure 3. Rush-sedge meadow in central portion of property (transect A).

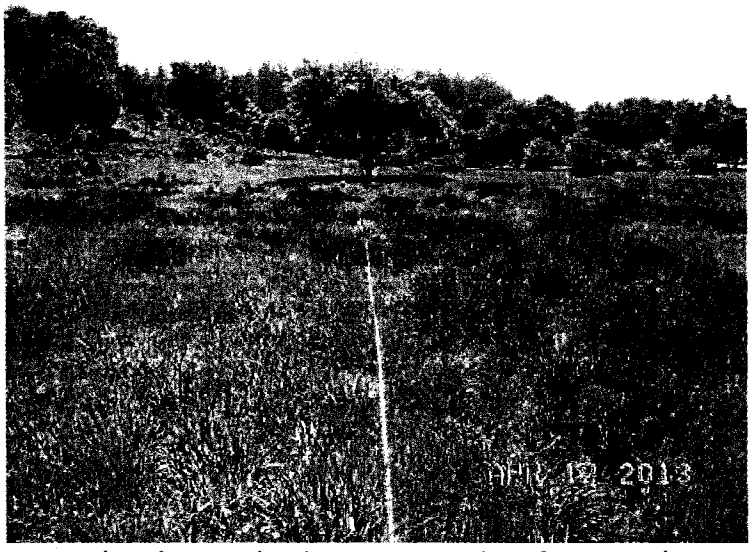

Figure 4. Rush-sedge meadow in western portion of property (transect C).

ATTACHMENT 1 1

Figure 5. Small patch of rush-sedge meadow along hillside in central portion of property.

Evaluation of Potential Wetlands in Rush-Sedge Meadow. The 2006 wetland report documented six isolated wetland features on the property. At the 2013 survey, these features were found to occur within areas mapped as rush-sedge meadow. The April 2013 wetland sampling program was focused in the rush-sedge meadow areas where upon visual observation the dominant species are wetland indicators (OBL, FACW, or FAC-designated species). Along Transect A, 41% of the sampling quadrats showed positive wetland vegetation, primarily by the dominance of clustered field sedge (FACW), velvet grass (FAC), and/or spreading rush (FACW). Along transect B, 35% of the sampling quadrats showed positive wetland vegetation, primarily by the dominance of velvet grass (FAC), spreading rush (FACW), and lesser amounts of clustered field sedge (FACW). Along transect C, none of the sampling quadrats showed positive wetland vegetation. Although velvet grass (FAC), spreading rush (FACW), and lesser amounts of clustered field sedge (FACW) occur in this area, they do not provide enough cover to meet the wetland dominance test.

Four sampling points were also established to determine if the three required wetland parameters would be met. Sample points 1 and 2 were located along transect A; sample 3 on transect B and sample point 4 on transect C. Table 2 presents a summary of the findings from these sample points. Although positive wetland vegetation was documented in some areas, none of the sampled areas were found to support positive wetland hydrology or hydric soil conditions. No evidence of primary wetland hydrology indicators were observed from the sampling pits (i.e., no water table, soil saturation, or oxidized rhizospheres along roots). No secondary wetland hydrology indicators were observed (i.e., no evidence of a closed depression subject to ponding), although a slight topographic micro-depression was documented in/around transects A and B. Soil sampling found the soil matrix color at 10YR2/2, consistent with findings of the 2006 wetland report. Redox concentrations within the soil, a hydric soil wetland indicator, were observed at two sample points 2 and 4; however, these features were not located within the upper 12 inches, which is required for a hydric soil determination (USACE soil indicator F6). The redox concentrations at sample point 2 were faint and located at 16-20 inches. The redox concentrations at sample point 4 were more prominent, yet were also located below the 12-inch threshold for soil indicator F6, and thus the soil at these two sites were determined not to meet the requirement of hydric soil. These 2013 observations differ slightly from the 2006

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wetland report which documented redox concentrations at some sample points, with some sites having redox concentration both above and below the upper-12 inch requirement. Data from the vegetation sampling and the sample points, as well as photographs of the sampled areas, is presented in Appendix A.

Table 2. Data Collection at Sample Points within Rush-Sedge Meadow, April 2013

Sample Site	Dominant Plant Species Wetland Indicator Status Positive Hydrophytic Vegetation?	Soil Features Positive Hydric Soil?	Hydrology Features Positive Wetland Hydrology?	Meets Definition of USACE Jurisdictional Wetland/ County of Santa Cruz Wetland?
1	Clustered field sedge (FACW) Velvet grass (FAC) Yes, >50% of dominant species are wetland indicator species	10YR2/2, no redox concentrations No, no positive field indicators	No 1^{o} indicators; slight evidence of 2^{o} indicator (micro-depression) No, insufficient number of field indicators	No
2	Velvet grass (FAC) No, ≤50% of dominant species are wetland indicator species	10YR2/2, 10YR3/4 redox concentrations at 16-20" No, no positive field indicators	No 1^{o} indicators; slight evidence of 2^{o} indicator (micro-depression) No, insufficient number of field indicators	No
3	Velvet grass (FAC) Yes, >50% of dominant species are wetland indicator species	10YR2/2, no redox concentrations No, no positive field indicators	No 1^{o} indicators; slight evidence of 2^{o} indicator (micro-depression) No, insufficient number of field indicators	No
4	Juncus patens (FACW) Vetch (UPL) No, ≤50% of dominant species are wetland indicator species	10YR2/2, 10YR3/4 redox concentrations at 16-20" No, no positive field indicators	No 1^{o} or 2^{o} indicators No, insufficient number of field indicators	No

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Annual Grassland

The 2012 field surveys found the annual grassland to be similar in distribution and species composition as documented in the 2008 biological report (with revisions previously noted). Although non-native grasses and forbs dominate the mapped annual grassland, two small patches of California oatgrass (*Danthonia californica)*, a native perennial bunchgrass, was observed in the central portion of the property. The two patches each support 1-3 oatgrass plants amid the otherwise annual, non-native species. The location of these two patches is depicted on Figure 1. Figure 5 shows the character of the annual grassland.

Figure 5. Annual grassland in central portion of property.

Non-native Tree Groves, including Landscaping

The property supports groves of non-native trees, primarily acacia (*Acacia sp.)* as well as a patch of non-native periwinkle (*Vinca major)*. These non-native features were encompassed in the coast live oak-box elder forest and annual grassland vegetation types in the 2008 biological report. Their distribution is depicted on Figure 1.

SENSITIVE BIOTIC RESOURCES

Santa Cruz County. The property is located within Santa Cruz County within the rural services line, yet outside the coastal zone. The ephemeral drainage supports a small area of riparian scrub which would be subject to the County of Santa Cruz Santa Cruz Riparian Corridor and Wetlands Protection Ordinance. In addition, the property supports needlegrass grassland, a vegetation type that meets the definition of a sensitive habitat as per the County of Santa Cruz Sensitive Habitat Ordinance. Both of these resources may be subject to development restrictions (subject to confirmation by the County of Santa Cruz).

Waters of the State. CDFG jurisdictional limits typically extend to the top of bank or to the edge of riparian habitat if such habitat extends beyond top of bank (outer drip line), whichever is greater. On the subject property, the ephemeral drainage (extending from the creekbed to the top-of-bank or edge of riparian, whichever is greater) may be within the regulatory jurisdiction of CDFW. Alterations to areas within the jurisdiction of CDFW may be subject to permitting under Section 1600 (i.e., Streambed Alteration Agreement), subject to their review.

Waters of the State subject to Regional Water Quality Control Board (RWQCB) regulation extend to the top of bank, as well as isolated water/wetland features and saline waters. For the subject property activities occurring on land extending from the creek bed to the top-of-bank may be within the jurisdictional area of the RWQCB.

Waters of the U.S. The US Army Corps of Engineers (USACE) regulates activities within waters of the United States. For the subject property, the USACE previously declined jurisdiction of the isolated seasonal wetlands documented in the 2006 wetland report. The 2012 field surveys failed to find 3-parameter wetlands on site, so no change in their jurisdiction is expected.

Special Status Plant Species. Plant species of concern include those listed by either the Federal or State resource agencies as well as those identified as rare by CNPS (List 1B). The 2013 search of the CNPS and CNDDB inventories identified the special status plant species with potential to occur in the project area. There are no records of any special status species occurring on the subject property from these data bases or from previous reports. Field surveys in April 2013 failed to document any special status species. Due to the lack of suitable habitat (i.e., lack of sandhills and chaparral) the likelihood for the occurrence of most special status plant species is considered low; the property offers moderate habitat potential for a few species that grow in moist grassland conditions (see Table 3); however, none of these species were observed during the April 2013 field visits. These species would have been detectable during the April survey period.

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Table 3. Special Status Plant Species Evaluated for Potential Presence on Conference Drive Property

Scientific Name	Common Name	Federal Status	State Status	Rare Plant Rank	Habitat, Closest Recorded Occurrence, and Potential to Occur on Site
Anomobryum julaceum	slender silver moss	None	None	2.2	Broadleaved upland forest | Lower montane coniferous forest | North coast coniferous forest; Northern Scotts Valley, Quail Hollow County Park, Empire Grade; Low potential on-site; not observed
Arctostaphylos andersonii	Anderson's manzanita	None	None	1B.2	Broadleaved upland forest | Chaparral | North coast coniferous forest; Ben Lomond sandhills, UCSC Reserve; Bonny Doon Ecological Reserve; Low potential on-site; not observed
Arctostaphylos silvicola	Bonny Doon manzanita	None	None	1B.2	Chaparral | Closed-cone coniferous forest | Lower montane coniferous forest; Ben Lomond sandhills, Bonny Doon, Glenwood area, Quail Hollow area, Lompico Road; Low potential on site; not observed
Arenaria paludicola	marsh sandwort	Endangered	Endangered	1B.1	Freshwater marsh | Marsh and swamp | Wetland; Camp Evers bog; Low potential on-site; not observed
Campanula californica	swamp harebell	None	None	1B.2	Bog and fen | Closed-cone coniferous forest | Coastal prairie | Marsh and swamp | Meadow and seep | North coast coniferous forest | Wetland; Historic record from Camp Evers bog; low potential on-site; not observed.
Carex saliniformis	deceiving sedge	None	None	1B.2	Coastal prairie | Coastal scrub | Marsh and swamp | Meadow and seep | Wetland; Camp Evers bog; Moderate potential to occur on-site; not observed
Chorizanthe pungens var. hartwegiana	Ben Lomond spineflower	Endangered	None	1B.1	Lower montane coniferous forest; Ben Lomond sandhills, Lockhart Gulch area, Zayante School Road area, Weston Road, Wilder Ranch; Low potential on-site; not observed
Chorizanthe robusta var. hartwegii	Scotts Valley spineflower	Endangered	None	1B.1	Meadow and seep | Valley and foothill grassland; Scotts Valley; Low potential to occur on-site; not observed
Chorizanthe robusta var. robusta	robust spineflower	Endangered	None	1B.1	Cismontane woodland | Coastal bluff scrub | Coastal dunes; historic record from Felton area, Smith Grade area; Low potential on-site; not observed
Dacryophyllum falcifolium	tear drop moss	None	None	1B.3	Limestone | North coast coniferous forest | Redwood; Fall Creek Lime Kilns Area; Low potential on-site; not observed

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Table 3. Special Status Plant Species Evaluated for Potential Presence on Conference Drive Property

