



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

www.sccoplanning.com

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 Shawver at (831) 454-3137 (TDD number (831) 454-2123 or (831) 763-8123) to make arrangements.

PROJECT: Proposed Staub Field Camp, Staff Cabins and Learning/Dining Center

APP #: 121314

APN(S): 057-121-22 et al (thirteen parcels total, see Table 1 of Initial Study)

PROJECT DESCRIPTION: Proposal to expand an existing educational research campus (Staub Field Camp) consisting of the construction of 12 student cabins (3,840 sq. ft. total), 2 staff cabins (1,880 sq. ft. total), a 3,816 sq. ft. Learning Center/Dining Hall, 400 square foot addition to existing classrooms, 900 sq. ft. Comfort Station (bathroom/shower), 720 sq. ft. laundry/break room, outdoor uncovered amphitheater/fire pit, the conversion of an existing non-habitable accessory structure into a training room, a lot line adjustment between APNs 057-121-22 and 057-151-03 and a significant tree removal. The project also includes approximately 468 cubic yards of excavation and 476 cubic yards of fill and improvements to School House Gulch Road at its intersection with Swanton Road.

PROJECT LOCATION: Located at the end of Schoolhouse Gulch Road approximately 1/3 miles east of the intersection with Swanton Road (900 Schoolhouse Gulch).

EXISTING ZONE DISTRICT: TP, CA, RA

APPLICANT: California Polytechnic State University Foundation

OWNER: CalPoly State University Foundation

PROJECT PLANNER: Robin Bolster-Grant

EMAIL: Robin.Bolster-Grant@santacruzcounty.us

ACTION: Negative Declaration with Mitigations

REVIEW PERIOD: February 19, 2015 through March 20, 2015 This project will be considered by the Planning Commission at a meeting on March 25, 2015. The meeting will be held at 9:00 a.m. in the Board of Supervisors Chambers, 701 Ocean Street, Room 525, Santa Cruz, CA 95060.



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MITIGATED NEGATIVE DECLARATION

Project: Proposed Staub Field Camp, Staff Cabins and Learning/Dining Center

APN(S): 057-121-22, et al (thirteen parcels total; see Table 1 in Initial Study)

Project Description: Proposal to expand an existing educational research campus (Staub Field Camp) consisting of the construction of 12 student cabins (3,840 sq. ft. total), 2 staff cabins (1,880 sq. ft. total), a 3,816 sq. ft. Learning Center/Dining Hall, 400 square foot addition to existing classrooms, 900 sq. ft. Comfort Station (bathroom/shower), 720 sq. ft. laundry/break room, outdoor uncovered amphitheater/fire pit, the conversion of an existing non-habitable accessory structure into a training room, a lot line adjustment between APNs 057-121-22 and 057-151-03 and a significant tree removal. The project also includes approximately 468 cubic yards of excavation and 476 cubic yards of fill and improvements to School House Gulch Road at its intersection with Swanton Road.

Project Location: Located at the end of Schoolhouse Gulch Road approximately 1/3 miles east of the intersection with Swanton Road (900 Schoolhouse Gulch).

Owner: CalPoly State University Foundation

Applicant: California Polytechnic State University Foundation

Staff Planner: Robin Bolster-Grant

Email: robin.bolster-grant@santacruzcounty.us

This project will be considered by the Planning Commission at a meeting on March 25, 2015. The meeting will be held at 9:00 a.m. in the Board of Supervisors Chambers, 701 Ocean Street, Room 525, Santa Cruz, CA 95060.

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: March 20, 2015

Date: _____

TODD SEXAUER, Environmental Coordinator
(831) 454-3511



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CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ENVIRONMENTAL REVIEW INITIAL STUDY

Date: January 26, 2015

Application Number: 121314

Staff Planner: Robin Bolster-Grant

I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

APPLICANT: Calif. Polytechnic State University Foundation

APN(s): 057-121-22, et al (thirteen parcels total; see Table 1)

OWNER: CalPoly State Univ. Foundation

SUPERVISORAL DISTRICT: 3rd

PROJECT LOCATION: Located at the end of Schoolhouse Gulch Road approximately 1/3 miles east of the intersection with Swanton Road (900 Schoolhouse Gulch)

SUMMARY PROJECT DESCRIPTION:

Proposal to expand an existing educational research campus (Staub Field Camp) consisting of the construction of 12 student cabins (3,840 sq. ft. total), 2 staff cabins (1,880 sq ft total), a 3,816 sq. ft. Learning Center/Dining Hall, 400 square foot addition to existing classrooms, 900 sq. ft. Comfort Station (bathroom/shower), 720 sq. ft. laundry/break room, outdoor uncovered amphitheater/fire pit, the conversion of an existing non-habitable accessory structure into a training room, a lot line adjustment between APNs 057-121-22 and 057-151-03 and a significant tree removal. The project also includes approximately 468 cubic yards of excavation and 476 cubic yards of fill and improvements to School House Gulch Road at its intersection with Swanton Road.

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.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Geology/Soils | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Hydrology/Water Supply/Water Quality | <input type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input type="checkbox"/> Greenhouse Gas Emissions |
| <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Visual Resources & Aesthetics | <input type="checkbox"/> Utilities & Service Systems |
| <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Land Use and Planning |
| <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Population and Housing |

Transportation/Traffic

Mandatory Findings of Significance

DISCRETIONARY APPROVAL(S) BEING CONSIDERED:

General Plan Amendment

Coastal Development Permit

Land Division

Grading Permit

Rezoning

Riparian Exception

Development Permit

Other: Lot Line Adjustment
Significant Tree Removal

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

2/13/15

Date

II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS

Parcel Size (057-121-22; primary): approximately 380 acres
Existing Land Use: Timber, agriculture, educational and residential facilities
Vegetation: redwood/Douglas fir forest, cropland, grasslands/coastal terrace prairie
Slope in area affected by project: 0 - 30% 31 - 100%
Nearby Watercourse: Winter Creek, Archibald Creek
Distance To: Bisect Property

ENVIRONMENTAL RESOURCES AND CONSTRAINTS

Water Supply Watershed: Not Mapped	Fault Zone: Not Mapped
Groundwater Recharge: Yes, portion	Scenic Corridor: Yes, Swanton Road
Timber or Mineral: Timber Resource	Historic: Cheese House
Agricultural Resource: Adjacent Parcels	Archaeology: Yes, no resource found
Biologically Sensitive Habitat: Yes: biotic report completed	Noise Constraint: No
Fire Hazard: Portion, outside development	Electric Power Lines: No
Floodplain: Not mapped	Solar Access: Adequate
Erosion: Moderate	Solar Orientation: Adequate
Landslide: Yes; Geology Report completed	Hazardous Materials: No
Liquefaction: No	Other:

SERVICES

Fire Protection: CalFire	Drainage District: None
School District: N/A	Project Access: Swanton Road
Sewage Disposal: Private	Water Supply: Private

PLANNING POLICIES

Zone District: TP, CA, RA	Special Designation:
General Plan: R-M	
Urban Services Line: <input type="checkbox"/> Inside	<input checked="" type="checkbox"/> Outside
Coastal Zone: <input checked="" type="checkbox"/> Inside	<input type="checkbox"/> Outside

ENVIRONMENTAL SETTING AND SURROUNDING LAND USES:

The Swanton Pacific Ranch (Ranch) is located approximately 4 miles north of Davenport on the northwestern slopes of Ben Lomond Mountain. The site is reached via Swanton Road, which follows Scott Creek upstream. The project sites are located in the hillslopes east of the Scott Creek drainage. These hillslopes are dissected by westward draining creeks with intervening upland areas. North of the sites is Little Creek. South of the project sites are Winter Creek, Archibald Creek and Molino Creek.

The Ranch includes thirteen parcels and encompasses 3,280 acres. The Ranch consists of approximately 100 acres of cropland, 1,435 acres of redwood and Douglas fir and 1,500 acres of grassland. The forested land is located primarily on the eastern side of the property with moderate to steep slopes along several creeks that are

tributaries of Scotts Creek. The cropland lies alongside Scotts Creek, which bisects the property in a northwest/southeast direction. The grassland is on the coastal terraces on the west side of the property. The Ranch properties are owned by Cal Poly Corporation and managed by Cal Poly's College of Agriculture, Food and Environmental Sciences. The facility provides students and faculty researchers' educational opportunities in areas of sustainable agriculture, timber harvesting, riparian protection and many other areas of study.

The parcels range in size from ½ acre to 585.5 acres and are zoned primarily Commercial Agriculture (CA) and Timber Production (TP). Parcel 057-121-10 lies within the boundaries of the Ranch, but is owned by Al Smith family.

Two access roads currently serve the portion of the Ranch proposed for development: Old Schoolhouse Road and an unnamed access road to the north located at Archibald Creek.

The Ranch properties are developed with a number of existing structures, which are summarized in Table 1 below.

The existing educational programs on the Ranch encompass all thirteen parcels, via both classroom and field settings. All thirteen parcels are used for education and research and were used in the Rural Density Matrix calculation. However, the only parcels proposed for development under this application are APNs 057-121-22, 057-141-01, 057-151-05, 057-151-06, and 057-151-03.

Vegetation in the vicinity of the proposed improvements is primarily grassland with a scattering of *Ceanothus* and coast live oaks. The proposed project site near the Smith House have experienced significant levels of prior disturbance and the proposed cabin complex has been previously used as a staging area for forestry operations and has largely been cleared of most trees and other vegetation.

Surrounding land uses include the Bureau of Land Management (Coast Dairies) property to the south, Peninsula Open Space property to the east, timber property owned by Cemex, and agricultural property to the west and north.

PROJECT BACKGROUND:

The parcels occupied by the Swanton Ranch were donated to California Polytechnic State University (CalPoly) by Alfred Smith in 1993. The Ranch is used by CalPoly to provide a teaching environment for resource management. The facilities are used for ranch management and student housing.

The proposal to expand the existing facilities on the Ranch began in 1992, with a development review group application. At that time, the proposal consisted of the construction of eight campus buildings, including an administration/cafeteria building, three classrooms, three residence halls, and amphitheater.

Subsequently, a Rural Density Matrix (93-0507) was done to establish the appropriate density for the Ranch expansion. The Rural Matrix was updated several times, with the most recent Matrix completed in 2010.

The subject application was made following the 2010 Rural Density Matrix and a project consultation to review possible geologic hazards.