Scientific Name	Common Name	Federal Status	State Status	Rare Plant Rank	Habitat, Closest Recorded Occurrence, and Potential to Occur on Site
Didymodon norrisii	Norris' beard moss	None	None	2.2	Cismontane woodland | Lower montane coniferous forest; Low potential on-site; not observed
Eriogonum nudum var. decurrens	Ben Lomond buckwheat	None	None	1B.1	Chaparral | Cismontane woodland | Lower montane coniferous forest; Quail Hollow Road, Graham Hill Road near Juvenile Hall, Glenwood area; Zayante School Road, Bean Creek Road, Weston Road; Low potential on-site; not observed
Erysimum teretifolium	Santa Cruz wallflower	Endangered	Endangered	1B.1	Chaparral | Lower montane coniferous forest; Quail Hollow Road, Graham Hill Road near Juvenile Hall, Glenwood area; Zayante School Road, Bean Creek Road, Weston Road; Low potential on-site; not observed
Hesperocyparis abramsiana var. abramsiana	Santa Cruz cypress	Endangered	Endangered	1B.2	Chaparral | Closed-cone coniferous forest | Lower montane coniferous forest; Major Creek ridge area, historic record from Mt. Hermon; Low potential on-site; not observed
Holocarpha macradenia	Santa Cruz tarplant	Threatened	Endangered	1B.1	Coastal prairie | Coastal scrub | Valley and foothill grassland; Mid Graham Hill Road; Low potential on-site
Horkelia cuneata var. sericea	Kellogg's horkelia	None	None	1B.1	Chaparral | Closed-cone coniferous forest | Coastal dunes | Coastal scrub; historic record from Graham Hill Road but re-identified as common species; Zayante area; Low potential on-site; not observed
Horkelia marinensis	Point Reyes horkelia	None	None	1B.2	Coastal dunes | Coastal prairie | Coastal scrub; Empire Grade and Smith Grade area; Low potential to occur on-site; not observed
Microseris paludosa	marsh microseris	None	None	1B.2	Cismontane woodland | Closed-cone coniferous forest | Coastal scrub | Valley and foothill grassland; Historic record from Graham Hill near Santa Cruz, Marshall Field; Low potential on-site
Monolopia gracilens	woodland woollythreads	None	None	1B.2	Broadleaved upland forest | Chaparral | Cismontane woodland | North coast coniferous forest | Ultramafic | Valley and foothill grassland; Quail Hollow County Park, Historic record from Mt. Hermon; Low potential on-site; not observed
Penstemon rattanii var. kleei	Santa Cruz Mountains beardtongue	None	None	1B.2	Chaparral | Lower montane coniferous forest; Empire Grade and Ice Cream Grade area; Low potential on-site; not observed

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Table 3. Special Status Plant Species Evaluated for Potential Presence on Conference Drive Property

Scientific Name	Common Name	Federal Status	State Status	Rare Plant Rank	Habitat, Closest Recorded Occurrence, and Potential to Occur on Site
Pentachaeta bellidiflora	white-rayed pentachaeta	Endangered	Endangered	1B.1	Ultramafic | Valley and foothill grassland; Historic record from Boulder Creek area and beach cliffs of Santa Cruz; Low potential on-site
Piperia candida	white-flowered rein orchid	None	None	1B.2	Broadleaved upland forest | Lower montane coniferous forest | North coast coniferous forest | Ultramafic; Boulder Creek near Hesse Brook; Low potential on-site; not observed
Plagiobothrys chorisianus var. chorisianus	Choris' popcorn flower	None	None	1B.2	Chaparral | Coastal prairie | Coastal scrub
Plagiobothrys diffusus	San Francisco popcorn flower	None	Endangered	1B.1	Coastal prairie | Valley and foothill grassland; Marshal Field, Graham Hill Showgrounds area, Pogonip Open Space; Moderate potential on-site; not observed
Polygonum hickmanii	Scotts Valley polygonum	Endangered	Endangered	1B.1	Valley and foothill grassland; Scotts Valley; Low potential to occur on-site; not observed
Rosa pinetorum	pine rose	None	None	1B.2	Closed-cone coniferous forest; Historic record from Mt. Hermon; Low potential to occur on-site; not observed
Senecio aphanactis	chaparral ragwort	None	None	2.2	Chaparral | Cismontane woodland | Coastal scrub; Bonny Doon Ecological Preserve; Sky Park in Scotts Valley; Low potential on-site; not observed
Trifolium buckwestiorum	Santa Cruz clover	None	None	1B.1	Broadleaved upland forest | Cismontane woodland | Coastal prairie; Graham Hill Showgrounds area, Pogonip; Moderate potential on-site; not observed

CNPS Status: List 1B: These plants (predominately endemic) are rare through their range and are currently vulnerable or have a high potential for vulnerability due to limited or threatened habitat, few individuals per population, or a limited number of populations. List 1B plants meet the definitions of Section 1901, Chapter 10 of the CDFG Code.

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Special Status Wildlife Species. Special status wildlife species include those listed, proposed or candidate species by either the Federal or the State resource agencies, as well as those identified as State species of special concern. In addition, all raptor nests are protected by Fish and Wildlife Code, and all migratory bird nests are protected by the Federal Migratory Bird Treaty Act. Special status wildlife species were evaluated for their potential presence in the project area as described in Table 4 below.

Table 4. Special status wildlife species and their predicted occurrence at Conference Drive Property.

SPECIES	STATUS[1]	HABITAT	POTENTIAL OCCURRENCE ON SITE
Invertebrates			
Ohlone tiger beetle *Cicindela ohlone*	FE	Coastal terrace prairie with sparse vegetation and openings, Watsonville loam soils	None, no suitable habitat on site.
Mt. Hermon June beetle *Polyphylla barbata*	FE	Chaparral and ponderosa pine with Zayante sandy soils	No suitable habitat on site.
Zayante band-winged grasshopper *Trimerotropis infantilis*	FE	Openings in sand hills parkland habitat with Zayante sandy soils	No suitable habitat on site.
Smith's blue butterfly *Euphilotes enoptes smithi*	FE	Coastal dunes and coastal sage scrub with buckwheat plants	No suitable habitat on site.
Fish			
Coho salmon *Oncorhynchus kisutch*	FE, SE	Perennial creeks and rivers with gravels for spawning	No suitable habitat on site.
Steelhead *Oncorhynchus mykiss*	FT	Perennial creeks and rivers with gravels for spawning	No suitable habitat on site.
Amphibians			
California red-legged frog *Rana aurora draytonii*	FT, CSC	Riparian, marshes, estuaries and ponds with still water at least into June.	Closest known observation is >1 mile to west. No suitable breeding ponds or riparian habitat on site. Unlikely to occur on site.
Reptiles			
Western pond turtle *Actinemys marmorata*	CSC	Creeks and ponds with water of sufficient depth for escape cover, and structure for basking; grasslands or bare areas for nesting.	Unlikely to occur on site. Closest known occurrence is >2.5 miles to north in the San Lorenzo River.
Birds			
White-tailed kite *Elanus leucurus*	FP	Nests in tall riparian trees adjacent to open lands for foraging	Unlikely, no suitable nesting habitat on site.
Olive-sided flycatcher *Contopus borealis*	CSC	Nests in tall forest trees, usually conifers	Possible nesting on site.
Mammals			
Pallid bat *Antrozous pallidus*	CSC	Roosts in caves, hollow trees, mines, buildings, bridges, rock outcroppings	None, no suitable habitat on site.
Santa Cruz kangaroo rat *Dipodomys venustus venustus*	None	Manzanita chaparral with sandy soils	None. No suitable habitat on site.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	CSC	Woodlands including oaks, willow riparian, Eucalyptus	No nests observed; may occur in wooded or scrub habitats on site.
American badger *Taxidea taxus*	CSC	Grasslands with friable soils	None, no suitable habitat on site and grasslands too small to support a badger population.

[1] Key to status: FE=Federally listed as endangered species; FT=Federally listed as threatened species; FP=Fully protected species by State; CSC=California species of special concern

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The wildlife values of the site observed in 2013 and potential for special status wildlife species to occur are similar to that described in the 2008 Harvey & Assoc. biotic report. However, the current proposed recreational project will not include a new culvert or outfall into Zayante Creek. The wetland delineation described above shows no secondary indicators that water ponds on the site, and thus the site does not provide suitable habitat for California red-legged frog. The closest occurrence of California red-legged frogs listed in the CNDDB is in Bull Creek, over 1 mile to the west near an area close to a mine site with multiple ponds that may provide frog breeding source. The only occurrence listed for Zayante Creek system is over 5 miles northeast of this project site along Mt. Charlie Gulch, not far from a large pond as shown on the USGS topo map. Impacts to California red-legged frog are unlikely because they are not expected to occur on site, nor is the site likely to provide a movement corridor for frogs travelling between breeding and summering sites.

In addition, this new project will retain most, if not all, native trees on the site, and thus impacts to nesting birds over the long term will not be significant. Mitigation is recommended to avoid direct impacts to nesting birds during construction.

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SUMMARY OF FINDINGS AND RECOMMENDATIONS

The findings and recommendations are based on a review of the Preliminary Site Plan, prepared by Verde Design, dated June 5, 2013. This plan in presented in Appendix B.

IMPACTS TO SENSITIVE AND REGULATED HABITATS

Ephemeral Drainage and Riparian Corridor. The property supports riparian vegetation along an ephemeral drainage that may be subject to County regulation. The Preliminary Site Plan (dated 6-5-13) proposes development adjacent to the ephemeral drainage, including a bridge over the drainage to provide vehicular access between two parking lots. The bridge will span the riparian corridor. The bridge roadway approaches, a small portion of the eastern parking lot, and a small portion of the bike pump-track will be located within the County-designated arroyo setback area; all other proposed developments will be located outside this setback area. The bridge is proposed to span the drainage; however, approximately 4,000 square feet of herbaceous vegetation growing within the arroyo setback area (i.e., outward of top of the bank) will be permanently disturbed to accommodate the bridge abutments and related bridge construction activities. Construction of the bridge and the nearby features will require a riparian exception from the County of Santa Cruz to allow development within the riparian corridor and within the arroyo setback area (pending confirmation by this agency). Construction of the bridge will require a Streambed Alteration Agreement with CDFW and a Water Discharge Notice of Intent filed with the RWQCB (pending confirmation by these agencies).

Needlegrass Grassland. The property supports two patches of needlegrass grassland that meet the definition of a sensitive habitat subject to County regulation. The Preliminary Site Plan (dated 6-5-13) depicts a portion of the Alpine Bike Park traversing the needlegrass grassland in the northeast corner of the property. Two trails (totaling approximately 300 linear feet) will directly affect approximately 3,000 square feet of grassland. Approximately1,200 square feet will be a permanent impact from creation and use of the 4-foot wide dirt trail. Approximately 1,800 square feet of the needlegrass grassland will be disturbed during trail construction but would be available for revegetation after construction; therefore, this would be considered a temporary impact. In addition, the pedestrian pathway from the East Zayante will be constructed in close proximity of the lower patch of needlegrass grassland; no direct impacts to this stand are expected. All other proposed developments will be located outside this sensitive habitat. Alteration of these grassland areas will require review and permitting from the County of Santa Cruz under the Sensitive Habitat Ordinance.

Wetlands. No 3-parameter-defined wetlands were documented on the property, based on surveys conducted in April 2013. The previously mapped isolated seasonal wetlands (2006 wetland report) were found to be part of a rush-sedge meadow vegetation type. The 3-paramter testing of vegetation, soil and hydrology failed to document that all three requisite wetland parameters are present; therefore, these areas would not be considered to be wetlands under County ordinances (pending confirmation by this agency).

Nesting Birds. Although most native trees on the site will be retained, tree removal, limbing, and the removal of scrub and undergrowth vegetation will occur. Nesting birds could be impacted if they are present at the time of removal or limbing.

Oak Woodland/Oak Trees. Please refer to the arborist report on an analysis of trees to be removed and/or limbed.

RECOMMENDATIONS TO AVOID, REDUCE OR COMPENSATE FOR PROJECT IMPACTS

The following recommendations are identified to avoid, minimize, or compensate impacts to sensitive biological resources from the proposed project, based on review of the Preliminary Site Plan, dated 6-5-13.

Ephemeral Drainage and Riparian Corridor. The ephemeral drainage and its associated riparian scrub vegetation should be retained in its natural condition, consistent with County Code, with the exception of the proposed bridge and its associated roadway approaches. As currently depicted on the site plan, the proposed bridge is located in an area supporting the least woody/tree vegetation and has a free-spanning design.

- Consistent with the arroyo setback requirement (if so approved by the County), designate a riparian buffer between the proposed development and the ephemeral drainage. Except for the bridge and roadway approaches associated with the parking lots, demarcate in the field the arroyo setback area as specified in the County ordinance (10 feet from bankfull and 50 feet from riparian vegetation, where present) (pending confirmation from this agency). The box elder trees growing along the drainage would be considered riparian vegetation, so the County ordinance requires a 50-foot setback from these trees. The proposed project maintains this appropriate buffer. To compensate for permanent impact to approximately 4,000 square feet of the riparian corridor and buffer from the bridge and roadway/parking lot, implement a riparian revegetation plan along the ephemeral drainage and buffer that adds native trees and shrubs to the area to enhance the retained riparian scrub and provide additional buffering of the proposed land uses to the creek. Utilize a 3:1 impact to replacement ratio.

Needlegrass Grassland. The needlegrass grassland should be retained in its natural condition, consistent with County Code, with the exception of the trails within Alpine Bike Park. All other facilities should avoid impacting this grassland type.

- Design recreational features to avoid and/or minimize impacts the mapped needlegrass grassland. Mark the extent of the needlegrass grassland in the field prior to project construction and demarcate the location of trails to be constructed within or adjacent the grassland areas. Install flagging and construction fencing to restrict equipment and worker access to the needlegrass grassland. Where trail sections traverse the grassland implement additional habitat protection measures (i.e., construction fencing along limit of work and erosion control) to restrict trail construction to a 10-foot wide construction area. Following trail construction, re-seed disturbed area adjacent to the completed trail with a native grass seed mix that includes purple needlegrass (*Stipa pulchra)*. Utilize native species for erosion control and/or landscaping within 100 feet of the mapped needlegrass grassland. To compensate for the permanent impacts to approximately 1,200 square feet implement a grassland revegetation program to re-establish needlegrass grassland within the project area. Utilize a 3:1 impact to replacement ratio, such that a minimum of 3,600 square feet of needlegrass grassland is created. Areas adjacent to the mapped needlegrass grassland that area currently supporting non-native annual grasses and forbs would be suitable revegetation areas.

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Nesting Birds. Although most native trees on the site will be retained, tree removal, limbing, and the removal of scrub and undergrowth vegetation will occur. Nesting birds could be impacted if they are present at the time of removal or limbing. Please refer to the arborist report on an analysis of trees to be removed, measures to protect trees to remain, and any tree replanting requirements to compensate to removal of native trees.

If nesting birds are present in vegetation to be removed, birds may be affected, which is a significant impact. The measure below is recommended to avoid potential impacts to nesting birds during project construction.

- Schedule vegetation clearing to occur between August 1 and March 1 of any given year to avoid the bird nesting season for this region. If that schedule is not possible, have a qualified biologist conduct nesting bird surveys no more than two weeks prior to vegetation clearing. If nesting birds are observed, the biologist shall establish a suitable buffer where no clearing will occur until all young have fledged the nest, usually 50 feet for most passerine birds and up to 250 feet for raptors.

Oak Woodland/Oak Trees. Please refer to the arborist report on measures to protect trees to remain and any tree replanting requirements to compensate for the removal of native trees (i.e., tree replacement).

Please let me know if you have any questions on this review.

Sincerely,

Kathleen Lyons

Kathleen Lyons

and

Dana Bland

Dana Bland

Attachments: Literature Cited and References
Appendix A
Appendix B

ATTACHMENT 11

ECOSYSTEMS WEST
CONSULTING GROUP

November 13, 2013

Matt Johnston
Planning Department
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Re: Biological Review of the Biotic Report for the Mt. Hermon Conference Center-Felton Faire Property. Application No REV 131093.

Dear Matt:

This letter summarizes my review of the "Biological Review Report" for the Mt. Hermon Christian Conference Center prepared by the Biotic Resources Group. The letter report entitled "Mt. Hermon Conference Center – Felton Faire Property: Result of Biological Review" dated June 6, 2013, was prepared by Kathleen Lyons and Dana Bland of the Biotic Resources Group. The basis off their report was a review of earlier reports prepared by H.T. Harvey and Associates for an unrealized development proposal for the 15+ acre parcels located on Conference Drive on the south, Mt. Hermon Road to the north, Felton Faire Shopping Center on the west and Zayante Road to the east in Felton, California. The following reports and letters reviewed included: "South County Housing Felton Project, Preliminary Delineation of Wetlands and Other Waters" (H.T. Harvey and Associates August 2006); a letter from the Army Corp of Engineers (COE) dated 18 December 2006 confirming jurisdiction wetland determination; and the South County Housing Zayante oaks project biological report (H.T. Harvey and Associates 2008). Biotic Resources Group completed a literature and data base review of the proposed project area and then followed up with a biotic field verification of the parcel to confirm or modify earlier biological characterizations of the parcels, primarily by H.T. Harvey and Associates.

Mt. Hermon Christian Conference Center proposes to develop the fifteen acre site (APN(s) 071-331-05 and 06) into "facilities for recreation, education and adventure." The development includes a wide variety of public recreation facilities and childhood education programs and facilities. Public activities include: a community garden, small and large bicycle pump tracks, hillside downhill bicycle flow trails, aerial adventure course, splash-park, paintball and target areas, a retail building with concessions, welcome center, fixed trails and parking areas. Children education zones include: education building/day camp center and a recreation/play field. The proposed extent and layout of these facilities are shown in detail on site and facility plans prepared by Verde Design dated August 6, 2013.

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The biological characterizations conducted by H.T. Harvey and Associates did not identify and significant biotic resources on the parcels with the exception of several potential isolated wetland features. Their wetland determination report identified six isolated wetlands and an ephemeral unnamed drainage in the south-central portion of the parcels. H.T. Harvey identified approximately 0.084 acres of potential wetlands. Other putatively wet areas on the parcels were determined to not meet the COE regulatory definitions of "Jurisdictional Waters". These findings were confirmed by the COE staff during a site visit on August 17, 2006. The ACOE determined that the parcel will not involve the discharge of fill materials in the regulated waters of the United States and are not subject to regulation by the COE under Section 404 of the Clean Water Act. The COE rightfully noted that their actions do not obviate approval from other jurisdictions, such as the County's Wetland Ordinance or the State of California Regional Water Quality Control Board.

Kathleen Lyons conducted an independent verification of these putative wetland features utilizing ACOE three-parameter assessment process as outlined in the ACOE "Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region" (USACE, May 2010). Following these procedures, Ms. Lyons determined that none of the isolated wetlands identified by H.T. Harvey met all three parameters particularly in soils and hydrology. The unnamed ephemeral drainage supports riparian scrub vegetation and was determined to meet the classification of an "arroyo" as per the County of Santa Cruz Riparian Corridor and Wetlands Protection Ordinance.

Biotic Resources Group identified six vegetation types on the 15 acre project area. These include annual grassland, coast live oak-box elder woodland and tree groves, non-native tree groves, coyote brush scrub, riparian scrub, needlegrass grassland, and rush-sedge meadow. Two of these vegetation types were not previously identified in the H.T. Harvey biological characterization the site. These vegetation types, riparian scrub and needlegrass grassland are recognized as sensitive habitats by both the State of California and the County of Santa Cruz. The needlegrass grassland vegetation type is located on the south-facing hillside on the east side of the parcel. A portion of this habitat will be directly impacted by the installation and operation of the bicycle hillside flow trails. The riparian scrub vegetation type is located along a short ephemeral swale on the lower southwest end of the parcel. A portion of this vegetation type will be impacted by the placement of a bridge crossing connecting the entrance with parking lots on the west side of the drainage. The remaining vegetation types are not unique to the San Lorenzo Valley.

No rare plants were observed during the course of the April 2013 field surveys. I assume that surveys were conducted floristically, but this report does not include an observed plant species list to confirm that there was a systematic approach to the survey. Based on the fact that the majority of the property supports Soquel loam and Elkhorn sandy loam, and there are no data base records or observations from earlier surveys this reviewer concurs that the site is unlikely to support rare plants know to occur in the San Lorenzo Valley region. In addition, no habitat was observed for special-status wildlife species, such as red-legged frog or breeding raptors. The site does support trees and groves that may support breeding opportunities for sharp shin hawk and Cooper's hawk and provides known foraging for white-tailed kite. A variety of bat species may opportunistically roost in the trees near to Zayante Creek to the east of the project site.

As depicted on the site plan Sheet L2.0 prepared by Verde Design, the majority of the parcel will be directly or indirectly impacted by the variety of recreational and educational facilities for the proposed Mt. Hermon Christian Conference Center development. As such, recommendations for avoidance will be difficult to achieve. We concur with those recommendations proposed in the Biotic Resources Group letter report with a few caveats. It will be difficult to achieve a 3:1 replacement ratio along the ephemeral drainage since the portion of the footprint displaced by the bridge will not be available for reintroduction of native plants. We suggest that a landscape design be developed that enhances the structural native plant diversity on the portion of the drainage below the bridge. The plan should identify species planting locations and removal and replacement of any non-native shrubs or trees that may currently occupy the drainage. Any oaks displaced by the development in general should be replanted at a 3:1 ratio where possible. Similarly, the needlegrass vegetation type will be difficult to replace at a 3:1 ratio where there will be fixed hillside flow trails. These trails will be permanent in structure and function and will likely have incidental spillover to the sides of the trail during operation making retention of vegetation adjacent to the track difficult. Also, the proposed placement of the maintained turf field at the bottom of the slope below the needlegrass vegetation type will further displace opportunities of enlarging the needlegrass type into the annual grassland habitats. I am not discouraging the attempt at maintaining the remaining habitat but considering the overall extent and intensity of use of the site by the variety of activities and facilities proposed it will be difficult to retain the current natural resources in an unimpacted state. The approach to native landscape maintenance should be along the lines of Best Management Practices that includes retention and maintenance where possible of those remnant native habitats, erosion control management that includes the use of native species where possible and establishment of buffers from activities with exclusion fencing if deemed appropriate, such as the slope west of the hillside track.

The proposed location of the paintball course in the grove of mixed woodland trees in the southeast corner of project site will make the use of the trees for nesting birds and bats tenable. I don't believe that theses two uses can be rectified and it is likely that any nesting that has occurred in the past will not continue during the use of the site. As noted in the report, preconstruction breeding bird surveys should be conducted prior to the initial development of the property and prescribed avoidance measures taken if birds are encountered until the young of the year have fledged.

A concern was raised regarding the potential impacts of paintball byproducts reaching the adjacent stream corridor and having an effect on anadromous fish know to occupy the stream. A review of the literature states that paintball paint is primarily composed of polyethylene glycol and gelatin with food coloring and some minor amounts of glycerin and sorbitol. All of these byproducts released when the paintball pellet explodes on contact or dissolves usually biodegrade at a reasonably high rate. Glycerol (glycerin) has been shown to have toxicity to fish but only in amounts greater then 5000 mg/l. This amount would only likely reach a stream corridor if there was a toxic spill from a treatment facility or tanker truck. The amount of glycerin released from a small paintball, even if shot directly into the stream would not amount to a minute addition to the overall stream chemistry. In addition, glycerin has a very short half-life and readily partitions into water when biodegrading. Since the majority of the paintball byproducts will be filtered through the soil below the trees, it is not likely that any toxic buildup will reach the water table or stream directly. As currently proposed, there is no direct outfall of water to Zayante Creek from the proposed project. A small collection

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ditch borders Zayante road on the west side of the road that empties into a storm drain on the corner of Zayante Road and Graham Hill Road. It is presumed that this drain empties somewhere into Zayante Creek downstream of Graham Hill Road. It is possible that some surface runoff could be collected in this drainage from the site but there should not be any notable increase in toxicity from what already occurs from oil and petroleum byproducts leaching from the road surface. Of bigger concern is the possible long distance shooting of paintballs over the fencing into the adjacent riparian corridor along Zayante Creek. Fencing should be high enough to contain most, if not all the projectiles shot in that direction. No elevated structures should be constructed in the paintball facility that would allow the participants to be higher then the surrounding fencing or result in the shooting of paintballs in a skyward direction.

Finally, the final landscaping plan should be reviewed to insure that no non-native trees or shrubs are used outside of landscaping proposed adjacent to the buildings. The preliminary landscape plan shown on Sheet L6.0 proposes using London plane tree as a canopy species. Although this species is a common street planting in urban communities, it is not appropriate for rural environments in native forest interfaces. A more appropriate alternative would be big-leaf maple or California buckeye.

It is my opinion that is general this development will not result in direct or indirect, short or long-term impacts to the natural habitats in the vicinity of the project area. Should you require further clarification of this review, please don't hesitate to contact me.

Sincerely,

Bill Davilla
Principal

CULTURAL RESOURCE EVALUATION OF THE PROPOSED MT. HERMON RECREATIONAL FACILITY IN THE COUNTY OF SANTA CRUZ

FOR

MR. DALE POLLOCK
P.O. BOX 413
MT. HERMON, CA 95041
NWIC# 12-0929

BY

Archaeological Resource Management
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Email: armcartier@netscape.net

MARCH 18, 2013

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ADMONITION

Certain information contained in this report is not intended for general public distribution. Portions of this report locate significant archaeological sites in the region of the project area, and indiscriminate distribution of these data could result in the desecration and destruction of invaluable cultural resources. In order to ensure the security of the critical data in this report, certain maps and passages may be deleted in copies not delivered directly into the hands of environmental personnel and qualified archaeologists.