Table 1 Existing Ranch Structures by Parcel Number						
Parcel	Size	Zone	GP	Primary Use	Development	Structure Size (Sq. Ft.)
057-121-07	259.2	TP	RM	Timber	No	N/A
057-121-14	28.9	TP	RM	Timber/Range	No	N/A
057-121-22	382.4	TP	AG	Timber/Range	Staub House	1,972
057-131-18	272.8	CA	AG	Range/Timber	Hay Barn	Unknown
057-131-60	277.2	TP	AG	Range/Timber/ Crops	Scout Camp	Unknown
057-141-01	0.8	A	RM	Residence	Little Creek House	2,600
057-151-03	496.8	TP-L CA	AG	Timber/Range	Archibald House Al Green House Bunkhouse Cheesehouse	655 2,922 1,909 650
057-151-05	40.2	TP CA-P	AG	Crops	Barn	Unknown
057-151-06	585.5	PR-P CA-P	AG	Range/Timber	Red House Cabin Mobile Home George's Cottage Cal Barn Car Barn Machine Shop Round House	1,595 540 1,680 757 1,100
057-151-07	249.2	CA-P	AG	Range/Crops	None	N/A
057-251-08	0.7	TP	RM	Timber	None	N/A
057-251-09	40.2	TP	RM	Timber	None	N/A
057-301-01	550.8	CA-P	AG	Crops	Cowboy Shack Barn Yurt	300
Zone Legend:			GP (General Plan Legend)			
TP – Timber Production			AG - Agriculture			
TP-L – Timber Production – Historic Resource			RM – Mountain Residential			
CA – Commercial Agriculture						
CA-P – Commercial Agriculture – Ag Preserve						
PR-P – Parks, Recreation, Open Space – Ag Preserve						

DETAILED PROJECT DESCRIPTION:

The proposed expansion of the existing educational and research facilities includes the construction of a learning center and dining hall, twelve field camp cabins, two faculty duplexes, a comfort station with showers and restrooms, a cantina, and uncovered amphitheater. The physical development would occur in four primary locations on Swanton Ranch, the intersection of Swanton Road and Old Schoolhouse Road, the Learning Center and Dining Hall, and the Student and Staff Housing. The project also includes a lot line adjustment between two parcels (APNs 057-121-22 and 057-151-03).

Swanton Road/Schoolhouse Gulch Road Intersection (APN 057-151-03)

Currently, the intersection of Swanton Road and Schoolhouse Gulch Road does not meet County of Santa Cruz Department of Public Works standards relative to safe line of sight. To address this, minor improvements are proposed. The proposed intersection improvements would include widening the existing entrance into the property and shifting the centerline of Schoolhouse Gulch Road approximately 25 feet to the south. The new intersection alignment would allow Schoolhouse Gulch Road to intersect Swanton Road in a more perpendicular configuration. Additionally, the intersection would become a right turn only and prevent vehicles leaving the Field Camp from making a left turn on to Swanton Road. This would require the construction of a raised island on the approach of Old Schoolhouse Road to Swanton Road and signage indicating right turn only.

Learning Center and Dining Hall (APN 057-121-03)

The 3,816 square foot Learning Center and Dining Hall building is proposed to be constructed just west of the Al Smith House (existing) and attached to an existing classroom. A 400 square foot lab addition is proposed at the opposite (eastern) end of the existing classroom. This area is relatively flat and only a minimal amount of grading is proposed. Drainage Improvements in this area include the placement of a 30-foot long level spreader with perforated pipe and drain rock to receive the increased stormwater runoff from the new structure.

Student and Staff Housing (APN 057-121-22)

Twelve (12) new 320 square foot cabins are proposed to be constructed just west of Smith Road. Additionally, an outdoor amphitheater, 900 square foot comfort station and 720 square foot cantina and laundry facility would be constructed in this area to serve the student residents. Grading for this portion of the project would require 224 cubic yards of cut and 381 cubic yards of fill, with five soldier pier retaining walls totaling 347 lineal feet, to a maximum height of 4 feet. Drainage improvements in the vicinity consist of 75-80 lineal feet of infiltration trenching on the downhill side of the cabins, and two 100 square foot bioretention swales at the eastern edge of the development.

Two 940 square foot staff duplexes are proposed south of Staub Road. Grading for this location consists of 44 cubic yards of cut and 95 cubic yards of fill. Two (2) soldier pier retaining walls are included, totaling 108 lineal feet and maximum height of 3 feet. Drainage improvements at this location consist of gravel sumps to capture drainage behind the retaining walls and grass swales leading to infiltration basins.

Lot Line Adjustment

Approximately 12.4 acres of land would be transferred from APN 057-121-22 to 057-151-03. The intent of this adjustment is to consolidate the existing improvements onto APN 057-121-03.

Erosion Control

Erosion control at the four areas of disturbance would consist of straw mulch and seed at the housing and learning center locations, with an erosion control blanket placed at the steeper graded area at the Swanton Road intersection. A stabilized construction entrance with base rock underlain by filter fabric, placed at the road leading to the staff cabins.

Utilities

Three new septic tanks would be required, with a 5,000-gallon tank at the Learning Center and Dining Hall, a 6,000 gallon tank for the student cabins, and a 2,000 gallon tank at the staff cabin location. New leach field trenches and expansion areas would be provided for these three areas of development.

A new 100,000 gallon water storage tank would be constructed to the east/northeast of the new facilities, with 6-inch water lines to connect all three locations.

All utility extensions would be underground.

No new roads are proposed, with transportation between venues to be provided by van service to provide accessibility.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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III. ENVIRONMENTAL REVIEW CHECKLIST

A. GEOLOGY AND SOILS

Would the project:

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|--|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| 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. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| B. Strong seismic ground shaking? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| C. Seismic-related ground failure, including liquefaction? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| D. Landslides? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion (A through D): The project site is located outside of the limits of the State Alquist-Priolo Special Studies Zone (County of Santa Cruz GIS Mapping, California Division of Mines and Geology, 2001). However, the project site is located approximately 14.1 miles southwest of the San Andreas fault zone, and approximately 2.3 miles northeast of the San Gregorio fault zone. While the San Andreas fault is larger and considered more active, each fault is capable of generating moderate to severe ground shaking from a major earthquake. Consequently, large earthquakes can be expected in the future. The October 17, 1989 Loma Prieta earthquake (magnitude 7.1) was the second largest earthquake in central California history.

A geologic investigation for the project was prepared by Pacific Geotechnical Engineering, dated November 12, 2010 (Attachment 5), and a geotechnical investigation was prepared by Dees & Associates, Inc., dated June 22, 2012 (Attachment 7). These reports have been reviewed and accepted by the Environmental Planning Section of the Planning Department (Attachment 6). The reports conclude that fault rupture would not be a potential threat to the proposed development, and that seismic shaking can be managed by constructing with conventional spread footings or pier and grade beam foundation systems and by

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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following the recommendations in the geologic and geotechnical reports referenced above.

The Geologic Feasibility Investigation and Revised Staub Housing Cluster Site letter, dated July 26, 2011 indicate the entire project area is underlain by a large landslide complex that is comprised of large blocks of displaced bedrock. The report and letter concluded that the potential for significant movement between the mapped landslide blocks to be low and the proposed sites for the student and staff cabins are geologically acceptable as long as the structures are not placed on top of the landslide boundaries. According to the Geotechnical Assessment, the site plan indicates that the proposed structures are not located on the landslide boundaries.

The Geotechnical Assessment further indicated no signs of ridgetop shattering or rock creep and low potential for these hazards to impact the proposed improvements.

A condition of project approval will require the implementation of the project design recommendations included in the review letter prepared by Environmental Planning staff (Attachment 6).

- | | | | | | |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

Discussion: The report cited above concluded that there is a potential risk from landslide. The recommendations contained in the geotechnical report, locating all structures off the landslide boundaries, use of conventional spread footing embedded into firm, native soils, and drilled piers for structures located on slopes steeper than 20 percent are included as conditions of approval and would be implemented to avoid substantial adverse effects.

- | | | | | | |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 3. | Develop land with a slope exceeding 30%? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

Discussion: There are slopes that exceed 30% on the property. However, the only development on steep slopes is the grading proposed at the intersection of Swanton Road and Old Schoolhouse Road. The area to be graded will be developed with a 10-foot retaining wall with adequate subdrainage, therefore no significant impacts associated with improvements of the steep slope are anticipated.

- | | | | | | |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 4. | Result in substantial soil erosion or the loss of topsoil? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

Discussion: Some potential for erosion exists during the construction phase of the project; however, this potential is minimal because standard erosion controls are a required condition of the project, including the use of an erosion control blanket at the

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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area of steepest cut. Prior to approval of a grading or building permit, the project must have an approved Erosion Control Plan, which will specify detailed erosion and sedimentation control measures. The plan will include provisions for disturbed areas to be planted with ground cover and to be maintained to minimize surface erosion.

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 proposed project would use an onsite sewage disposal system, and County Environmental Health Services has determined that site conditions are appropriate to support such a system. Additionally, the geotechnical engineer for the project evaluated the proposed leach field locations to assess suitability with respect to mapped landslides on the site (Attachment 14). The assessment found that the slopes below the leach field sites are gentle and underlain by shallow bedrock and concluded that there is low potential for deep seated landslides to develop below the leach field site.

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 proposed development area lies within a 100-year flood hazard area.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 2. | Place within a 100-year flood hazard area structures which would impede or redirect flood flows? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

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

- | | | | | | |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 3. | Be inundated by a seiche, tsunami, or mudflow? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: The proposed housing and associated facilities are located at an elevation hundreds of feet above sea level and therefore not subject to a seiche, tsunami, or mudflow hazard.

- | | | | | | |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 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)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: The project would rely on a private well for water supply. Comments from Environmental Health Services indicate that groundwater supply is adequate in this area (Attachment 15). While a portion of the subject parcel is located in Mapped Groundwater Recharge, the proposed development would be outside the resource area.

- | | | | | | |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 5. | Substantially degrade a public or private water supply? (Including the contribution of urban contaminants, nutrient enrichments, or other agricultural chemicals or seawater intrusion). | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

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 proposed project will be addressed through implementation of erosion control measures.

The parking and driveway associated with the project would incrementally contribute

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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urban pollutants to the environment; however, the contribution would be minimal given the size of the driveway and parking area. Potential siltation from the proposed project will be addressed through implementation of erosion control measures.

6. Degrade septic system functioning?

Discussion: There is no indication that existing septic systems in the vicinity would be affected by the project. Additionally, new septic tanks of 3,000, 5,000 and 6,000 gallons are proposed to accommodate the proposed development, as well as expanded leach and expansion areas. The large amount of available leach area will and distance from existing leach areas, would further ensure that the proposed development will not impact existing septic system functioning.

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: While the proposed project is located in the vicinity of watercourses, proposed grading is minimal and the addition of impervious surfaces is offset by the use of bioswales and percolation trenches to ensure that stormwater runoff is allowed to percolate and would not alter the existing overall drainage pattern of the site. Department of Public Works Drainage Section staff has reviewed and approved the proposed drainage plan.

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 Analysis prepared by Fall Creek Engineering, Inc., dated September 9, 2012, has been reviewed for potential drainage impacts and accepted by the Department of Public Works (DPW) Drainage Section staff. The calculations show that stormwater runoff generated from the addition of impervious areas on the site would be retained and infiltrated into the native soils with infiltration trenches, bioretention swales or level spreaders. Stormwater runoff in excess of the capacity of the infiltration basins and bioretention swales would sheet flow over existing vegetation and terminate in natural drainage channels throughout the site. DPW staff have determined that existing stormwater facilities are adequate to handle the increase in drainage associated with the project. Refer to response B-5 for discussion of urban contaminants and/or other polluting runoff.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Discussion: The proposed improvements do not occur within areas prone to flooding or in the vicinity of dams or levees.

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| 10. | Otherwise substantially degrade water quality? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Discussion: A Site Assessment was performed by Fall Creek Engineering, dated October 1, 2012 (Attachment 16) to determine whether the location of the onsite sewage treatment posed risks to groundwater. The assessment concluded that soil conditions and groundwater monitoring in the vicinity of the improvements are well suited for a subsurface disposal system for wastewater with no anticipated impacts to groundwater.

C. BIOLOGICAL RESOURCES

Would the project:

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| 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? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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Discussion: A Wildlife Report was prepared for this project by Dan Grout, dated June 14, 2013 (Attachment 9). This report has been reviewed and accepted by the Planning Department Environmental Planning Section (Attachment 11). While several sensitive wildlife species are known to occur in the Swanton area, no species of concern were detected within the disturbed sites proposed for development. The project site does not harbor any habitat that is essential to any listed or sensitive wildlife species, nor are any sensitive species likely to occur within the project site.