THE PRINCIPAL INVESTIGATOR

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ABSTRACT

This cultural resource evaluation was carried out for the proposed recreational facility project at APN 071-331-05 and 071-331-06 in the County of Santa Cruz. The research included an archival background and surface survey of the proposed project area. The Northwest Information Center reported that there are no recorded sites within the proposed project area. Nine previously recorded resources are located within one-half mile of the proposed. All of these resources are historic structures. No significant cultural resources, prehistoric or historic, were noted during surface reconnaissance. However, surface visibility was limited due to vegetation throughout the property. In addition, the project area is located within the vicinity of the intersection of three water sources: Zayante Creek, Bean Creek, and the San Lorenzo River. Water confluences are known to be highly likely locations of Native American activity. Smaller seasonal drainages are also present within the proposed project area. Therefore, due to the limited visibility during surface reconnaissance and the ecological conditions suitable to potential Native American habitation, it is recommended that a qualified archaeologist spot-check monitor construction activities into native soils for the proposed project

REQUEST FOR CULTURAL RESOURCE EVALUATION

This cultural resource evaluation was carried out to determine the presence or absence of any significant cultural resources. Archaeological services were requested in March of 2013 in order to provide an evaluation that would investigate the possible presence of cultural resources. This study meets the requirements of CEQA (California Environmental Quality Act).

QUALIFICATIONS OF ARCHAEOLOGICAL RESOURCE MANAGEMENT

Archaeological Resource Management has been specifically engaged in cultural resource management projects in central California since 1977. The firm is owned and supervised by Dr. Robert Cartier, the Principal Investigator. Dr. Cartier has a Ph.D. in anthropology, and is certified by the Register of Professional Archaeologists (RPA) for conducting cultural resource investigations as well as other specialized work in archaeology and history. He also fulfills the standards set forth by the Secretary of the Interior for inclusion as a historian and architectural historian and is certified as such on the State of California referral lists.

LOCATION AND DESCRIPTION OF THE SUBJECT AREA

The subject area consists of approximately 16 acres of land located at APN 071-331-05 and 071-331-06 in the County of Santa Cruz. On the USGS 7.5 minute quadrangle of Felton, the Universal Transverse Mercator Grid (UTMG) four corners of the project area are 10S 5 83 061mE/41 00 971mN for the northwest corner, 10S 5 83 366mE/41 00 811mN for the northeast corner, 10S 5 83 243mE/41 00 653mN for the southeast corner and 10S 5 82 966mE/41 00 764mN for the southwest corner. The elevation ranges from approximately 235 to 400 feet MSL. The nearest sources of fresh water include small seasonal drainages which run through the proposed project area, as well as Zayante

ATTACHMENT 13

Creek, Bean Creek, and the San Lorenzo River, which all intersect within the immediate vicinity of the proposed project area.

The proposed project consists of the construction of a recreational facility including multiple structures as well as associated utilities and improvements. These will require the necessary excavation, trenching, grading, and other earthmoving activities.

METHODOLOGY

The methodology used in this investigation consisted of an archival search, a surface reconnaissance, and a written report of the findings with appropriate recommendations. The archival research is conducted by transferring the study location to a State archaeological office which maintains records of archaeological investigations. This is done in order to learn if any archaeological sites or surveys have been recorded within a half mile radius of the subject area. Each archival search with the State is given a file number for verification. The surface reconnaissance portion of the evaluation is done to determine if traces of historic or prehistoric materials exist within the study area. This survey is conducted by a field archaeologist who examines exposed soils for cultural material. The archaeologist is looking for early ceramics, Native American cooking debris, and artifacts of stone, bone, and shell. For historic cultural resources, the field evaluation also considers older structures, distinctive architecture, and subsurface historic trash deposits of potentially significant antiquity. A report is written containing the archival information, record search number, the survey findings, and appropriate recommendations. A copy of this evaluation is sent to the State archaeological office by requirements of State procedure.

A cultural resource is considered "significant" if it qualifies as eligible for listing in the California Register of Historic Resources (CRHR). Properties that are eligible for listing in the CRHR must meet one or more of the following criteria:

1. Association with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States;
2. Association with the lives of persons important to local, California, or national history;
3. Embodying the distinctive characteristics of a type, period, region, or method of construction, or representing the work of a master, or possessing high artistic values; or
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Most Native American prehistoric sites are eligible due to their age, scientific potential, and/or burial remains.

The CRHR interprets the integrity of a cultural resource based upon its physical authenticity. An historic cultural resource must retain its historic character or appearance and thus be recognizable as an historic resource. Integrity is evaluated by examining the

subject's location, design, setting, materials, workmanship, feeling, and association. If the subject has retained these qualities, it may be said to have integrity. It is possible that a cultural resource may not retain sufficient integrity to be listed in the National Register of Historic Places yet still be eligible for listing in the CRHR. If a cultural resource retains the potential to convey significant historical/scientific data, it may be said to retain sufficient integrity for potential listing in the CRHR.

ARCHIVAL BACKGROUND

Prior to reconnoitering the subject area, a study of the maps and records at the Northwest Information Center of the California Archaeological Site Inventory was conducted and given the file number of NWIC# 012-0929. This research into the records at the Information Center was done to determine if any known archaeological resources were reported in or around the subject area. The search of records at the Northwest Information Center (NWIC) revealed that there are no previously recorded sites within the proposed project area. Nine previously recorded resources are located within a one-half mile radius of the proposed project area. All of these resources are historic structures. The closest three of these resources are described briefly below:

CA-SCR-207H

This historic structure was recorded by J. Cooper in 1979. It is described as the Felton Covered Bridge. This structure is located approximately 700 feet southwest of the proposed project area.

CA-SCR-329H

This historic resource is a recordation of the historic alignment of Highway 9 in Santa Cruz County. It was recorded by J. Berg and S. Mikesell in 1999. The highway runs approximately 1500 feet west of the proposed project area.

CA-SCR-208H

Recorded in 1979 by J. Cooper, this historic structure is described as Felton Presbyterian Church. This structure is located approximately 1800 feet west of the proposed project area.

Four previous studies have been carried out which included portions of the proposed project area within their scope: S-3787, S-16692, S-17863, and S-21591. These studies are briefly described below:

S-3787

Carried out by R. Edwards in 1972, this study is entitled "Archaeological Aspect of Environmental Impact Report on PG&E Power Line Alignment from Davenport to Mt. Hermon: Preferred and Secondary Alignments." This study area included the eastern portion of the current proposed project area within its scope.

ATTACHMENT 13

S-16692

This study was carried out in 1994 by R. Cartier and entitled "Cultural Resource Evaluation of Redtree Properties, APN 71-201-43 and APN 71-331-05, -06, in the City of Felton, County of Santa Cruz." This study included the southern portion of the current proposed project area within its scope.

S-17863

Carried out by R. Cartier, L. Eckert, J. Goetz, M. Pokriots, and J. Reddington in 1995, this study is entitled "Historic Research and Archaeological Testing Program Evaluation for the Redtree Properties, APN 71-201-43 and APN 71-331-05, -06, in the City of Felton, County of Santa Cruz." This study included the southern portion of the current proposed project area within its scope.

S-21591

This study was carried out by S. Guedon in 1998 and entitled "Seismic Retrofit Programmatic Agreement Short Form HPSR, 05-SCR-Co. Rd., Bridge Number 36C-0038, Seismic Retrofit Work of the Conference Drive Bridge." This study included southern boundary of the current proposed project area within its scope.

In addition, there have been eighteen previous studies carried out within a one quarter mile radius of the proposed project area. These are: S-4066, S-12694, S-3984, S-3983, S-4029, S-28809, S-28447, S-21971, S-22539, S-17180, S-37033, S-26659, S-22415, S-24260, S-38258, S-39178, S-22825, and S-34931.

SURFACE RECONNAISSANCE

A "general surface reconnaissance" was conducted by a field archaeologist on all open land surfaces. A "controlled intuitive reconnaissance" was performed in places where burrowing animals, exposed banks and inclines, and other activities had revealed subsurface stratigraphy and soil contents. The boundaries of the proposed project were well established in the field by fence lines, existing roads, and project maps. Survey stakes were also present marking many areas of the proposed development. Accessibility was good, the majority of the subject area accessible for a walking survey, although portions of the hillside were inaccessible due to steep slopes and dense vegetation. Soil visibility was fair; the majority of the surface area was obscured by high grasses in the lower portions of the project area and dense vegetation on the hillside. However, small exposures were present throughout due to rodent activity. Vegetation on the property consisted of spring grasses, shrubs, and trees. Where native soil was exposed, a light brown silty loam with some sandy inclusions was noted on the lower property, a tan silty loam was seen on the hillside. Rock types noted included quartz and granite gravel in the lower area. Sandstone gravel and cobbles as well as metamorphic gravel were noted on the hillside. No traces of significant cultural materials, prehistoric or historic, were noted during surface reconnaissance.

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CONCLUSION AND RECOMMENDATIONS

The Northwest Information Center reported that there are no recorded sites within the proposed project area. Nine previously recorded resources are located within one-half mile of the proposed. All of these resources are historic structures. No significant cultural resources, prehistoric or historic, were noted during surface reconnaissance. However, surface visibility was limited due to vegetation throughout the property. In addition, the project area is located within the vicinity of the intersection of three water sources: Zayante Creek, Bean Creek, and the San Lorenzo River. Water confluences are known to be highly likely locations of Native American activity. Smaller seasonal drainages are also present within the proposed project area. Therefore, due to the limited visibility during surface reconnaissance and the ecological conditions suitable to potential Native American habitation, it is recommended that a qualified archaeologist spot-check monitor construction activities into native soils for the proposed project

LITERATURE CITED AND CONSULTED

Berg, J. and S. Mikesell

1999 Site record for CA-SCR-270H on file at the Northwest Information Center, Department of Anthropology, Sonoma State University, Rohnert Park.

Cartier, R.

1994 Cultural Resource Evaluation of Redtree Properties, APN 71-201-43 and APN 71-331-05, -06, in the City of Felton, County of Santa Cruz. Report on file at Archaeological Resource Management.

1995 Historic Research and Archaeological Testing Program Evaluation for the Redtree Properties, APN 71-201-43 and APN 71-331-05, -06, in the City of Felton, County of Santa Cruz." Report on file at Archaeological Resource Management.

Cooper, J.

1979a Site record for CA-SCR-329H on file at the Northwest Information Center, Department of Anthropology, Sonoma State University, Rohnert Park.

1979b Site record for CA-SCR-208H on file at the Northwest Information Center, Department of Anthropology, Sonoma State University, Rohnert Park.

Edwards, R.

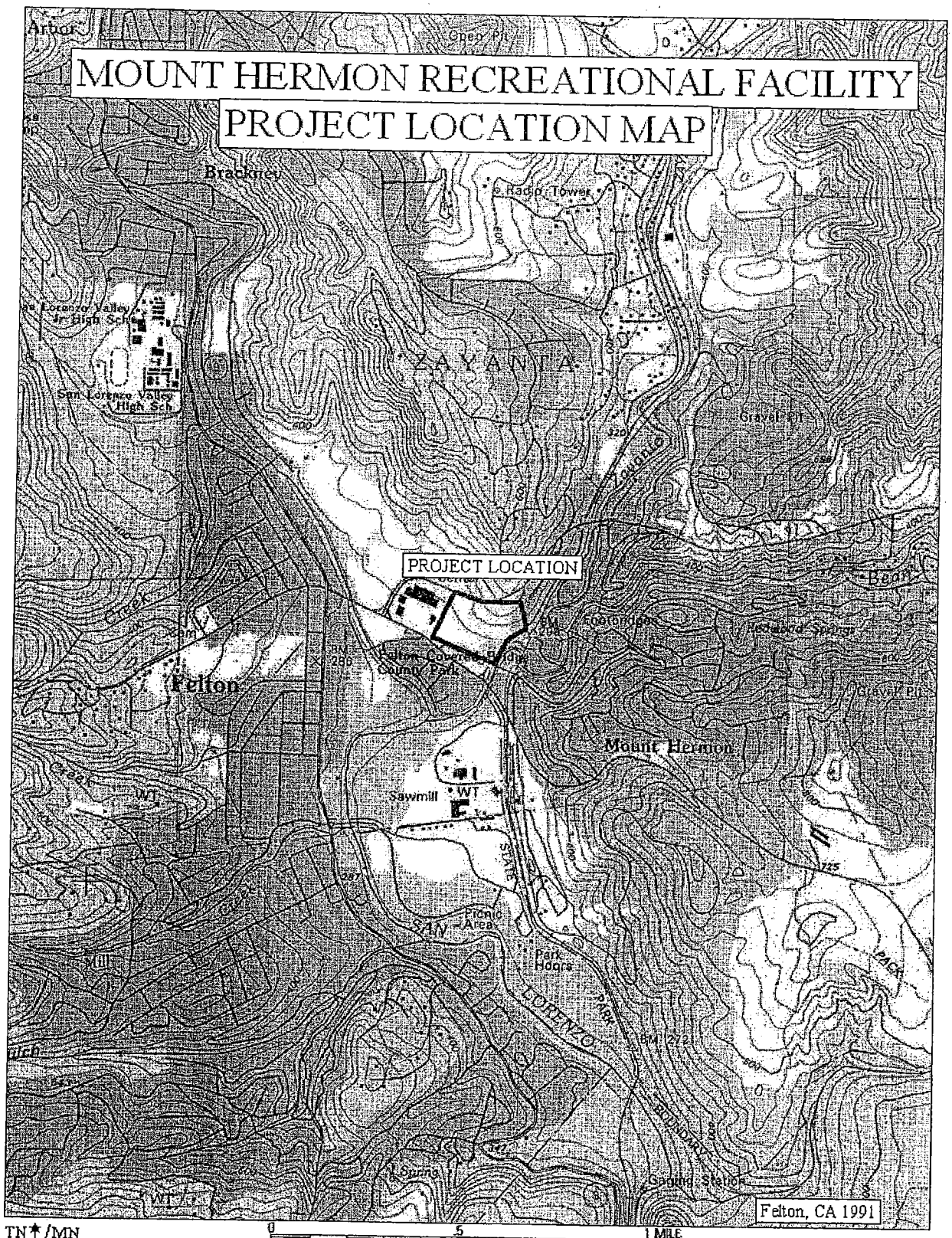
1972 Archaeological Aspect of Environmental Impact Report on PG&E Power Line Alignment from Davenport to Mt. Hermon: Preferred and Secondary Alignments. On file at the Northwest Information Center, Department of Anthropology, Sonoma State University, Rohnert Park.

ATTACHMENT 13

Guedon, S.
1998 Seismic Retrofit Programmatic Agreement Short Form HPSR, 05-SCR-Co. Rd., Bridge Number 36C-0038, Seismic Retrofit Work of the Conference Drive Bridge." On file at the Northwest Information Center, Department of Anthropology, Sonoma State University, Rohnert Park.

Northwest Information Center
2013 Record Search NWIC# 12-0929 on file at the Northwest Information Center, Department of Anthropology, Sonoma State University, Rohnert Park.

MOUNT HERMON RECREATIONAL FACILITY
PROJECT LOCATION MAP



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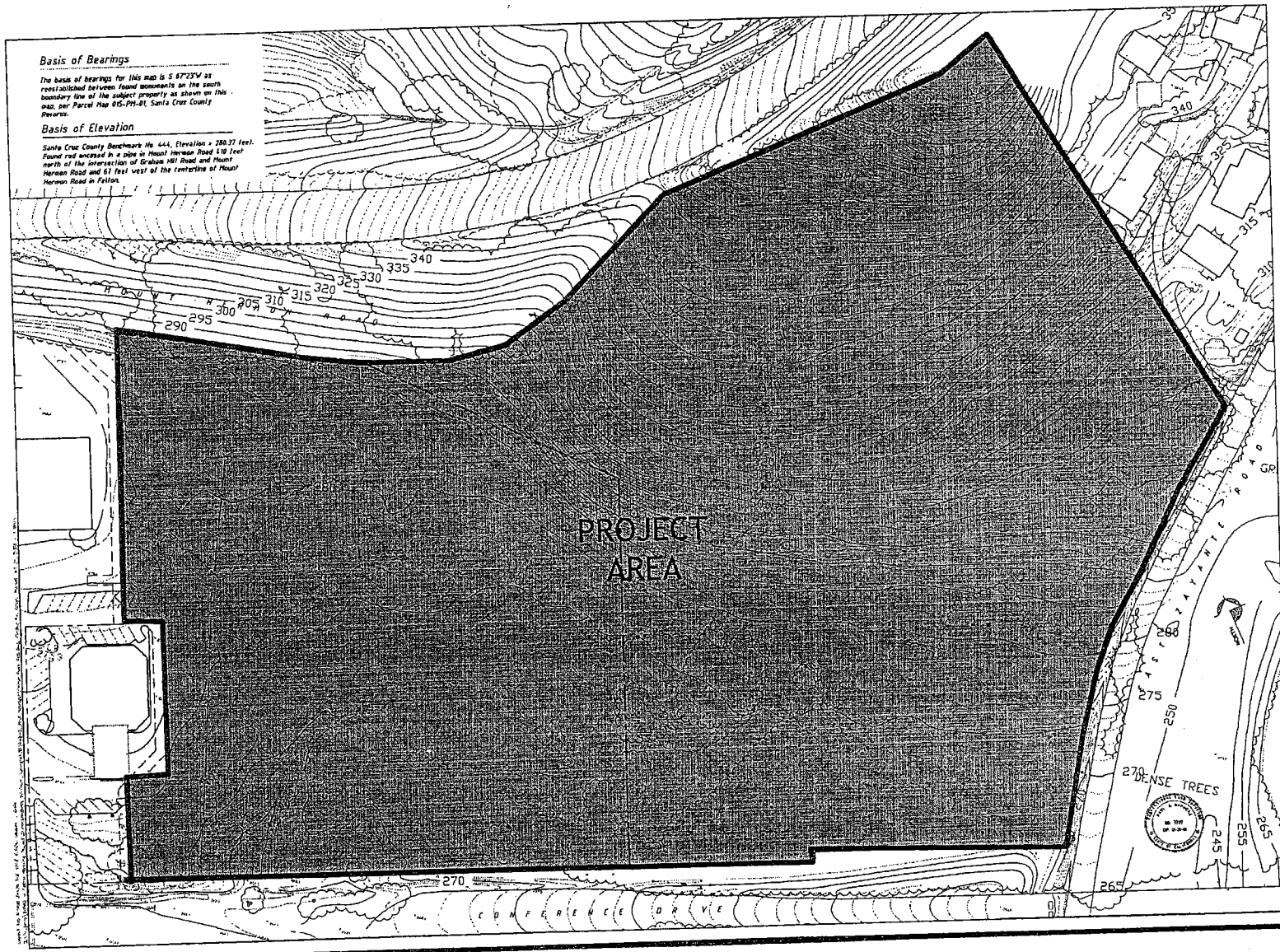
MOUNT HERMON RECREATIONAL FACILITY PROJECT AREA MAP



ATTACHMENT 13

Maureen Hamb- Certified Arborist WE2280
Professional Consulting Services

August 1, 2013

Mount Hermon
Attention: Dale Pollock
P.O. Box 413
Mount Hermon, CA 95041

Project: Felton Faire Property
Phase: Plan Review

As you requested I have reviewed the most recent plans for your project at Conference Drive and Graham Hill Road.

In May of this year I completed a report analyzing the potential impacts to the tree resources on the site. Recommendations for minor plan modifications were outlined to reduce impacts or retain significant trees.

The plans prepared by RI Engineering, Biosphere Consulting and Verde Design have incorporated the recommendations and impacts to retained trees have been reduced or eliminated.

Eleven trees will require removal due to impacts related to the proposed development. In addition, I have recommended the removal of five trees that are either standing dead or in an irreversible state of decline.

Once the plans are approved and site staking is in place a specific tree protection plan will be prepared. This plan will include recommendations for clearance pruning, locations for exclusionary fencing and straw bale barricades.

Please call my office with any questions regarding the trees on this project site.

Respectfully,

Maureen Hamb-Certified Arborist #WE2280

849 Almar Ave. Suite C #319
Santa Cruz, CA 95060
email: maureenah@sbcglobal.net

Telephone: 831-763-6919
Fax: 831-763-7724
Mobile: 831-234-7735

ATTACHMENT 14

Maureen Hamb- Certified Arborist WE2280
Professional Consulting Services

TREE RESOURCE EVALUATION
PRELIMINARY CONSTRUCTION IMPACT ANALYSIS
MOUNT HERMON CONFERENCE CENTER
PROPOSED RECREATIONAL FACILITY
CONFERENCE DRIVE

PREPARED FOR
MOUNT HERMON
P.O. BOX 413
MOUNT HERMON, CA 95041

MAY 25, 2013

849 Almar Ave. Suite C #319
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ATTACHMENT 14

ASSIGNMENT/SCOPE OF SERVICES

Plans for the development of a recreational facility are in process for a large vacant parcel near Conference Drive and Graham Hill Road in Santa Cruz County.

The site is forested with a variety of native tree growth that could be affected by the development. Mount Hermon facility engineer, Dale Pollock retained me to evaluate the condition of the trees, review the proposed development plans and provide a preliminary assessment of the potential impacts to the tree resources. To complete the evaluation I have completed the following:

- Locate, map, number and catalog data on 161 individual or groups of trees greater than six inches in trunk diameter growing within the development area.
- Identify each tree as to species and measure trunk diameter at 54 inches above grade.
- Perform a visual assessment of each tree to determine health status, structural integrity and suitability for incorporation into the development project.
- Review development plans prepared by Verde Design to evaluate potential construction impacts.
- Provide preliminary recommendations for tree retention and tree removal based on overall condition and construction related impacts.
- Provide recommendations for reducing preliminary impacts.

SUMMARY

I have completed an evaluation of the health and structural stability and suitability of 161 individual or groups of trees growing on a large undeveloped site bordering Conference Drive, Graham Hill Road and Mt. Hermon Road.

The site is forested with native trees growing in small groupings or larger groves throughout the property. Coast live oak is the dominant species; young, semi-mature and mature trees are present. Box elders represent approximately 50% of the trees in a dense grove at the southeast corner of the site.

In general, the oaks are in good condition with structural form and condition consistent with trees that have developed in a forest-type environment. The box elder display structural defects common to the species, especially when they develop in a dense system where canopy development is suppressed.

The proposed project includes a number of recreational/sports areas including cycling, aerial adventures, and target/paintball courses. In addition, a retail center and educational facility are included. The majority of the property will be utilized for these activities.

I have preliminarily recommended the removal of nine trees because of construction impacts. An additional 11 trees may require removal due to condition; they are either standing dead or display structural defects that cannot be mitigated.

BACKGROUND

In 2007, a residential development project was proposed for this property. At that time, I inventoried and evaluated 60 trees growing on the site. The initial inventory has been updated and the remainder of the trees evaluated and added.

For purposes of identification numbered metal tags have been affixed to the tree trunks and locations documented on the attached site plan. Several dense clusters of box elders were evaluated as "tree groups" as they were in a similar condition. Additionally, the dense forest at the northern edge of the site could not be accessed due to dense undergrowth. The species were visually identified from a distance. The specific information regarding the numbers and condition of the trees will be gathered once the site is accessible.

The attached inventory includes tree species, trunk diameter, and ratings for tree condition, level of impacts and preliminary recommendations. In addition, the "Critical Root Zone" (CRZ) dimensions are listed. This is the area of root development that should be left undisturbed to ensure the long-term survival and stability of each tree.

Ratings for tree condition are determined following the completion of a visual tree assessment. This type of evaluation is based on methods developed by Claus Mattheck and documented in The Body Language of Trees. The assessment involves an analysis of biology and mechanics of each tree which are then rated as "good, "fair" or "poor".

OBSERVATIONS

The development site is a large parcel bordered by three public roadways and a commercial shopping center.

The southern portion of the site is mainly level, with steep slopes to the north. The central portion of the property is open grassland with small groupings of young oaks. Several box elder stand in a swale area at the southwest.

The southeast corner of the property is pictured below. It is densely forested with coast live oak (*Quercus agrifolia*), interior live oak (*Quercus wislizenii*), and box elder (*Acer negundo*).

Several small groves of mature coast live oaks are growing on the lower northern slope. The trees have broad, low, spreading canopies typical of the species.

ATTACHMENT 14

In general, the oaks are in good health, absent of serious structural defects. The box elder are poorly structured with suppressed structural form due to the dense growing conditions. Decay and dead branching are a dominant feature of this species on the site.

DISCUSSION OF CONSTRUCTION IMPACTS/RECOMMENDATIONS

The **Critical Root Zone** (CRZ) for each tree is listed in the attached inventory. It represents the optimum area around a single tree or group of trees in which no grading, excavation, or soil compaction should occur. The critical root zone must be large enough to retain sufficient root and crown area to maintain both tree health and stability.

Native trees are especially sensitive to changes in natural grade. A "cut" or reduction of grade can remove or damage the absorbing roots responsible for providing the tree with moisture and nutrients. The larger diameter woody roots can also be removed or damaged causing destabilization.

An increase in grade limits the exchange of oxygen causing the absorbing roots to suffocate; structural roots can decay limiting their ability to keep the tree anchored and upright.

Trenching or excavation needed for foundations, footings and utilities can damage structural roots and destabilize trees. Compaction that is required for pavement stabilization can limit the exchange of gases that are needed for root health.

During development it often becomes necessary to encroach into the CRZ. Alternatives are available to reduce impacts to both the absorbing and structural root systems. Each proposed activity area and the associated potential impacts area summarized in the attached inventory. In several areas, the specific impacts cannot be determined until the site staking or construction detail drawings are completed.