The Wildlife Report found that while no listed or sensitive species were found to occur on the proposed project site, some sensitive species may occur in the general vicinity.

Reconnaissance level raptor surveys were conducted between March 15 and August 15, 2011 during the time of year considered by California Department of Fish and Wildlife (CDFW) as the critical breeding period. Surveys covered suitable raptor habitat and involved looking for nests, pellets, feathers and other signs of raptor nesting.

Protocol-level surveys for Marbled murrelets were also conducted in the areas

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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surrounding the project site in 2009, 2010, and 2011. Standard CDFW Marbled murrelet survey protocol guidelines were used during those focused surveys.

An acoustic bat monitoring survey was conducted on Swanton Pacific Ranch in June 2011 and a list of local bat species present on the site was developed utilizing this and other data.

A site assessment for California red-legged frog (CRLF) habitat was first conducted on the proposed project site on August 12, 2011 by Dan Grout, who has conducted CRLF surveys in every watershed in Santa Cruz County during the past 12 years. The habitat assessment revealed that no suitable CRLF occurs on the site due to the absence of any aquatic or wetland features. However, because a known CRLF breeding pond occurs at Lower Staub pond approximately 1,000 feet east of the project site, a series of day and night CRLF surveys were conducted on the project site during the non-breeding season to assist in confirming that the site is not regularly used as upland refugia by any foraging, resting or migrating red-legged frogs (see Attachment 9).

The Wildlife Report concluded that while direct impacts to listed species were not anticipated, several mitigation measures should be employed to ensure that no significant indirect or temporary impacts to bird, amphibian, or fish species occur. Required mitigation measures are as follows:

Bird Impact Avoidance Measures

- Conduct construction operations during the fall and winter, outside of the nesting period. Alternatively, a nest site (clearance) survey could be conducted in the spring/summer months just prior to planned construction to identify, mark and avoid any active bird nest trees in the few remaining trees left on the site.
- Use directional (downward-facing) outdoor lighting and low wattage so as to minimize light pollution
- Secure human food and food waste related to the construction and operation of the facility to reduce the likelihood of attracting corvids and potential predation of bird eggs.

Mammal Impact Avoidance Measures

- Prohibit the use of rodenticides in the Field Camp area.
- Restrict exterior lighting to downward-pointing outdoor lighting
- Remove any potential bat roost trees during the period when no maternity roosts are likely present (September 15 – January) or install exclusionary devices on the trees to prevent roosting prior to felling selected trees.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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California Red-legged Frog Impact Avoidance Measures

All construction shall comply with the following measures:

- Minimize the area over which wet-season construction activities occur.
- Attempt to construct most ground-disturbing activities to the dry months of the year when the red legged frogs (RLF) are unlikely to inhabit or move across upland sites.
- Require construction monitoring for red-legged frogs just prior to and during all the construction and delivery of equipment/supply activities to ensure no take of this species could occur during construction. The designated RLF Monitor will be notified by the Swanton Pacific Ranch Resource manager in a timely manner regarding the upcoming schedule for all construction activities. The RLF Monitor will be present during and prior to all construction activities, to conduct clearance surveys of roads and staging areas and construction zones, guide delivery trucks entering the site, and to give environmental training to all construction workers and associated vehicles and personnel those entering the site.
- The RLF monitoring and red-legged frog training should be conducted by an independent professional biologist certified as having experience conducting red-legged frog monitoring. Training of staff and construction crews will include red-legged frog identification, habits, occurrence in the area, legal status, how to operate and drive vehicles in the area, and what to do and who to contact should a frog be seen or detected in or near the construction zone. Laminated pocket cards regarding RLF avoidance procedures, field identification and reporting procedures will be handed out by SP staff to all those anticipated making more than one visit to the site for construction purposes.
- The SP Resource Manager will be responsible for ensuring that a RLF Avoidance and Monitoring Plan is implemented whereby the designated RLF Monitor will be present each day throughout the delivery/construction period or available by phone to assess what level of monitoring the proposed day's/week's construction activities will require.
- Any project-related trucks that need to use the upper Staub Road or drive past the Staub Pond or any staging areas within 300 feet of the pond will require that the designated RLF Monitor be notified and present to conduct a clearance survey and ensure that those areas are clear of any red-legged frogs immediately prior to them being used.
- The independent experienced RLF Monitor could delegate some minor or ongoing RLF construction monitoring duties to specifically identified and trained Ranch staff or student, at the discretion of the independent monitor. The decision by the independent RLF Monitor will take into consideration the time of year, type of work being done that day/week, proximity to Staub Pond and adjacent road, and the training and experience level of the staff/student monitor.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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- Reduce to the maximum extent possible activities and practices that could result in sediments reaching Lower Staub Pond due to truck traffic on the road past the pond.
- Require all trucks and construction equipment to be cleaned with a pressure-hose prior to being driven onto the site to reduce the chance of introduction of invasive species or seeds/eggs to the site.
- The staging areas for construction materials, equipment and trucks from contracted personnel should be clearly delineated on aerial photographic maps and roped off on the ground to ensure the footprint of the project is minimized.
- Construction equipment and related trucks should be limited to moving and staging within the project site, which should be marked with norplex fencing. Should a staging area or trucks turn around area be needed in the Staub House area, norplex fencing should be erected prior to construction activity by a certified Red-legged frog biologist, with regular monitoring of the road and construction area if construction occurs during frog breeding or dispersal periods.

Once construction has been completed, the following operational measures shall be followed:

- Vehicles using the Field Camp Cabins will be parked more than 500 meters from Staub Pond, thus reducing the probability of road-killed frogs to nearly zero.
- With the exception of emergency vehicles and handicapped access, travel off-road on the campus is limited to foot traffic on a system of developed footpaths.
- Placement of signboards at two locations near the pond identifying this area as habitat for a threatened species and giving a brief description of red-legged frog natural history and habitat use.
- Prohibition of any activities within the pond and within 10 meters of the pond except those related to research, livestock management, forest management (as directed by the State-approved NTMP) and designated trail use of the existing trail by the Staub Pond. These uses will be limited to only those CalPoly staff/contractors that have received training in red-legged frog identification, biology, and impact avoidance measures by a certified RLF biologist.
- Require all students and staff residing at the field camp to watch a PowerPoint, video or printed presentation on red-legged frogs, prepared by a certified specialist. The material should cover red-legged frog identification, biology, and impact avoidance measures during the first two weeks of their attendance at the field camp. All staff and students and visitors should sign a form indicating that they have reviewed the educational materials and will comply with the provisions required by the regulatory agencies as conditions of project approval.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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- Special precautions will be taken with food and trash storage to avoid attracting predators like raccoons. Trash containers in and/or near the cabin sites will be secured.

A Botanical Report was prepared by Grey Hayes, PhD, dated February 11, 2013 (Attachment 10) to assess the project site for the presence of protected plant species. The botanical report concluded that there would be no significant direct impacts to botanical resources as a result of the proposed project. Indirect impacts were identified as a result of plantings associated with the proposed development and disturbance fostering areas of establishment of new invasive plant populations. The following mitigation measures will be required to ensure no adverse impacts to botanical resources occur:

- No planting of CallIPC (California Invasive Plant Council (CallIPC) 2011) listed species, which are recognized threats in the region, shall occur.
- No planting of species in the following genera, as these could hybridize with sensitive species in the vicinity, threatening the integrity of the genepool. If these genera are desired, local collections shall be used in the landscape.
 - 1) Arctostaphylos
 - 2) Ceanothus
 - 3) Quercus
 - 4) Pinus

Invasive Species

- Plant species prioritized for the region as cited by CallIPC shall be controlled in areas disturbed and adjacent to disturbance associated with the project until replacement plantings have been established.

All recommendations made in the Wildlife and Botanical reports would be incorporated into the project conditions of approval. Implementation of these recommendations would ensure impacts to biotic resources resulting from the project would be less than significant.

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| 2. Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations (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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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Discussion: No riparian or other identified sensitive habitat has been identified in the

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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vicinity of the project areas. Therefore impacts to riparian habitat or sensitive natural communities would be less than significant.

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| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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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. Also see response C1 above.

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| 4. | Produce nighttime lighting that would substantially illuminate wildlife habitats? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Discussion: The development area is not in the vicinity of riparian corridors, which could be adversely affected by a new or additional source of light that is not adequately deflected or minimized. No impact would occur.

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| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Discussion: No wetlands occur within the project area.

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| 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)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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Discussion: The project would not conflict with any local policies or ordinances. Mitigation measures listed under C1 will minimize any impacts to California red-legged frog species and associated habitat.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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One Significant Tree—a pine tree with a diameter at breast height of 20 inches—is proposed for removal in the vicinity of the 12 new student cabins. The loss of one Significant Tree on a project site of this size (approximately 3,000 acres) would have a less than significant impact.

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| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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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:

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| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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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 Statewide or Farmland of Local Importance would be converted to a non-agricultural use. No impact would occur from project implementation.

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| 2. | Conflict with existing zoning for agricultural use, or a Williamson Act | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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contract?

Discussion: The project site is zoned TP, CA and RA. CA is considered to be an agricultural zone. However none of the proposed development activities occur within the area under cultivation. While the project site's land is under a Williamson Act Contract, the proposed activities would foster education and research directed, in part, in promoting sustainable agriculture, which is consistent with the purpose of commercial agricultural and timber zoning designations. All development occurs outside of prime agricultural lands. Therefore, the project does not conflict with existing zoning for agricultural use, or a Williamson Act Contract. No impact is anticipated.

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| 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))? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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Discussion: The project is located within lands designated as Timber Resource. However, the project would not affect the resource or access to harvest the resource in the future. The timber resource may only be harvested in accordance with California Department of Forestry timber harvest rules and regulations. Further, the proposed development would continue to support education and research that fosters sustainable forestry practices.

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| 4. Result in the loss of forest land or conversion of forest land to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Discussion: While forest lands are in the vicinity of the project site or in the immediate vicinity, the proposed development would not occur within forested areas, nor would the development negatively impact future timber harvests. No impact is anticipated.

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| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Discussion: The project site consists of areas of historical disturbance and is not currently under cultivation. Additionally, the development of additional educational and research facilities support sustainable agriculture and forestry practices. The surrounding farmland and forests would serve as a natural setting for ongoing research and development of sustainable agriculture and forestry practices.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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E. MINERAL RESOURCES

Would the project:

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| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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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.

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| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Discussion: The project site is zoned TP, CA, RA which are 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:

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| 1. Have an adverse effect on a scenic vista? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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Discussion: Swanton Road is a designated scenic road. Therefore, changes to the road require a visual resource analysis. In this case, the improvements proposed to improve the existing inadequate line of sight at the intersection of Swanton Road and Schoolhouse Gulch Road would be sufficiently minor that the impact would be less than significant. The proposed intersection improvements would include widening the existing entrance into the property and shifting the centerline of Schoolhouse Gulch Road approximately 25 feet to the south. Additionally, the intersection would become a right turn only. This would require the construction of a raised island on the approach of Old Schoolhouse Road to Swanton Road and signage indicating right turn only.

The proposed student and staff cabins are not visible from any protected viewshed.

While the Learning Center and Dining Hall building would be located atop a bluff with ocean views, a Visual Analysis was submitted (Attachment 17), which indicates that the building heights of 25 feet and 20 feet respectively, would not be visible from Highway 1, Swanton Road or the coastline. Therefore the project would not result in significant impacts to the scenic vista.

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| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion: See F1 above.

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| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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Discussion: The areas of proposed development occur in areas that have been either disturbed by logging activities or are characterized by existing development. The proposed structures near the Smith House extend no higher than 25 feet and are located at such a distance as to not be visible from any public road. Additionally, minimal grading is required to accommodate the proposed structures.

At the intersection of Schoolhouse Gulch Road and Swanton Road, minor improvements designed to assure the safe functioning of that intersection would have a less than significant impact on the visual resource. The proposed improvements include a sign on Schoolhouse Gulch Road prohibiting left turns onto Swanton Road, a raised island on Schoolhouse Gulch Road to prevent left turns, and the shifting of the centerline of Schoolhouse Gulch Road about 25 feet to the south.

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| 4. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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Discussion: The project would create an incremental increase in night lighting. However, this increase would be unlikely to affect nighttime views in the area, given the remote location of the project site. As stated in F4, the project area is not visible from any public roads. Additionally, there the site is not visible from nearby residential development or public parks. Therefore, impacts to day or nighttime views due to fugitive light would be less than significant.

G. CULTURAL RESOURCES

Would the project:

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|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 1. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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Discussion: The only designated historic resource on the subject parcels is the Cheese House which is located on APN 057-151-03. No changes to the structure or use are proposed and there would be no other historic resources impacted by the project. Therefore this project would not result in impacts 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 Archeological Survey performed by Pacific Legacy, dated February 2, 1999 (Attachment 12), there is no evidence of pre-historic cultural resources. Additionally, in 2008, a Confidential Archaeological Addendum (CAA) was filed as part of the Swanton Pacific Ranch Non-industrial Timber Management Plan (NTMP). As part of the multi-day field archaeological investigation for the NTMP Nadia Hamey, Registered Professional forester and Steve R. Auten, Registered Professional Forester, both certified as Archaeological Surveyors for CalFire, evaluated the Swanton Pacific Education Center and Field Camp portion of the NTMP (Attachment 19). No evidence of either historic or pre-historic presence was found at the proposed location of the project site or access roads.

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

3. Disturb any human remains, including those interred outside of formal 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 measures 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 unique paleontological resource or unique geologic features are known to exist within the project site.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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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 campus expansion, 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 educational campus would not involve the release of hazardous materials into the environment, which would create a significant hazard to the public or environment; therefore impacts would be less than significant.

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 site is located more than 4 miles north of the nearest existing or proposed school (Pacific Elementary School in Davenport); 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,

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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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 an airport land use plan or within two miles of a public or public use airport, therefore there is no impact.

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: The subject parcels are not located within the vicinity of a private airstrip. The Bonny Doon Village Airport is located approximately 5 miles east of the project, therefore there is no impact.

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 Operational Area Emergency Management Plan (September 2005). Specific countywide evacuation routes are not designated in the Emergency Management Plan; rather feasible routes are determined based on particular events. California Polytechnic University, which owns and manages the subject property, has historically worked closely with Calfire in response to wildland fires in the vicinity and portions of the property has been used for staging in combating past fire events. Calfire has reviewed and approved the plans for the proposed expansion. Therefore, the proposed development would not be expected to negatively impact access or any other aspect of the County Emergency Management Plan.

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

Discussion: Any electrical lines associated with the educational facility expansion would not be high voltage transmission and no such lines are known to exist in the vicinity of the project site. Therefore, people would not be exposed to electromagnetic fields.

9. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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Discussion: The access road was evaluated by CalFire (Attachment 13) and a variance granted to allow the access road to remain between 12 and 18 feet in width, based on the improvements proposed for the new and existing camp structures. These improvements include the installation of fire sprinklers in all buildings, water storage meeting 2013 California Fire Code requirements, and the installation of new fire hydrants. The existing road has full-sized turnouts which comply with CalFire standards. Additional conditions of approval imposed by CalFire include the following:

- Removal of existing yurts on the property
- Creation of an evacuation plan
- Annual inspections for the organized camp

All construction would comply with applicable Fire Codes. Therefore, the project would not expose people or structures to fire hazards. Impacts would be less than significant.

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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|---|--------------------------|--------------------------|-------------------------------------|--------------------------|

Discussion: The project would create a small incremental increase in traffic on nearby roads and intersections. However, given the relatively remote project location and lack of congestion on Swanton Road, a modest increase in traffic attributable to the project would be less than significant. Further, the increase would not cause the Level of Service at any nearby intersection to drop below Level of Service D.

- | | | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: The project will have no impact on air traffic.

- | | | | | |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 3. Substantially increase hazards due to a design feature (e.g., sharp curves or | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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dangerous intersections) or incompatible uses (e.g., farm equipment)?

Discussion: A Sight Analysis prepared by Hatch Mott MacDonald (Attachment 18) identified a lack of adequate sight distance at the intersection of Swanton Road and Schoolhouse Gulch Road. The proposed improvements to that intersection—widening Schoolhouse Gulch Road, moving the centerline 25 feet to the south, and making it a right-turn only intersection—would reduce the existing hazard. Therefore there is no increase in hazard due to the proposed project. Impacts would be less than significant.

4. Result in inadequate emergency access?

Discussion: The project's road access has been approved by the CalFire, as a result of the proposed improvements to structures and water storage on the project site.

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

Discussion: The project meets the code requirements for the required number of parking spaces; and therefore, new parking demand would be accommodated on 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.

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 designated intersections, roads or highways?

Discussion: See response I-1 above.

J. NOISE

Would the project result in:

1. A substantial permanent increase in

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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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, the project is located in an isolated and relatively remote portion of the Santa Cruz mountains so such an increase would be less than significant.

- | | | | | | |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 2. | Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: As noted in J-1, the project location is isolated, with minimal residential development in the vicinity. Therefore, no impact due to exposure to groundborne vibration or noise is anticipated.

- | | | | | | |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: Per County policy, average hourly noise levels shall not exceed the General Plan threshold of 50 Leq during the day and 45 Leq during the nighttime. The project site is located in a remote area of the Santa Cruz Mountains and not located adjacent to a heavily traveled roadway or stationary noise source; therefore, the proposed education campus expansion would not have the potential to expose people to noise levels in excess of General Plan standards.

- | | | | | | |
|----|---|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 4. | A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|----|---|--------------------------|--------------------------|-------------------------------------|--------------------------|

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.

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|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: The project is not located within an airport land use plan or within two

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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miles of a public airport.

- | | | | | | |
|----|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|----|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: The project is not located within the vicinity of a private airstrip.

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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|----|---|--------------------------|--------------------------|-------------------------------------|--------------------------|

Discussion: The North Central Coast Air Basin does not meet state standards for ozone and particulate matter (PM₁₀). 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 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, would be implemented during construction to reduce impacts. Impacts would be less than significant.

- | | | | | | |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 2. | Conflict with or obstruct implementation of the applicable air quality plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

Discussion: The project includes the construction of 14 cabins for use by students and faculty on a temporary and/or seasonal basis. Therefore the cabins do not represent a permanent increase in the population. However, the population from the combination of the existing and permitted housing units in the County of Santa Cruz unincorporated area plus the future addition of 14 cabins would still represent less than the regional forecasts for the County. Therefore, the proposed project is consistent with the 2008 regional forecasts and the Air Quality Management Plan.

- | | | | | | |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 3. | Result in a cumulatively considerable net increase of any criteria pollutant for | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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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: See K-1 above.

4. Expose sensitive receptors to substantial pollutant concentrations?

Discussion: No sensitive receptors are located within the vicinity of the project site. Additionally, no substantial pollutant concentrations would be emitted during or as a result of the proposed construction of 14 cabins. While short-term construction activities may result in the emissions of CO2 and criteria pollutants (e.g. particulates, carbon monoxide, etc.) standard dust control measures and limited hours of operation would ensure that any such exposure would not be significant.

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 campus expansion. 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, like all development, would be responsible for an incremental increase in greenhouse gas emissions by usage of fossil fuels during the site grading and construction. All project construction equipment would be required to comply with the California Air Resources Board emissions requirements for construction equipment. Greenhouse gas (GHG) emissions would be emitted by off-road and on-road construction equipment and worker vehicles.

The County board of Supervisors approved the County of Santa Cruz Climate Action Strategy (CAS) on February 26, 2013. No thresholds of significance for project-generated greenhouse gas emissions were included in the CAS. Instead, the County is looking to the Monterey Bay Unified Air Pollution Control District (MBUAPCD) for guidance in this area. The MBUAPCD has not yet adopted recommended thresholds of significance for land use projects within the North Central Coast Air Basin. However, on February 20, 2013, the MBUAPCD Board of directors received an informational report on the status of developing GHG emissions thresholds for evaluating projects under CEQA. (MBUAPCD 2013). Although no action was taken, staff recommended

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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further review of a GHG threshold of 2,000 metric tons of Co₂ equivalent (MTCO₂e) per year for land use projects or compliance with an adopted GHG reduction plan/climate action plan.

The scope of work associated with the proposed educational facility expansion is expected to be well below the unofficial 2,000 metric ton threshold being considered by the MBUAPCD. Therefore, impacts associated with the increase in greenhouse 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

Discussion: See the discussion under L-1 above. The proposed project would be consistent with the County of Santa Cruz Climate Action Strategy approved by the Board of Supervisors on February 26, 2013. In addition, the project would be required to comply with the updated 2013 California Building code Energy Efficiency Standards. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing emissions of greenhouse gases.

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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. Police protection? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c. Schools? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d. Parks or other recreational activities? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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- e. Other public facilities; including the maintenance of roads?

Discussion (a through e): While the project represents an incremental contribution to the need for services, the increase would be minimal. Moreover, the project meets all of the standards and requirements identified by the local fire agency or California Department of Forestry, as applicable, and school, park, and transportation fees to be paid by the applicant would be used to offset the incremental increase in demand for school and recreational facilities and public roads.

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 project provides state recreational/educational facilities and would not generate the need to use other existing facilities.

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: See N-1 above.

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: Drainage analysis of the project Fall Creek Engineering, dated September 9, 2012 (Attachment 8) concluded that the preliminary design for the storm water runoff system is adequate and efficient for the proposed development and in conformance with the County of Santa Cruz Design Criteria. Department of Public Works Drainage staff has reviewed the drainage information and there is no indication that the project would require or result in the construction of new storm water drainage facilities or expansion of existing facilities. A condition of project approval requires that any increased storm water storage volume be accommodated on site.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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- | | | | | | |
|----|---|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|----|---|--------------------------|--------------------------|-------------------------------------|--------------------------|

Discussion: The project would rely on an existing individual well for water supply. Public water delivery facilities would not have to be expanded.

The project includes the installation of a 5,000 gallon septic tank and leach field at the Learning Center location, with a 6,000-gallon tank and leach field system proposed at the cabin location. The proposed leach field locations have been evaluated by the project geotechnical engineer (Attachment 14) and found to be suitable with no significant impact to slope stability or biotic resources. Impacts would be less than significant.

- | | | | | | |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 3. | Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: The project's wastewater flows would not violate any wastewater treatment standards. No impact would occur.

- | | | | | | |
|----|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 4. | Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|----|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: The Environmental Health Services staff have determined that the existing water supplies are sufficient to serve the proposed project and that no new entitlements or expanded entitlements are needed. No impact would occur.