Recommendations for reducing impacts may include but not be limited to:

- **Plan modification**

    - This recommendation has been made to accommodate tree # 16, a healthy coast live oak near the edge of the driveway entry. If possible, a slight modification can allow the preservation of this tree.

- The pump track and skills area cycling courses may require minor modifications to reduce impacts to trees #7-#12. Grading or compaction should be reduced or eliminated within the CRZ. In addition, the low branching may not provide the vertical clearance needed for cycling beneath the canopies. Pruning to allow for clearance may remove excessive branching or foliage.

- The Aerial Adventure and Alpine Bike Park could affect two groups of mature oaks. The specific impacts to the trees will be evaluated once the plans are finalized and field staking installed. The size of the tree canopies and CRZ dimensions will be taken into consideration.

- The downhill cycling track must avoid impacts to tree #152. The tree is significantly sized with a full, broad canopy.

- The locations of the leach fields will be field located to avoid impacts to the large coast live oak trees.

- The septic system will be designed to avoid the CRZ of protected trees.

- The walkway adjacent to tree #13 will be relocated to reduce impacts to the root zone.

- **Alternative construction methods**

  - This recommendation can include, but not be limited to preconstruction treatments such as root pruning, hand excavation or grading. Grading may be required within the Target Sports/Paintball Course. Any grading or soil compaction must be kept to the minimum necessary. A layer of wood chip type mulch can buffer the compaction associated with heavy foot traffic areas.

- **Tree Removal**

  - The preliminary plans require the removal of 11 trees that are growing within the footprint of the proposed development.
  - An additional 11 trees either are standing dead or have structural defects that could lead to branch or whole tree removal.

- **Protection Fencing**

    - This is a simple and effective way to protect trees during construction. Fencing supported by posts in the ground creates both a physical and visual barrier between the trees, the construction workers and their equipment. Once the site staking is in place and impacts to trees finalized a specific fencing plan will be prepared.

Any questions regarding the trees on this development site or the content of this report can be directed to my office.

Respectfully submitted,

Maureen Hamb-Certified Arborist WE2280

ATTACHMENT 14

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR

Dale Pollock
Mount Herman Association
PO Box 413
Mt Herman, CA 95041

November 5, 2013

Dear Mr. Pollock:

Arborist Report Review APNs 071-331-05, 06

Introduction:

We have received and reviewed the completed Arborist Report, prepared by Maureen Hamb, May 25, 2013. The report are required to accurately assess the potential impacts to trees of a proposed recreational project on the subject parcels and to allow avoidance of impacts to be planned in the design phase of the project, as well as to recommend mitigation measures to unavoidable impacts.

Discussion:

The report as submitted does a good job of describing the impacts to oak trees on the subject parcel and recommending modifications to the design to avoid impacts, which we understand have already been incorporated into the design. The report has a brief discussion of the box elder grove where the proposed target and paint ball activities will be conducted and where the leach field is proposed. The discussion of impacts is limited to trenching and simply states the leach field will be field located to avoid large coast live oaks, but doesn't address either the root zones for the box elder, nor the impacts to introducing the leachate into this grove. The report also does not include any discussion of acacia on the property.

Conclusion: * REVISED REPORT ATTACHED

The report was reviewed by the County Planning Department and has been found to be deficient. In order for the County to accept and approve the biotic report, and to allow the proposed development to move forward in the permitting process, the following items must be addressed:

1. Revise the report to include the following:

    a. A discussion of the impacts to the trees within the proposed leach field due to leachate;

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b. A discussion of the potential impacts to the box elders from trenching in the leach field and methods to avoid or minimize those impacts;
c. A discussion of the non-native trees on the subject parcel. While it is not necessary to protect these trees, their disposition should be included in this report.

Please call me at 831-454-3201 if you have any questions about this letter.

Sincerely,

Matthew Johnston
Environmental Planning

CC: Robin Bolster-Grant

ATTACHMENT 15

Maureen Hamb- Certified Arborist WE2280
Professional Consulting Services

November 22, 2013

Mt Hermon
Attention: Dale Pollock
P.O. Box 413
Mount Hermon, CA 95041

As you requested I have reviewed the comments provided by the County of Santa Cruz Planning Department (Matthew Johnson, 11/05/2013). They have requested additional information regarding the following:

1a. A discussion of the impacts to the trees within the proposed leach field due to leachate:

Trees adjacent to the leach fields are mainly small diameter box elder (*Acer negundo*), a riparian species. Soil moisture in the area may increase because of the system but this species is adapted to wet environments and can tolerate constant soil moisture or inundation.

Other changes that may be associated with the system include increased nitrogen levels or changes in soil pH. According to literature provided by David Quinn, Biosphere Consulting, the system proposed for this site decreases the nitrogen level of the original material by 60%, in addition the pH levels remain between 6.5 and 7 which is appropriate for root development.

Nitrogen is a chemical that trees utilize to produce green, healthy foliage and root systems. Nitrogen does not stay active within the soil for long, and does not remain as a residual chemical within the soil. It is easily diluted and can volatilize when temperatures are warm. Any excess nitrogen introduced into the growing area may improve tree growth.

No adverse affects to trees are anticipated because of the leachate associated with the proposed system.

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Mobile: 831-234-7735

ATTACHMENT 15

1b. A discussion of the potential impacts to the box elder from trenching in the leach field and methods to avoid or minimize those impacts:

As stated in the original arborist report the exact locations of the underground trenching to construct the leach fields will be selected based on tree locations. Most of the trees in the general area are semi-mature with trunk diameters that range from saplings to 13 inches. The Critical Root Zone for a 13-inch tree is a six-foot radius. Taking into account the space between the tree trunks, and existing open areas, encroachment into the CRZ of most trees is not anticipated.

If trenching within the CRZ of any tree becomes necessary, the excavation will be completed manually and roots over one inch in diameter properly pruned.

1c. A discussion of the non-native trees on the subject parcel.

Acacia (*Acacia baileyana*) is a non-native species that exists on the site. The northern portion of the property (sloped area below Mt. Hermon Road) contained several large clusters of acacia growth. In addition, a steeply sloped area to the northwest was densely forested with acacia. This area is outside the project property boundary and owned by the County of Santa Cruz.

Recently, CalFire contacted Mount Hermon staff to discuss a fuel management plan that included the removal of trees on both the northern slope within the project boundaries and the northwest slope owned by the County. Mount Hermon agreed to allow CalFire personnel to perform the fuel management plan and utilize their property to gain access to the County area to complete the tree removal.

When I visited the site on November 14, the tree removal had been completed and clean-up of wood debris was underway. Several large clusters of acacia were removed from the project property as recommended by CalFire. No other tree species was removed or altered during this process.

Development Plan Update

The project proposed for the site has been recently updated to include a pedestrian bridge that originates from an existing parking area off East Zayante Road.

Several trees growing on both sides of East Zayante Road will require removal to construct the bridge. Tree numbers, species, trunk diameter and condition ratings are listed below.

Tree #	Species	Diameter	Condition
162	Interior Live Oak	11.5	Fair
163	Bay	Cluster of stems	Fair
164	Interior Live Oak	8.4	fair
165	Interior Live Oak	15.9	good
166	Interior Live Oak	10.4	good
167	Alder	Cluster of stems	fair

The tree removal required to construct the site as proposed includes 16 trees, an additional four trees will be removed as they are either standing dead or in poor condition.

Please call my office with any questions regarding the trees on this project site.

Respectfully submitted,

Maureen Hamb-Certified Arborist WE2280

ATTACHMENT 15

Biotic Resources Group
Biotic Assessments • Resource Management • Permitting

Mount Hermon Association
Felton Meadow Project

Riparian Restoration Monitoring and Maintenance Plan

Prepared For

Dale Pollock
Facilities Engineer, Mount Hermon Association
PO Box 413, Mount Hermon, Ca 95041
831.430.1204 | fax 831.335.9218

Prepared By

Biotic Resources Group
Kathleen Lyons, Plant Ecologist

July 23, 2014

ATTACHMENT 16

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Chapter 1. Introduction

The Mount Hermon Association Felton Meadow property is located in Felton, Santa Cruz County. The project area is located north of Conference Drive and west of Zayante Road. The property is proposed for recreational uses and includes a riparian restoration area in the southwest corner of the property. The maintenance and monitoring of this riparian restoration area is the subject of this report.

The location of the Felton Meadow property, including the riparian restoration area, is depicted on Figure A.1 (Appendix A).The riparian restoration area encompass approximately 7,000 square feet, wherein native riparian plantings will be installed to achieve an approximately 3.5:1 impact to restoration ratio. The riparian restoration area currently supports a mosaic of native and non-native vegetation within an ephemeral drainage; some areas have been previously disturbed and support weedy, ruderal vegetation. Following property development (i.e., installation of bridge), the riparian restoration area will be prepared to receive plantings of native riparian trees, shrubs, and groundcovers. Invasive, non-native plant species and non-native landscape trees will be removed/controlled from the restoration area.

Project construction is anticipated to occur in fall 2014. Revegetation is expected to commence in fall/winter 2015 (Year 0). The Monitoring and Maintenance Plan will be initiated in Year 1 (2016) and will extend for 5 years (through 2020).

1.1. Restoration Goals and Objectives

Long-term biological goals have been identified for the riparian restoration area. The Preliminary Landscape Plan, Sheet L5.1 (Verde Design, 2014) as well as County permits and project conditions identify the following long-term goals and objectives for the restoration areas:

Restoration Area:

a) Establish approximately 7,000 square feet of native riparian plantings within the swale, thus achieving an approximately 3.5:1 impact to restoration ratio.
b) Install plantings that will enhance the riparian qualities of the swale by increasing plant diversity, boosting structural diversity (adding trees and shrubs), and enhancing wetland habitat (planting wetland plants along the channel).
a) Utilize locally-derived native plant propagules in the revegetation efforts.
b) Maintain 100% survival of installed container stock shrubs and small trees (excluding mugwort and rushes installed in creek bottom – see Sheet L5.1) each year during Years 1-3 and 80% survival for Years 4 and 5. Install replacement plants if needed to meet survival rates.
c) Control cover of invasive, non-native plant species (see Chapter 2) to less than 5% in Years 1-5.
d) Achieve a minimum of 30% woody plant cover and a minimum of 50% herbaceous cover (i.e., mugwort and rushes) at the end of Year 5.

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1.2 Summary Schedule

The riparian restoration area will be established in fall 2015 after construction of the site and installation of the bridge over the ephemeral swale. Planting of riparian trees, shrubs and groundcovers will occur in fall/winter 2015 (Year 0). Maintenance and monitoring tasks within the riparian restoration area will be initiated in 2016 (Year 1) and will continue through Year 5 (2020) as outlined in Table 1.

Table 1. Summary Schedule of Monitoring and Maintenance Activities, Years 0-5

Task	Year 0 (2015)				Year 1 (2016)				Year 2 (2017)				Years 3-5 (2018-2020)			
	W	S	S	F	W	S	S	F	W	S	S	F	W	S	S	F
Property Construction and Final Site Preparation																
Installation of Riparian Restoration Plantings																
Conduct Site Maintenance																
Supplemental Planting (if necessary) or Other Remedial Actions																
Conduct Yearly Monitoring																
Submit Monitoring Reports to County Planning Department																

ATTACHMENT 6

Chapter 2. Restoration Area Maintenance

2.1 Responsible Parties

The Mount Hermon Association is responsible for implementing all maintenance actions within the riparian restoration area, as outlined in this plan.

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2.2 Maintenance Activities

The goal for the riparian restoration area is to establish native riparian habitat that creates a structurally diverse riparian woodland and wetland understory along the ephemeral drainage and provides suitable and sustainable habitat for wildlife that will require little or no maintenance in the long term. The project also includes minimizing opportunities for invasive, non-native plant species establishment and minimizing irrigation system operation and maintenance. During the establishment period (Years 1-5), proper maintenance is especially important. When the habitat has established, maintenance efforts should be reduced.

The riparian restoration area will be maintained in perpetuity. A specific establishment period maintenance program will be implemented for the first five years following plant installation, as outlined in this document. After these five years, the site will be periodically maintained by the project applicant (Mount Hermon Association) as part of their ongoing duties in maintaining their developed property.

Maintenance efforts during Years 1-5 will consist primarily of weed removal and irrigation system operation and upkeep. Some plant replacement may be necessary during the first five years. When plants are well established, maintenance efforts will consist of weed control and removal/control of invasive, non-native plant species. After Year 5 maintenance will likely be reduced to the periodic control/removal of invasive non-native plants. Plant replacement may be required at any time if plants are subject to vandalism or injury from property users or natural events (e.g., flooding).