- | | | | | | |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: See Sections O-2 and O-4.

- | | | | | | |
|----|---|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 6. | Be served by a landfill with sufficient permitted capacity to accommodate | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|----|---|--------------------------|--------------------------|-------------------------------------|--------------------------|

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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the project's solid waste disposal needs?

Discussion: No demolition is required to accommodate the future student and faculty cabins. The project would make a one-time contribution to the reduced capacity of regional landfills during construction which would have a less than significant impact. In addition, although the ongoing use of the facility would result in a minor contribution to the regional landfills, this addition would have a less than significant impact.

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

Discussion: Solid waste accumulation is anticipated to increase as a result of the new camp uses; however the increase is not anticipated to result in a breach of federal, state, or local statutes and regulations.

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. The educational programs supported by the expansion of the existing facilities serve to further research and training regarding stewardship of timber, agricultural, and natural resources.

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

Discussion: The proposed project does not conflict with any habitat conservation plan or natural community conservation plan.

3. Physically divide an established community?

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

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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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 infrastructure)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: The proposed project would not induce substantial population growth in an area because the project does not propose any physical or regulatory change that would remove a restriction to or encourage population growth in an area including, but limited to the following: new or extended infrastructure or public facilities; new commercial or industrial facilities; large-scale residential development; accelerated conversion of homes to commercial or multi-family use; or regulatory changes including General Plan amendments, specific plan amendments, zone reclassifications, sewer or water annexations; or LAFCO annexation actions.

The proposed project is designed at the density and intensity of development allowed by the General Plan and zoning designations for the parcel. Additionally, the project does not involve extensions of utilities (e.g., water, sewer, or new road systems) into areas previously not served. Consequently, it is not expected to have a significant growth-inducing effect.

- | | | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 2. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: The proposed project would not displace any existing housing since the project expands existing facilities and does not reduce existing housing.

- | | | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 3. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Discussion: The proposed project would not displace any people or necessitate the construction of replacement housing.

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? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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, include California red-legged frog, bat roosting, and nesting bird species. However, mitigation has been included that clearly reduces these effects to a level below significance. This mitigation includes restricting the timing of construction operations to periods least likely to disrupt nesting and breeding, removal of potential bat roosting sites, requiring a red-legged frog avoidance and monitoring plan, and restricting the footprint of all construction activity to areas outside of potential sensitive habitat. 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)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

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, it has been determined that there is no substantial evidence that there are significant 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

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. As a result of this evaluation, there were determined to be no potentially significant 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

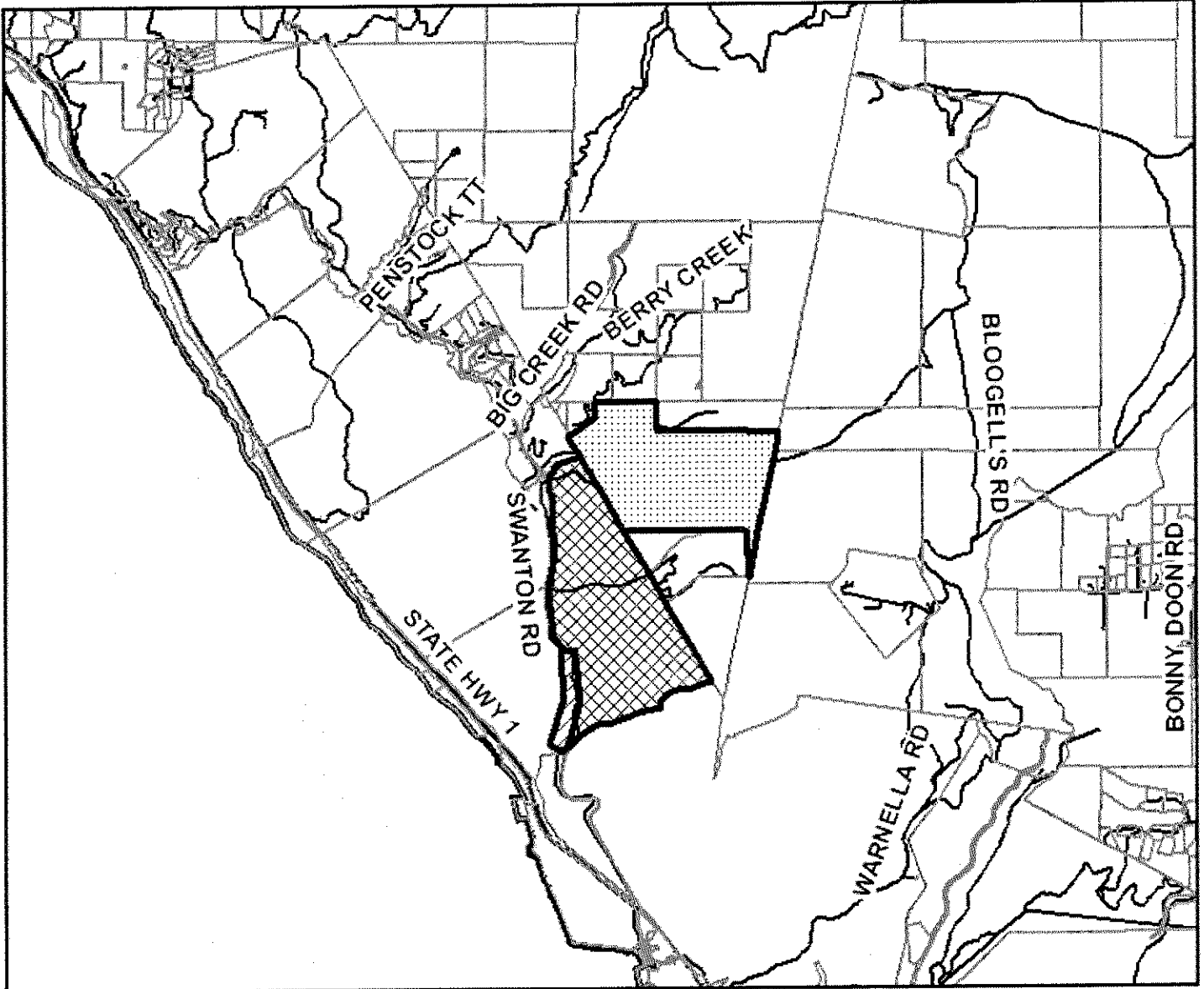
1. *Vicinity Map, Map of Zoning Districts; Map of General Plan Designations; and Assessor's Parcel Map.*
2. *Architectural Drawings*, prepared by TJ Weber, Architect, dated July 29, 2013
3. *Civil Drawings*, prepared by Fall Creek Engineering, dated July 2013
4. *Surveyed Drawings*, prepared by Dunbar and Craig, dated October 26, 2011
5. *Preliminary Geologic Investigation (Report Summary, Conclusions, Recommendations, Map & Cross Sections)*, prepared by Pacific Geotechnical Engineering, dated November 12, 2010
6. *Geologic Review Letter*, prepared by Joe Hanna, County geologist, dated January 23, 2011
7. *Geotechnical Investigation (Conclusions and Recommendations)*, prepared by Dees & Associates, Inc., dated June 22, 2012
8. *Drainage Analysis (Report Summary, Conclusions)*, prepared by Fall Creek Engineering, Inc., dated September 9, 2012
9. *Wildlife Report*, prepared by Dan Grout, dated June 14, 2013
10. *Botanical Report (Report Summary, Recommendations)*, prepared by Grey Hayes, PhD, dated February 11, 2013
11. *Biotic Report Review Letter*, prepared by Matthew Johnston dated January 29, 2014
12. *Archeological Reconnaissance Survey Letter*, prepared by Pacific Legacy, dated February 2, 1999
13. *Letters from Fire Marshall*, prepared by CalFire, dated March 25, 2013 and May 29, 2013
14. *Stability of Proposed Leachfield Locations*, prepared by Dees & Associates, Inc., dated April 29, 2013
15. *Project Review Comments*, prepared by Environmental Health Services, dated January 10, 2013.
16. *Site Assessment – Groundwater, (Report Summary)* prepared by Fall Creek Engineering, Inc., dated October 1, 2012.
17. *Visibility Analysis*, prepared by applicant, undated.

18. *Sight Distance Analysis*, prepared by Hatch Mott MacDonald, dated June 27, 2012








19. *Swanton Pacific Ranch Management Plan*, undated

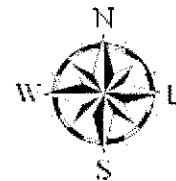


Location Map



LEGEND

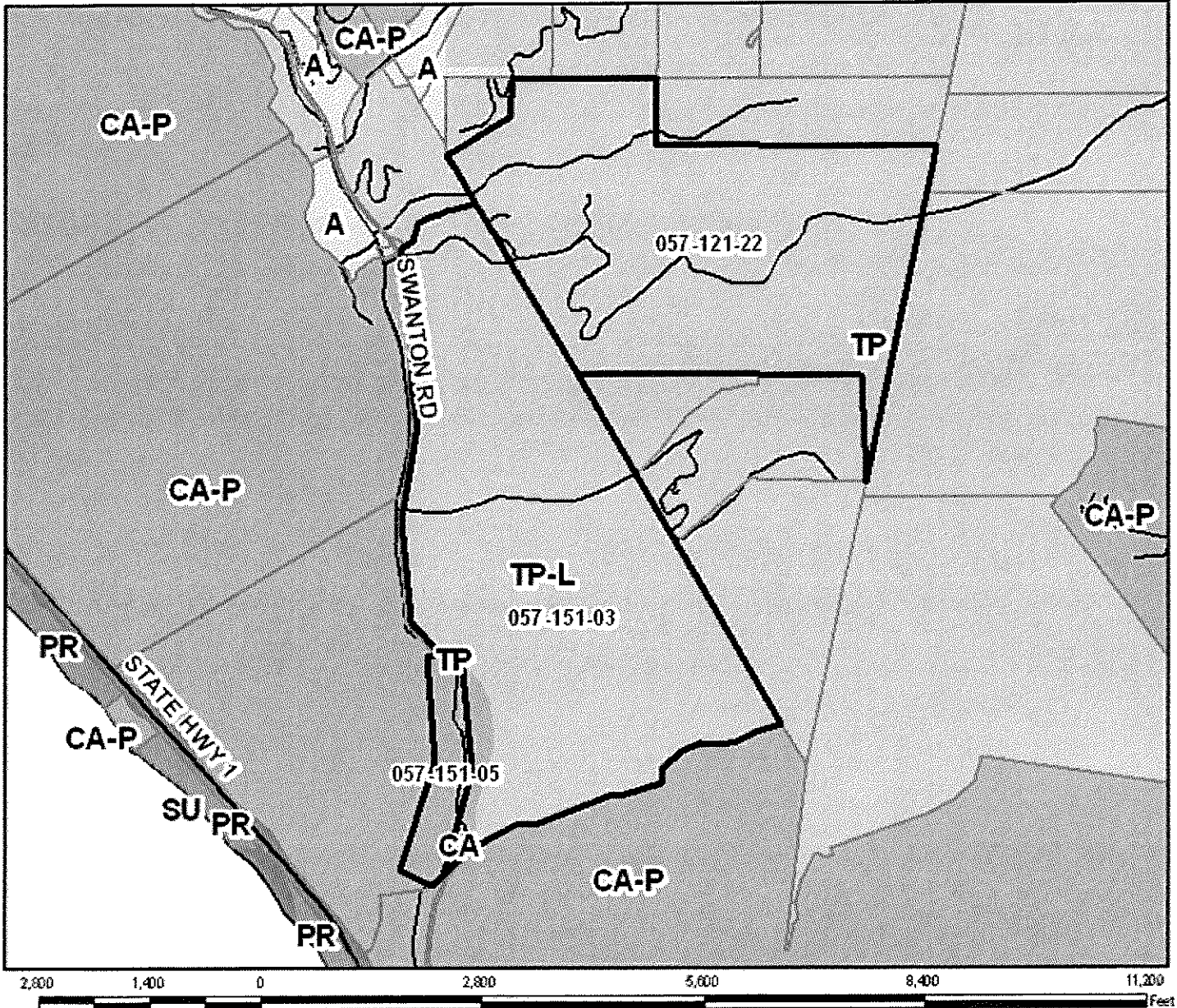
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-  APN: 057-151-03
-  APN: 057-121-22
-  Assessors Parcels
-  Streets
-  State Highways
-  County Boundary



Map Created by
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Planning Department
December 2012

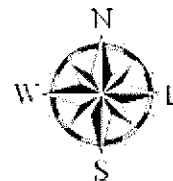


Zoning Map



LEGEND

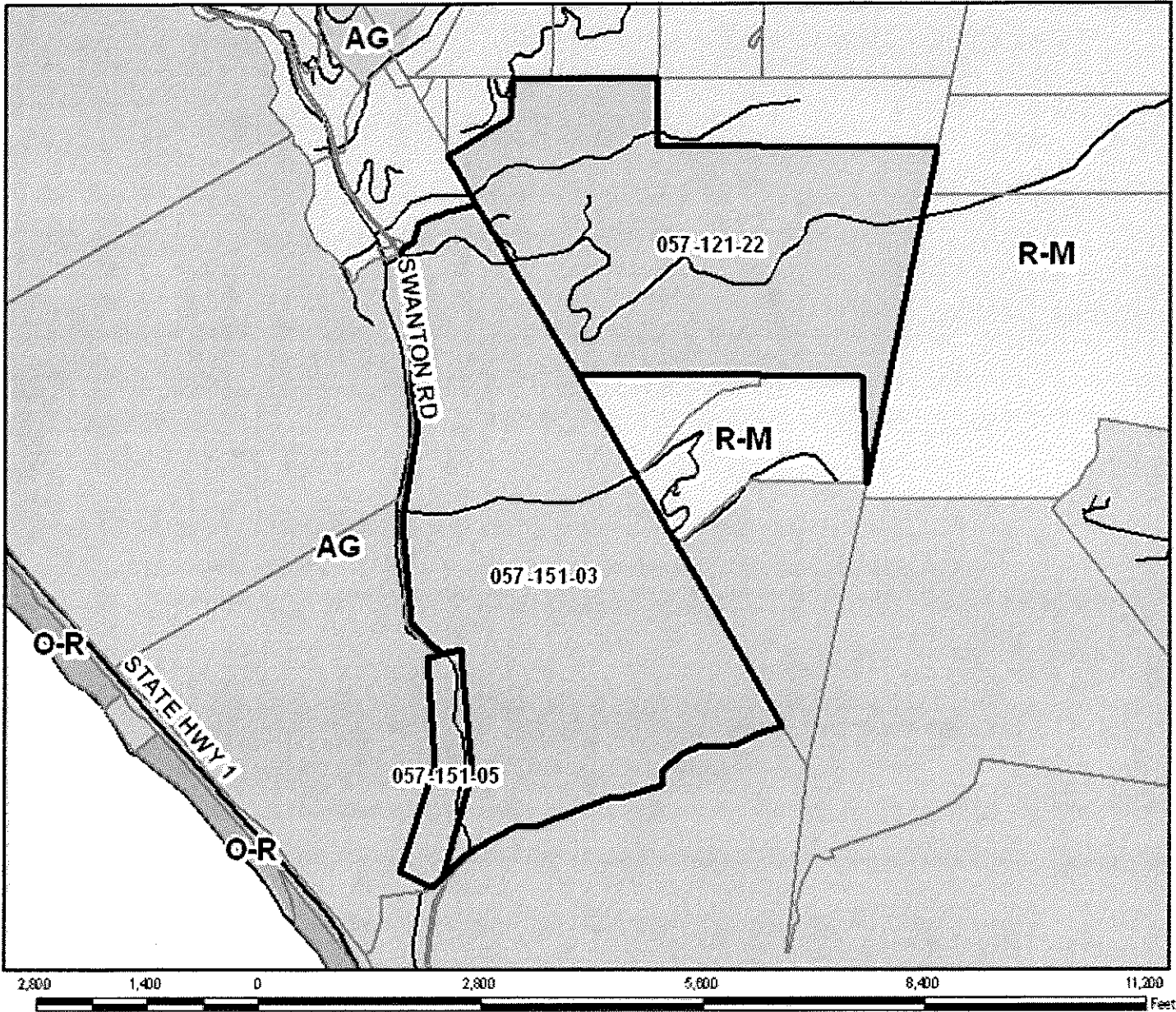
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- 057-151-03
- 057-151-05
- Unincorporated Area
- Property
- State Highway
- County Districts
- AGRICULTURE
- BUSINESS/PROFESSIONAL
- OFFICE
- RESIDENTIAL



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December 2012

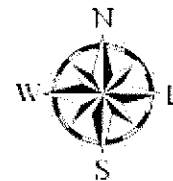


General Plan Designation Map



LEGEND

- AP N: 057-151-05
- AP N: 057-151-03
- AP N: 057-121-22
- Assessor's Parcel
- Street
- State Highways
- County Boundary
- Residential-Mountain
- Agriculture
- Parks and Recreation



Map Created by
County of Santa Cruz
Planning Department
December 2012

Electronically redrawn 11/14/00 KSA
 Rev. 11/14/00 KSA (Por. to Pg. 30)
 Rev. 1/11/01 CG (Add map refs.)
 Rev. 6/25/01 mwn (changed page refs.)

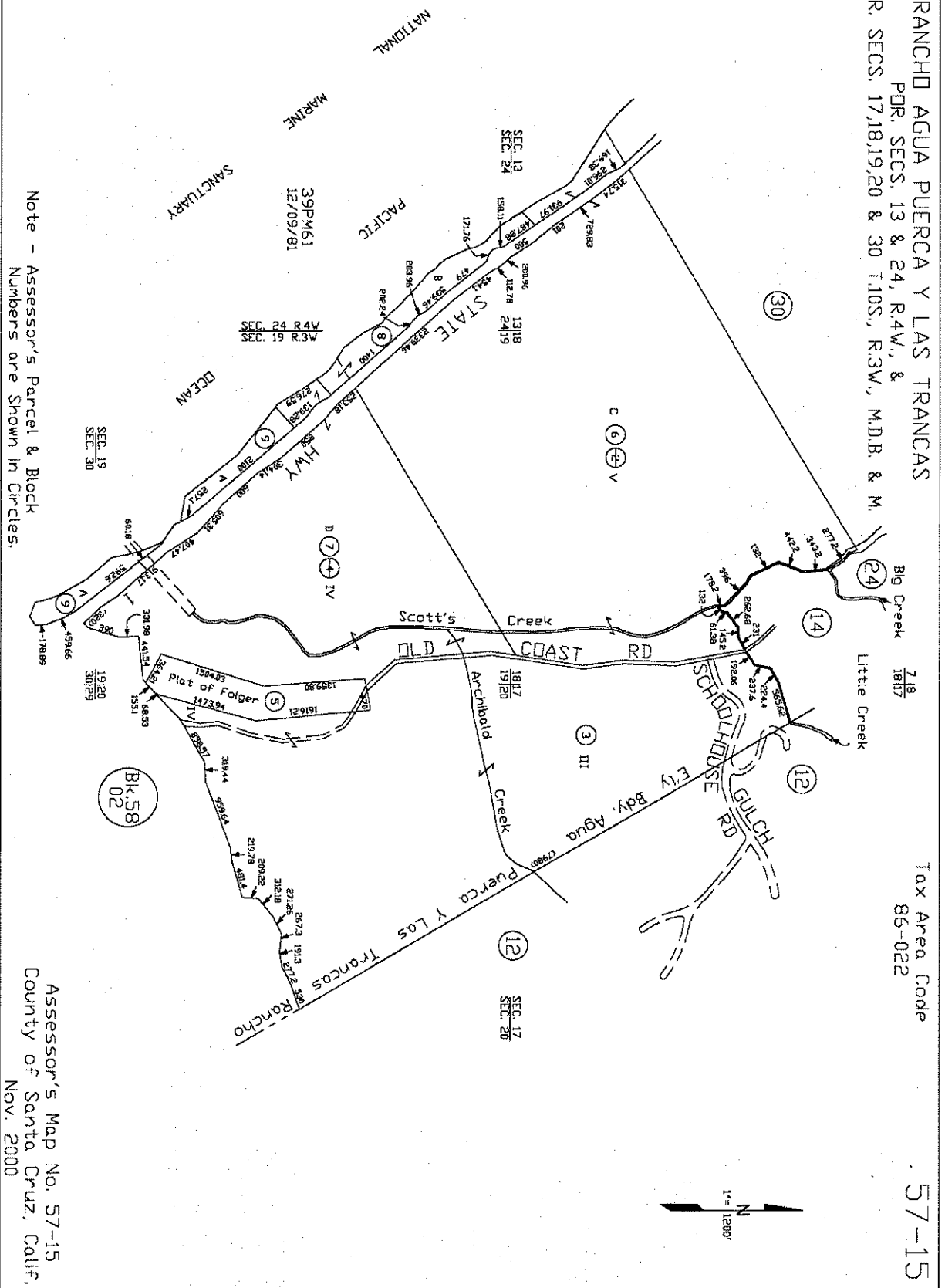
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RANCHO AGUA PUERCA Y LAS TRANCAS
 PDR. SECS. 13 & 24, R4W., &
 PDR. SECS. 17,18,19,20 & 30 T.10S., R3W., M.D.B. & M.