2.2.1 Weed Control and Mulching within Watering Basins

The watering basins around each container stock planting will be periodically weeded to remove unwanted plants. The basins will be routinely inspected and all weeds removed. The basins will be repaired expeditiously so irrigation water is directed to plant roots and does not runoff. Organic mulch will be replenished within each basin to suppress weeds and to retain soil moisture. A planting plan detail is presented in the Appendix. Specifications for installation and mulch in support of the Landscape Plan (Sheet L5.1 by Verde Design, 2014)

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will also be prepared at a later date and adhered to by the landscape contractor.

2.2.2 Irrigation System Inspection and Maintenance

The riparian restoration area will be irrigated under direction of the project landscape architect within input, as needed, from the revegetation specialist. Supplemental irrigation may cease on the recommendation of the revegetation specialist during the 5-year establishment period if the following conditions are met: 1) the tree and shrub composition meets the criteria of the performance standards; and 2) the plants are deemed to be established and no longer in need of irrigation.

2.2.3 Pruning, Herbivore Protection, Insect Pest Control and Debris Removal

Pruning will not be required. Much more irregular and random plant growth is desirable (for wildlife value) in natural habitats than is typical for urban landscaping. Pruning will not be permitted for grooming plants. Most especially, pruning to clean the understory shrubs and low branches of trees will not be conducted unless required for site security or as noted below.

If pruning is necessary, under the direction of a qualified arborist or landscape architect, pruning will be limited to the barest minimum required to accomplish the following goals:

Promote healthy initial plant growth. Extremely unbalanced plant growth will be pruned only during the first five years after planting, and just enough to promote initial strong growth of trees and shrubs.
Repair storm damage or remove hazard. Storm damage, such as broken branches or fallen trees, will be cleaned up if they are deemed to compromise channel stability or capacity. There will be no anticipated need for safety pruning of hazard trees since the revegetation areas are not intended for public access, with the exception of areas immediately adjacent to the vehicular bridge.

Above ground browse protection cages will need maintenance if they are knocked over by animals or property users or if they are vandalized. Above-ground cages will be removed once plants reach the top of the cage and no additional plant protection is needed.

Insect infestations will not be treated unless more than 5 to 10 percent of the trees or shrubs show significant damage. Insects are a primary food source for riparian birds, and once the habitats are functioning, the birds themselves will keep insects in balance. If this level of tolerance is exceeded and insects must be controlled, the applicant's landscape architect will develop an Integrated Pest Management (IPM), which will be implemented and the use of biological controls will be maximized.

All non-organic debris will be removed and properly disposed of off-site during the entire 5-year maintenance period. All organic debris such as leaves, dead branches, plants, and snags will be left in the restoration area to increase wildlife habitat and add organic matter to the soil.

2.2.3 Invasive Plant Species Control

Infestations of invasive, non-native plants will be reduced and controlled within the riparian restoration area. The safest way to control weeds is to patrol frequently, and remove weeds manually. No pre-emergent herbicides will be used within the riparian restoration areas; however, select herbicides may be used for spot treatment of select invasive, non-native plant species. If herbicides are considered necessary, they will be used only on the recommendation of a California Licensed Qualified Applicator in conjunction with a qualified revegetation specialist, and only on sites narrowly specified. Table 2 lists the weeds currently or potentially of management concern within the riparian restoration area and the recommended control method.

Table 2. Invasive, Non-native Plant Species of Management Concern and Recommended Treatment

Common Name	Scientific Name	Cal-IPC Ranking	Growth Habit	Recommended Control Method
Bull thistle, Italian thistle	*Cirsium vulgare, Carduus pycnocephalus*	Moderate	Annual Biennial	1
Cape ivy	*Delairea odorata*	High	Perennial	2 and 4
English ivy	*Hedera helix*	High	Perennial	2 and 4
Fennel	*Foeniculum vulgare*	High	Perennial	1
Himalaya berry	*Rubus discolor*	High	Perennial	1 and 4
French broom	*Genista monspessulanus*	High	Perennial	2
Pampas/Jubata grass	*Cortederia jubata*	High	Perennial	2 and 4
Periwinkle	*Vinca major*	High	Perennial	2, 3, and 4
Poison hemlock	*Conium maculatum*	Moderate	Biennial	1
Wild mustard	*Brassica spp.*	Moderate	Biennial	1
Wild radish	*Raphanus sativa*	Limited	Annual	1

Invasive Non-native Plant Control Treatment Methods

Code	Treatment
1	Hand remove using small hand tools, remove prior to spring/summer flowering
2	Hand pull with tools
3	Weed-whip, followed by specific techniques and timing (see Appendix B)
4	Herbicide with or without surfactant

Categories of Invasive Plants, California Invasive Plant Inventory (Cal-IPC, 2014)

Ranking	Meaning of Ranking
High	Plant species pose severe ecological impacts on physical processes, plant and animal communities and vegetation structure, plants have moderate to high rates of dispersal and establishment.
Moderate	Plant species have substantial ecological impacts; plants have moderate to high rates of dispersal yet establishment is generally dependent on ecological disturbance.
Limited	Plant species are invasive, but ecological impacts are minor on statewide level; reproductive biology result in low to moderate rates of spread, but species may be locally persistent and problematic.

2.2.4 Plant Replacement/Replanting

The density of woody plant species (woody shrubs and small trees) installed is designed to create continuous and structurally diverse riparian woodland. Herbaceous plants (mugwort

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and rushes) will also provide cover in the creek bottom. Supplemental planting may be needed due to unforeseen events or factors, such as soil compaction, vandalism or other damage, drought, or severe flooding. Supplemental planting needs will be assessed during the annual monitoring. The need for supplemental planting will be determined by monitoring field performance and comparing it to the performance standards. The number of replacement plants, the species, and the propagule/container size, will be determined by the monitor and stated in the annual monitoring report. Replacement plant species will coincide with the plant list in the Landscape Plan, Sheet L5.1 (Verde Design, 2014). The Mount Hermon Association or their designated contractor will be responsible for contracting with a native plant nursery for the production of the required plants.

Supplemental plant installation will occur within 30 days of the site inspection. This schedule may be amended if the necessary plants are not available, are low in quality, or conditions are deemed unsuitable for replanting. It is desirable to replant as soon as possible to minimize the extension of the establishment period maintenance. Supplemental planting will be triggered when the number of live, healthy woody plants falls below (or is thought to imminently fall below) the numbers required as outlined in the success criteria section. A qualified revegetation specialist will decide the number of plants, the species, and the propagule/container size. Substitute species may be used if the original species consistently performs poorly and suitable alternative species perform well. However, substitute species should be consistent with the goals and objectives and be compatible with the criteria for success.

The number of supplemental plants installed may be greater than the number of plants required to bring the total live plants up to the performance standards. Additional plants can be installed to allow for some mortality and still meet the performance standards.

2.3 Maintenance Schedule

After plant installation, maintenance activities will be selected and timed to maximize their effectiveness, such as weeding prior to flowering and seed set. Maintenance activities will occur only in areas designated for those activities.

During the five-year establishment period, the Mount Hermon Association landscape contractor or other designated maintenance personnel will check and, if necessary, tend to each plant at least once a month. Irrigation emitters (if used) will also be checked at least once every other week during periods of irrigation system operation. If necessary, animal protection devices, such as screening, will be adjusted, weeds removed, or mulch adjusted. Soil around the plant will be examined to ensure that adequate moisture is available and the emitter or irrigation system will be adjusted, if necessary. A log of all irrigation observations and adjustments will be kept by maintenance personnel. All plants will receive water at the rate stated by the landscape architect (Verde Design). If appropriate, each irrigation circuit or valve zone will be checked during each irrigation session for proper operation.

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Table 3. Maintenance Schedule

Task	Winter	Spring	Summer	Fall
Yearly, conduct field inspections to monitor plant growth and progress of flowering stalks on invasive weed species. Monitor project area for changes in distribution of existing invasive weeds.				
Yearly, prior to the spring flowering season conduct first-season removal of invasive weeds.				
Monthly, check planting basins and remove weeds, repair browse protection cages, if needed.				
Yearly, in early spring check irrigation system and program system for spring and summer irrigation (Years 1-3)				
In spring and summer, every two weeks check irrigation system to ensure each plant is receiving adequate water; repair leaks or other problems with irrigation system				

2.4 Evaluation and Reporting of Maintenance Activities

The Mount Hermon Association landscape contractor or other designated maintenance personnel will monitor the need for maintenance and will keep records documenting maintenance task items performed. Documentation will include the date, maintenance tasks performed, who performed maintenance, notes on other tasks requiring action, and observations of problems or potential problems. Maintenance tasks documented will include, but not be limited to: irrigation, irrigation system maintenance, weed control, supplemental planting, mulching, plant protection measures and debris removal. This log will be submitted to the Mount Hermon Association revegetation specialist for preparation of the yearly monitoring report.

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Chapter 3. Restoration Area Performance Standards

3.1 Performance Standards

The performance standards for the riparian restoration areas are outlined below. When these standards are fulfilled, the restoration areas will be determined to be progressing toward the habitat type and values that constitute the long-term goals of this project. The performance standards will be monitored for compliance during each monitoring year by a qualified botanist, ecologist or revegetation specialist.

Performance standards are established for the riparian woodland (container stock shrubs and small trees) and its understory vegetation (herbaceous plants of mugwort and rushes). These are measured during Years 1-5. As depicted on Table 4, survival of woody container stock species, woody plant cover, herbaceous plant cover, and cover provided by invasive, non-native plant species are performance standards that must be met. Remedial measures will be implemented by the Mount Hermon Association if these standards are not achieved in any of the monitoring years. Examples of remedial actions include re-planting failed plants, increasing weeding sessions, and/or modifying the irrigation system.

Table 4. Performance Standards for Years 1-5

	Year 1	Year 2	Year 3	Year 4	Year 5
RIPARIAN WOODLAND					
Woody Shrub and Small Tree Container Stock Plant Survival (%)[1]	100	100	100	80	80
Minimum Woody Plant Cover (%)[2]	≥5	≥10	≥15	≥20	≥30
Minimum Herbaceous Plant Cover (mugwort and rushes) (%)[2]	≥50	≥50	≥50	≥50	≥50
Maximum Cover by Invasive, Non-native Plant Species (%)[2]	≤5	≤5	≤5	≤5	≤5

[1] Surviving trees and shrub plants must have health/vigor rating of 3 or higher (see Chapter 4)

[2] Cover documented from line-intercept sampling (see Chapter 4)

Chapter 4. Restoration Area Monitoring

4.1 Responsible Parties

The Mount Hermon Association is responsible for implementing monitoring of the riparian restoration area, as outlined in this plan.

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4.2 Monitoring Methods

Monitoring is used to evaluate the effectiveness of plan activities and as a tool in determining if management actions should be revised to better reach Plan goals. The ability to alter management activities based on monitoring results is the primary tenet of the adaptive management process. Implementation of the Plan will utilize adaptive management strategies. This approach is particularly important as new data/research is gathered on-site and elsewhere on the native plant revegetation and management (see Chapter 5 on Adaptive Management).

4.2.1 Reconnaissance Surveys

A qualified botanist, ecologist, or revegetation specialist will periodically survey the riparian restoration area during Years 1-5. Reconnaissance surveys will consist of two site inspections, conducted at approximately 4-month intervals. The purpose of the reconnaissance visits will be to assess how the revegetation is proceeding, and to identify problems or potential problems that may exist. During these surveys, the inspector will look for plant damage, document significant damage, and will make recommendations to correct any significant problems or potential problems. These visits will also be used to document the need to change or adjust revegetation plan activities (i.e., altering the maintenance schedule, adding extra weed control visits, increasing or reducing the frequency or amount of irrigation water, or remove inorganic debris). The presence of invasive non-native plant species will be ascertained during the reconnaissance surveys. The assessments will be used to evaluate the maintenance practices within the restoration area and to identify any remedial actions necessary to properly maintain the site. The inspector will confer with the Mount Hermon Association on maintenance practices within the restoration area and other issues that may arise. An email progress memo will be prepared after each of these inspections and submitted to the Mount Hermon Association.

4.2.2 Detailed Monitoring of Shrubs and Trees for Plant Survival and Growth

Monitoring visits will be made to the restoration area between July and September of Years 1-5. These visits will be used to collect quantitative data on the revegetation plantings. The monitoring survey will evaluate plant survival and health/vigor during or, for some species,

just after, peak growth.

Plant Survival. In each monitoring year, each container stock tree and shrub will be assessed for plant survival, health, and vigor. The survivorship of plantings will be determined by field counts of all plants within the restoration area(s). The survival rate for each species will be documented and compared to performance standards. Data on plant survival, health and vigor will be compared to previous year data, such that trends in plant growth can be detected. The plant survival data will be used to determine if the project is meeting the required survival rates and to determine if remedial planting is required.

Health and vigor of each tree and shrub container stock plantings will be recorded using the rating scale in Table 5.

Table 5. Health and Vigor Rating Scale

Code	Rating	Health Characteristics	Vigor Characteristics
4	Excellent	75-100% healthy foliage	Vigorous new growth observed throughout plant
3	Good	50-74% healthy foliage	Vigorous new growth observed only at terminal bud
2	Fair	25-49% healthy foliage	No new growth evident
1	Poor	0-24% healthy foliage	Stem dieback observed

Plant Cover. Data will be collected along permanent transects to document percent cover of vegetation. The transects will be randomly located within the restoration area. Tree and shrub cover will be measured using the line intercept method and will be recorded by species. Percent cover of tree and shrub species will be compared to data collected in previous years and to the performance standards. Cover by invasive, non-native plant species will also be recorded. Herbaceous cover will also be recorded to document progress of the areas planted with mugwort and rush (herbaceous species). The location of the monitoring transects will be depicted on a site plan.

4.2.3 Photo-Documentation

Photos will be taken of the revegetation area at least once a year in Years 1-5. Photos will be taken from the same vantage point and in the same direction every year, and shall reflect the findings discussed in the monitoring report. A minimum of 4 photo stations will be established. The location and photo direction of each photo stations will be established in Year 1. GPS data for each photo station shall be recorded and the location depicted on the as-built planting plan.

4.3 Monitoring Report Requirements

Annual reports for monitoring Years 1-5 will present data on the riparian restoration and the attainment of yearly performance standards, progress toward restoration area goals, and any remedial actions required.

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Annual reports will include the following topics:

1. Project name and location
2. Applicant's name, address, and phone number
3. Names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year
4. County application number, other permit numbers (if applicable
5. Purpose and goals of the riparian restoration
6. Dates of restoration site construction, seeding, and planting
7. Results of field data and analysis of quantitative monitoring data and success criteria
8. Monitoring photographs from photo stations.
9. Maps identifying monitoring areas and planting zones, as appropriate.
10. Identification of any remedial actions necessary to meet performance standards.
11. List of actions for the next year's maintenance.

4.4 Monitoring and Reporting Schedule

Reconnaissance surveys will be conducted two times a year during Years 1-5. Detailed monitoring (plant survival counts, vegetative cover measurements, and photo-documentation) will be conducted once a year between July and September of Years 1-5.

The Mount Hermon Association or designated contractor shall prepare annual monitoring reports. The Mount Hermon Association shall submit the annual reports to the County of Santa Cruz Planning Department before December 31 of each monitoring year (i.e., Years 1-5).

4.5 Notification

When the required monitoring period is complete and the Mount Hermon Association believes that the final performance standards have been met, the Mount Hermon Association will notify the County Planning Department when submitting the proposed final report (Year 5). Final performance standards will be considered met a minimum of two years after all irrigation has ceased. Maintenance actions, such as control and/or removal of invasive non-native plant species can occur throughout (and beyond) the five-year monitoring period.

4.6 County Confirmation

Following receipt of the proposed final report, the County Planning Department will either confirm the successful completion of the revegetation obligation or require additional years of monitoring. The County Planning Department will make this determination within 30 days of receipt of the final report. The Mount Hermon Association will not be released from the revegetation obligation until written notice of completion is received from the County Planning Department or 180 days have passed since the applicant's submittal of the final report.

Chapter 5. Adaptive Management

5.1 Responsible Parties

The Mount Hermon Association is responsible for implementing adaptive management actions within the riparian restoration area as outlined in this plan.

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5.2 Potential Challenges to Project Success

The riparian restoration area is to be located within an otherwise developed recreational facility and is located adjacent to a parking lot and a public roadway; a commercial development is located nearby. Both natural and human-influenced activities may occur and may pose challenges to the success of the riparian restoration effort.

5.2.1 Flooding

The drainage is an ephemeral waterway. The riparian restoration area is located within this drainage and may be subject to high winter flows during above-average rainfall years. High flood flows that occur during Years 1 -5 that inundate all or part of the riparian restoration area would likely result in damage to riparian plantings. Silt deposition in and around the riparian plantings and direct damage to plant stems and tree trunks from moving debris could occur. Due to this damage, yearly performance standards may not be met.

5.2.2 Vandalism and Vegetation Disturbances

The relatively urban condition of the project vicinity may subject the site to vandalism. Vandalism may occur from graffiti, direct plant stem damage or cutting, or human caused fires. If vandalism, fires, or other damage occurs within the riparian restoration area plant survival, as well as plant health and vigor, may be compromised and yearly performance standards may not be met.

5.2.3 Invasive Plant Species

The monitoring and maintenance plan outlines measures to remove and control several invasive, non-native plant species that have been documented to occur on or adjacent to the riparian restoration area. New invasive plant species may colonize the area in the future and may spread into the riparian restoration area. Species may be brought to the site by humans or animals or in flood waters. If new species are successful at colonizing the area, performance standards for the maximum amount of invasive species (i.e., 5% cover) may not be met.

5.2.4 Other Issues

Other unforeseen activities may occur in the riparian restoration area. If such actions affect plant growth survival performance standards may not be met.

5.3 Potential Remedial Measures

If an unforeseen activity occurs within the riparian restoration area and an annual performance standard is not met for all or any portions of the revegetation area in any monitoring year, or if the final performance standards are not met, the applicant will prepare an analysis of the cause(s) of failure and proposed remedial actions for County Planning Department approval. Remedial actions may include additional maintenance and/or security patrols, temporary plant-protection fencing during plant establishment, re-planting all or portions of the area, removal of organic and/or inorganic debris, or other measures approved by the Mount Hermon Association and the County Planning Department.

Appendices

Components of Riparian Restoration Plan (Verde Design, 2014)

- Riparian Restoration Area Planting List (source Verde Design, 2014)
- Landscape Plan, Sheet L5.1 (Source Verde Design, 2014)

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PLANTING LEGEND

SYM	QTY	SIZE	BOTANICAL/COMMON NAME	SPACING/ COMMENTS
SHRUBS - CREEK BOTTOM				
	734	1 GAL	ARTEMISIA DOUGLASIANA MUGWORT	3'-0" O.C.
	689	1 GAL	JUNCUS PATENS SPREADING RUSH	3'-0" O.C.
SHRUBS - CREEK BOTTOM				
	37	5 GAL	CORYLUS CORNUTA CALIFORNIA HAZELNUT	8'-0" O.C.
	129	1 GAL	FRANGULA CALIFORNICA (RHAMNUS CALIFORNICA) CALIFORNIA COFFEE BERRY	4'-0" O.C.
	76	1 GAL	RIBES SANGUINEUM FLOWERING CURRANT	5'-0" O.C.
	128	1 GAL	ROSA CALIFORNICA CALIFORNIA ROSE	4'-0" O.C.
	80	1 GAL	SAMBUCUS MEXICANA BLUE ELDERBERRY	5'-0" O.C.

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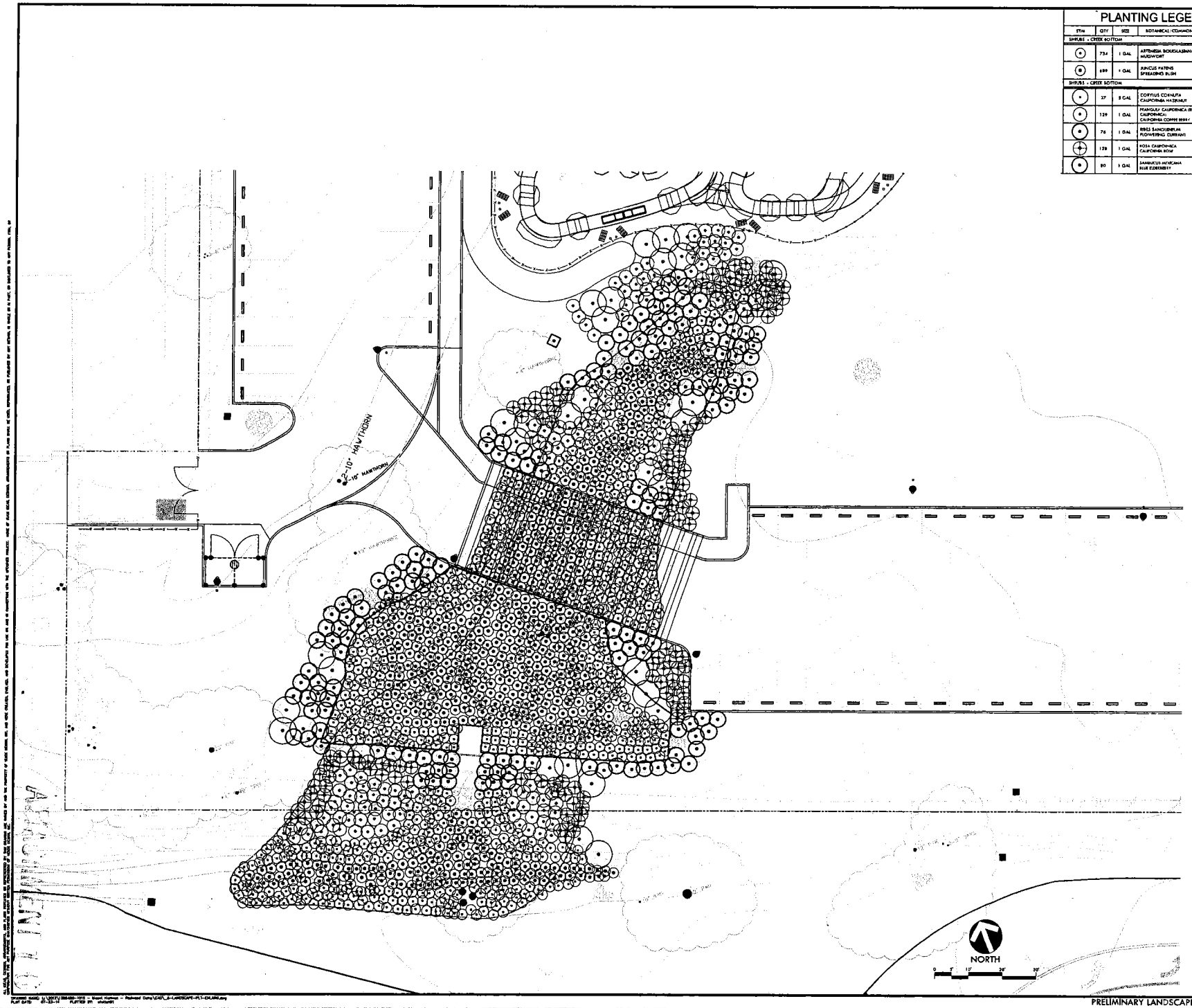

PLANTING LEGEND

SYM	QTY	SIZE	BOTANICAL / COMMON NAME	SPACING / COMMENTS
SHRUBS - CREEK BOTTOM				
	734	1 GAL	ARTEMISIA DOUGLASIANA MUGWORT	3'-0" O.C.
	699	1 GAL	JUNCUS PATENS SPREADING RUSH	3'-0" O.C.
SHRUBS - CREEK BOTTOM				
	27	5 GAL	COFFTUS CORNUTA CALIFORNIA HAZELNUT	6'-0" O.C.
	139	1 GAL	MAHONIA CALIFORNICA (BERBERIS CALIFORNICA) CALIFORNIA COPPER BERRY	4'-0" O.C.
	76	1 GAL	RIBES SANGUINEUM FLOWERING CURRANT	5'-0" O.C.
	128	1 GAL	ROSA CALIFORNICA CALIFORNIA ROSE	4'-0" O.C.
	80	1 GAL	SAMBUCUS MEXICANA BLUE ELDERBERRY	5'-0" O.C.

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REGISTERED LANDSCAPE ARCHITECT
CHRIS MOSS
No. 4168
STATE OF CALIFORNIA

CONSULTANT

SITE OVERVIEW

ASSESSOR'S PARCEL NUMBER: 071-151-05, 06

SHEET TITLE
PRELIMINARY LANDSCAPE PLAN - RIPARIAN CORRIDOR ENHANCEMENT

PROJECT NAME
MOUNT HERMON
NEW LAND DEVELOPMENT
PHASE ONE

PROJECT ADDRESS
CONFERENCE DRIVE
MOUNT HERMON, CA

SUBMITTAL	DATE
BOAL SUBMITTAL	08/13/14

NO.	REVISIONS	DATE
1		
2		
3		
4		
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RK	CMS
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