Tax Area Code
 86-022

57-15

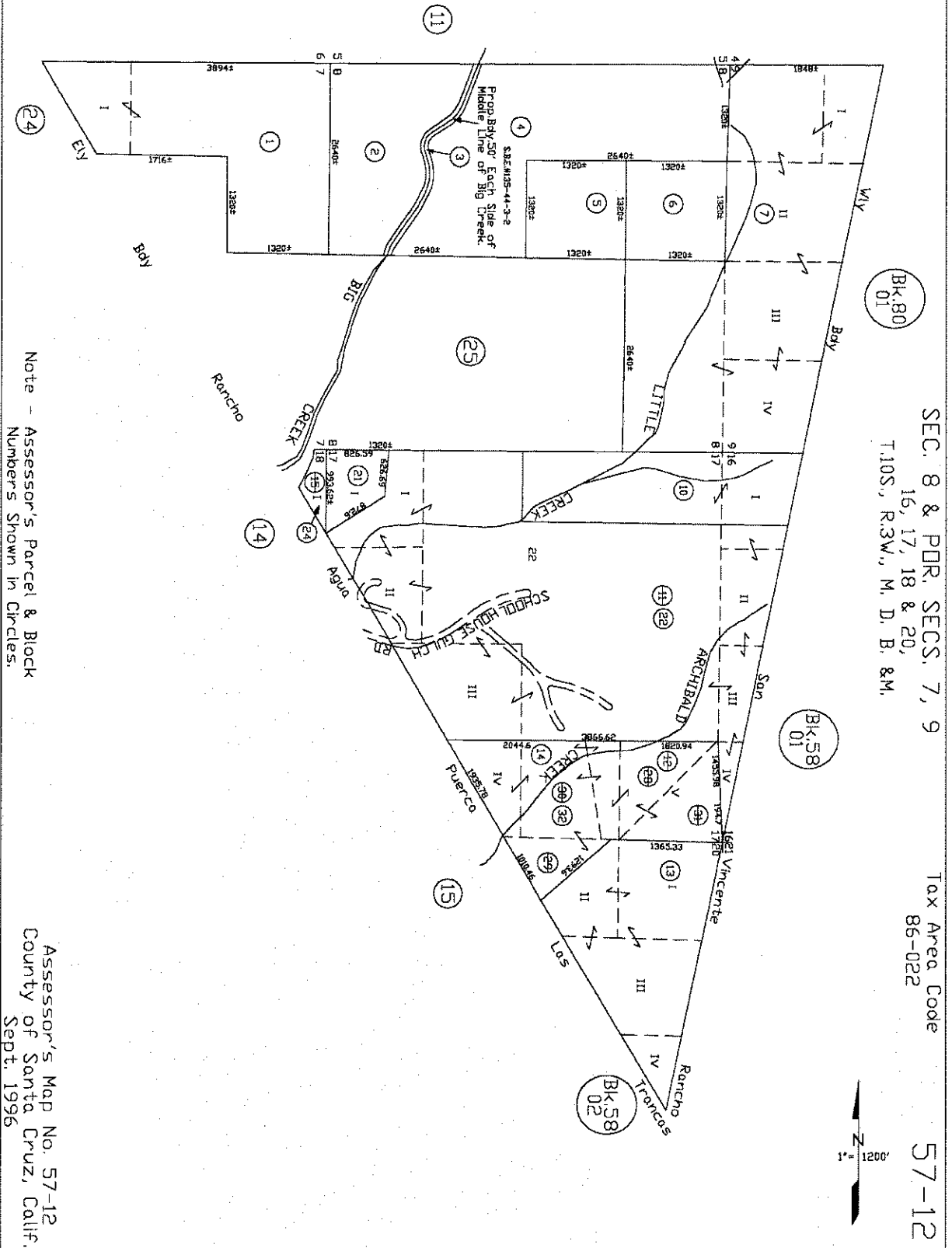


Note - Assessor's Parcel & Block
 Numbers are Shown in Circles.

Assessor's Map No. 57-15
 County of Santa Cruz, Calif.
 Nov. 2000

FOR TAX PURPOSES ONLY

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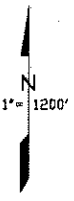


BK 80
01

SEC. 8 & POR. SECS. 7, 9
 16, 17, 18 & 20,
 T.10S., R.3W., M. D. B. & M.

BK 58
01

Tax Area Code
 86-022



57-12

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

Assessor's Map No. 57-12
 County of Santa Cruz, Calif.
 Sept. 1996

FIELD CAMP CABINS FOR: CAL POLY CORP

SWANTON PACIFIC RANCH
DAVENPORT, CA

ATTACHMENT 2



T. J. WEBER
ARCHITECT

FOR BOOKING
FOR BOOKING
FOR BOOKING

CAL POLY CORP
SWANTON PACIFIC RANCH
SWANTON ROAD
DAVENPORT, CA

CONTACTS

SR RANCH DIRECTOR
SWANTON PACIFIC RANCH
1000 SWANTON ROAD
DAVENPORT, CA 95015
TEL: 831-241-0001

CIVIL ENGINEER
PETER MASSE
PALM CREEK ENGINEERING, INC.
1500 CALIFORNIA STREET
DAVENPORT, CA 95015
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K. REBE RABIER, GEOTECHNICAL ENGINEERING
1000 SWANTON ROAD
DAVENPORT, CA 95015
TEL: 831-241-0001

SOILS CONSULTANT
BOYD'S CANAL CONSULTANTS
1000 SWANTON ROAD
DAVENPORT, CA 95015
TEL: 831-241-0001

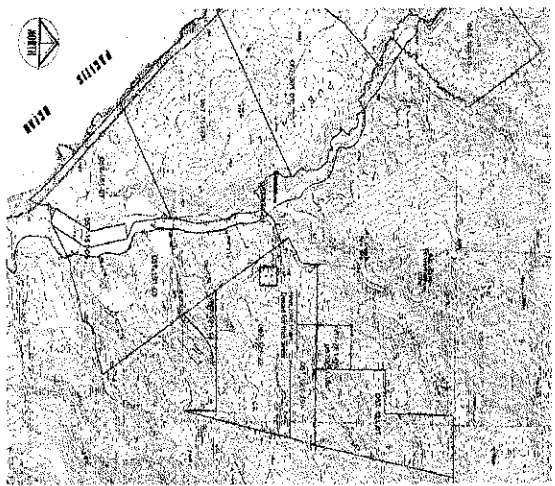
SOILS ASSESSMENT
BOYD'S CANAL CONSULTANTS
1000 SWANTON ROAD
DAVENPORT, CA 95015
TEL: 831-241-0001

SOILS ASSESSMENT
BOYD'S CANAL CONSULTANTS
1000 SWANTON ROAD
DAVENPORT, CA 95015
TEL: 831-241-0001

ARCHITECT
T. J. WEBER ARCHITECT
1100 WOODBURN ST., SUITE 204
DAVENPORT, CA 95015
TEL: 831-241-0001

REGISTERED ELECTRICAL ENGINEER
REGISTERED ELECTRICAL ENGINEER
1100 WOODBURN ST., SUITE 204
DAVENPORT, CA 95015
TEL: 831-241-0001

VICINITY MAP



PROJECT DATA

DESCRIPTION: DEVELOP FIELD CAMP CABINS & LEARNING CENTER FOR CAL POLY CORP. PROJECT CABINS & LEARNING CENTER.

OWNER: CAL POLY CORPORATION
BUILDING 50100, CA 95017-0101
DAVENPORT, CA

LEGAL DESCRIPTION: 081-01-022
7P

APN: 081-01-022

ZONING: 7P

LOT SIZE: 380 ACRES

RETRACTS: FRONT - 30';
SIDES - 30';
REAR - 30';

BUILDING INFORMATION:

BUILDING TYPE:	VB	OCCUPANCY:	OFFICE
ROOM RATING:	YES	USE:	OFFICE
SMOKING:	A	AREA:	OFFICE
UTILITIES:	PRIVATE	TYPE:	OFFICE
WATER:	PRIVATE	AREA:	OFFICE
SEWER:	PRIVATE	TYPE:	OFFICE
TELEPHONE:	PRIVATE	AREA:	OFFICE

BUILDING AREA: 380 ACRES

LEARNING CENTER: 380 ACRES

CANTINA / LAUNDRY: 380 ACRES

BOY SCOUT CAMP: 380 ACRES

STUDENT CABINS: 380 ACRES

APPROXIMATE: 380 ACRES

THIS PROJECT SHALL CONFORM WITH THE SWANTON PACIFIC RANCH GENERAL PLAN AND THE APPLICABLE SANTA CRUZ COUNTY CODES. SWANTON PACIFIC RANCH GENERAL PLAN, CONSISTENCY, UTILITIES, CANTINA / LAUNDRY, STUDENT CABINS, BOY SCOUT CAMP, LEARNING CENTER, ACCESSIBILITY, LIGHTING PLAN 1, ACCESSIBILITY, LIGHTING PLAN 2, ACCESSIBILITY DETAILS.

SHEET INDEX

DESCRIPTION	SHEET NO.
TITLE, VICINITY MAP, PROJECT STATISTICS	T1
CIVIL INFO SHEET	C0.0
IMPROVEMENT PLAN	C1.0
GRADING & DRAINAGE	C2.0-2.4
EROSION CONTROL	C3.0-3.1
UTILITY & WATER PLANS	C4.0-4.2
WASTE WATER PLANS	C5.0-5.2
SITE IMPROVEMENTS	C6.0
CHEESE HOUSE / BOY SCOUT CAMP	LLA1-3
LOT LINE ADJUSTMENTS	A0.0
SITE PLAN OVERALL	A0.1-0.2
SITE PLAN DETAILS	A1
STUDENT CABINS	A2
STAFF DUPLEXES	A3
COMFORT STATION	A4
CANTINA / LAUNDRY	A5
DINING / LEARNING CENTER	A6
DINING / LEARNING ELEVATIONS	A7
ACCESSIBILITY / LIGHTING PLAN 1	A8
ACCESSIBILITY / LIGHTING PLAN 2	A9
ACCESSIBILITY DETAILS	A9

Project: SWANTON / PACIFIC FIELD CAMP SWANTON ROAD DAVENPORT, CA

Sheet Contents: TITLE

Date: 7/29/2013

Revised:

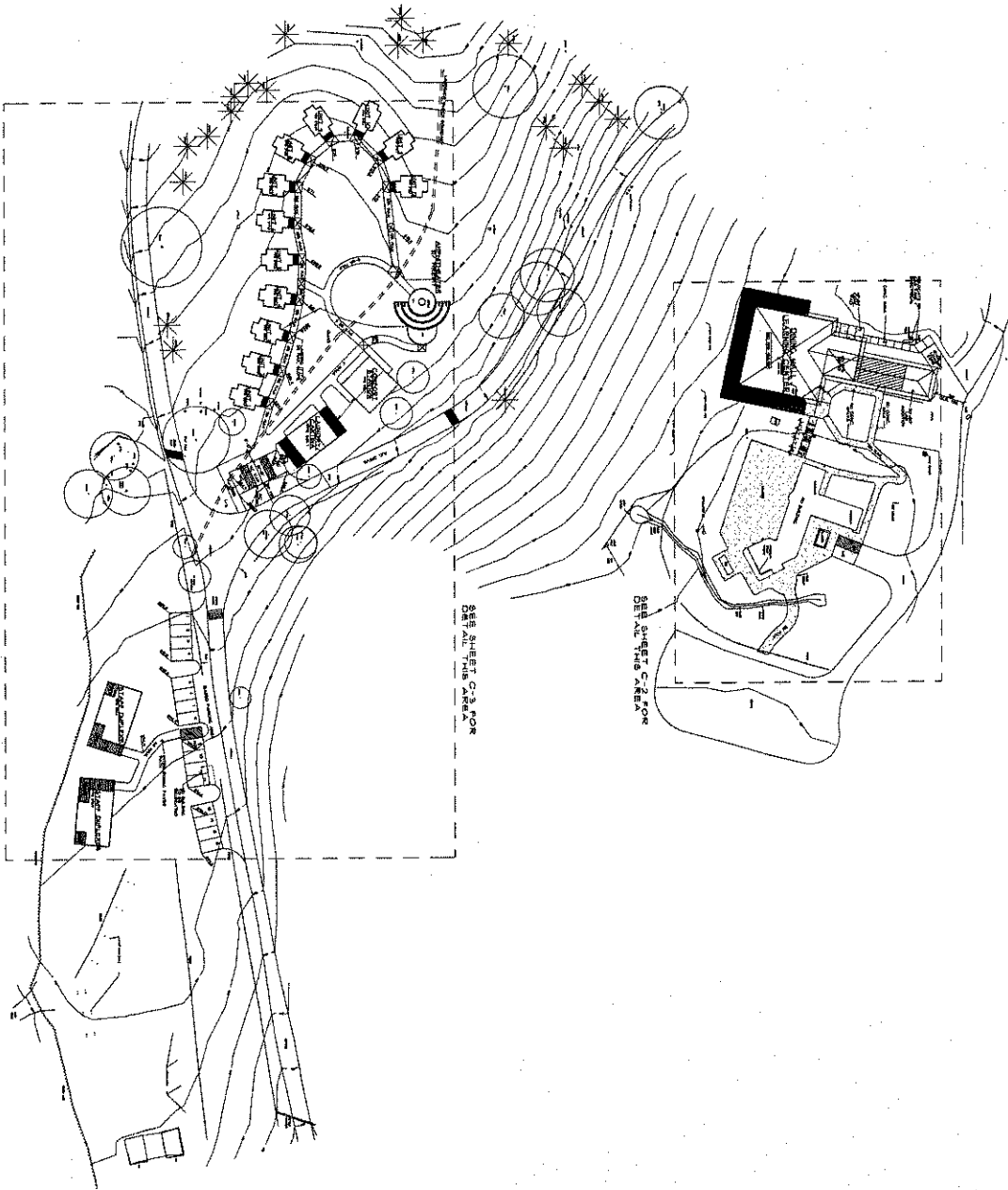
Job. No.: 1105

Sheet: T-1

No. 1 of 32


SITE PLAN OVERALL

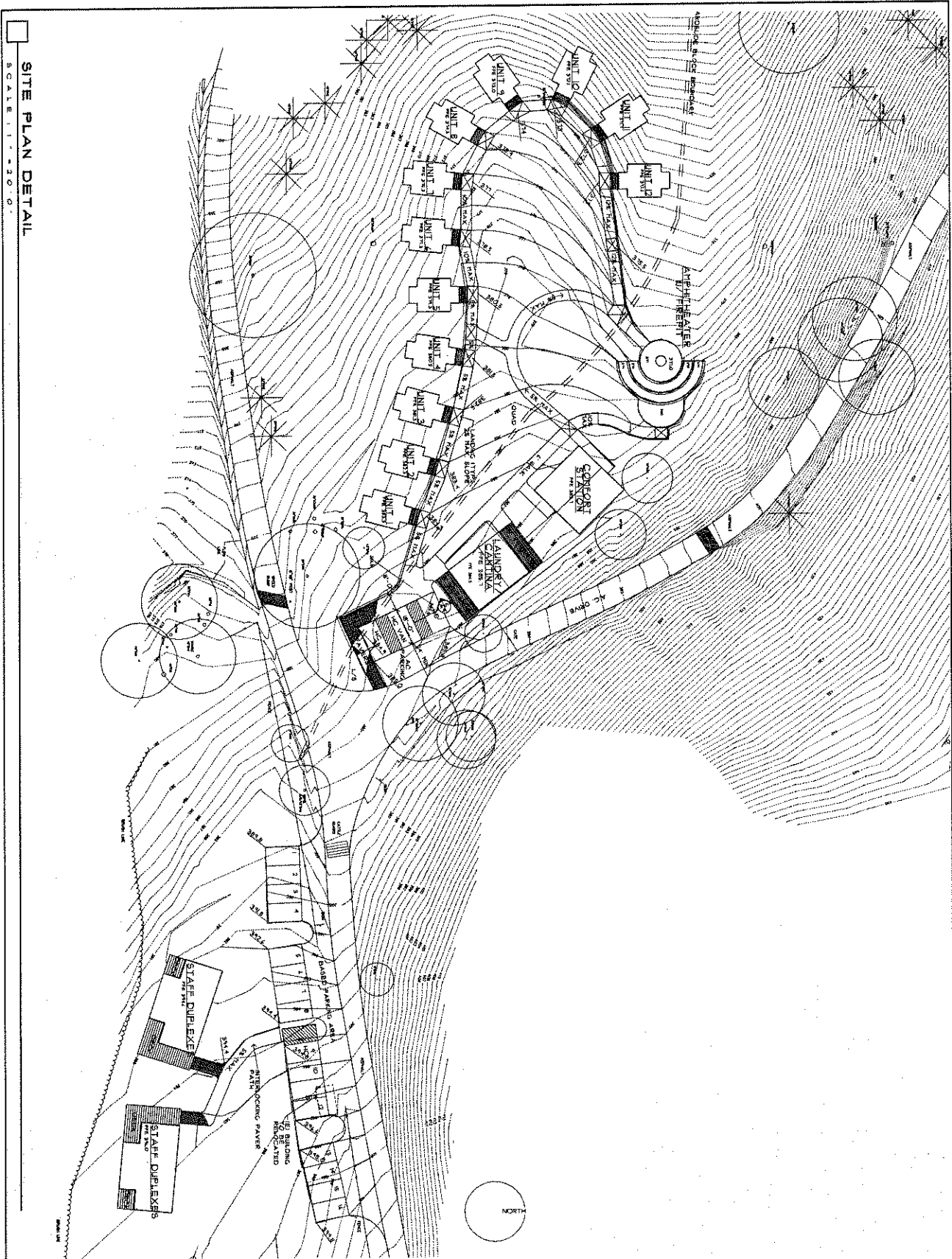
SCALE: 1" = 100'-0"



ON-SITE ACCESSIBILITY, SPECIAL TERRAIN AND SLOPE PROTECTIVE BETWEEN THE VARIOUS BUILDINGS AND DRIVEWAYS SHALL BE CONCRETE OR ASPHALT. ALL DRIVEWAYS AND VERTICAL CURBS SHALL BE CONCRETE OR ASPHALT. ALL DRIVEWAYS SHALL BE CONCRETE OR ASPHALT. ALL DRIVEWAYS SHALL BE CONCRETE OR ASPHALT. ALL DRIVEWAYS SHALL BE CONCRETE OR ASPHALT.

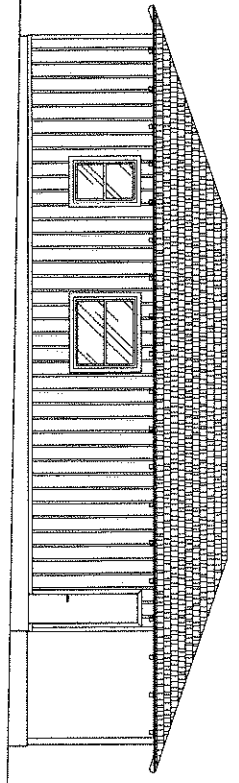


<p>TJ WEBER ARCHITECT</p>  <p>P.O. BOX 16 ROSELAND, CA 94608-0016 TEL: (415) 534-1111 WWW.TJWEBERARCHITECT.COM</p>	<p>CAL POLY CORP SWANTON PACIFIC RANCH SWANTON ROAD DAVENPORT, CA</p>	<p>Project: SWANTON/PACIFIC FIELD CAMP SWANTON ROAD DAVENPORT, CA</p>	<p>Sheet Contents: SITE PLAN</p>	<p>Date: 12/21/2014 Revised: Job No: 1105 Sheet: A - 0.0 No. 21 of 32</p>
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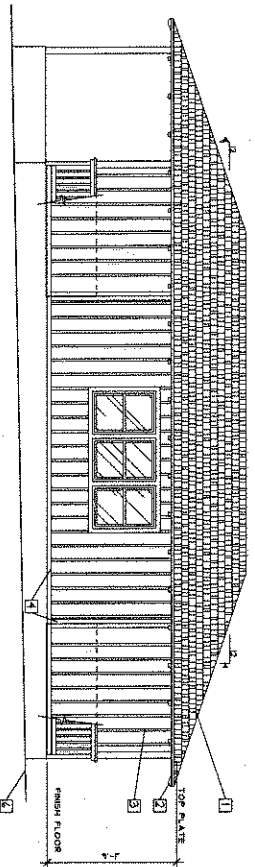


SITE PLAN DETAIL
 SCALE: 1" = 30' 0"

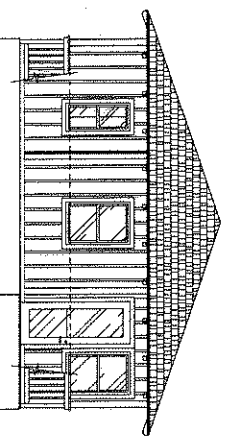
<p>T WYBBER ARCHITECT</p> <p>Professional Seal of T. Wybber, Architect, State of California, No. 11055</p>	<p>CAL POLY CORP SWANTON PACIFIC RANCH SWANTON ROAD DAVENPORT, CA</p>	<p>Project: SWANTON / PACIFIC FIELD CAMP SWANTON ROAD DAVENPORT, CA</p>	<p>Sheet Contents: SITE PLAN DETAIL</p>	<p>Date: 7/29/2013 Revised: Job No: 1105 Sheet: A - 02 No. 23 of 32</p>
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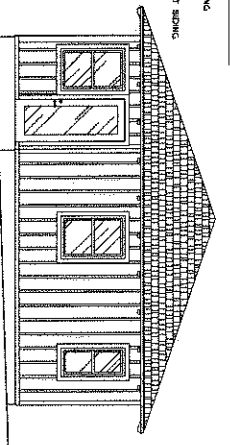
STAFF DUPLEX FRONT ELEVATION
SCALE: 1/4" = 1'-0"



STAFF DUPLEX REAR ELEVATION
SCALE: 1/4" = 1'-0"

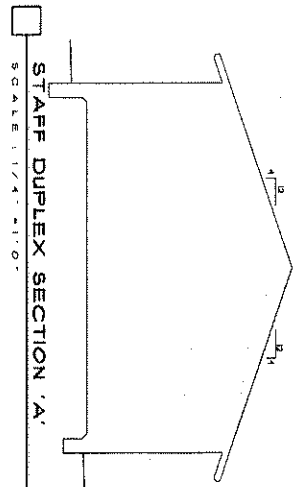


STAFF DUPLEX SIDE ELEVATION
SCALE: 1/4" = 1'-0"

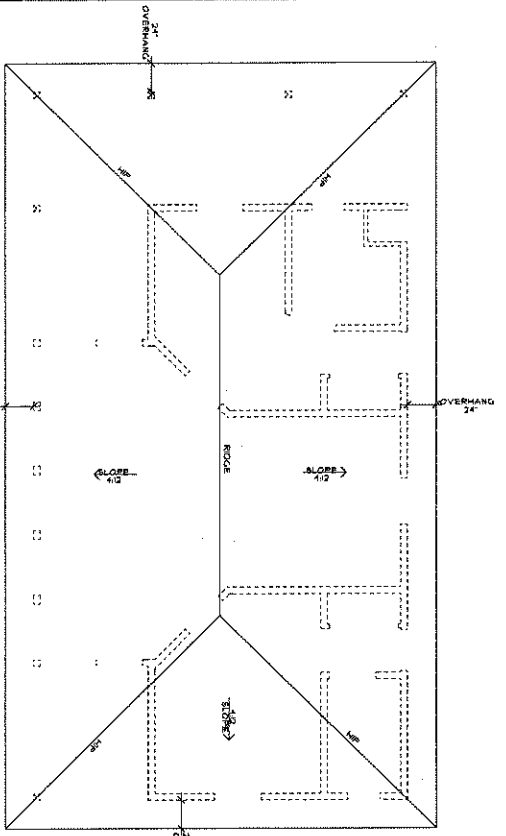


STAFF DUPLEX SIDE ELEVATION
SCALE: 1/4" = 1'-0"

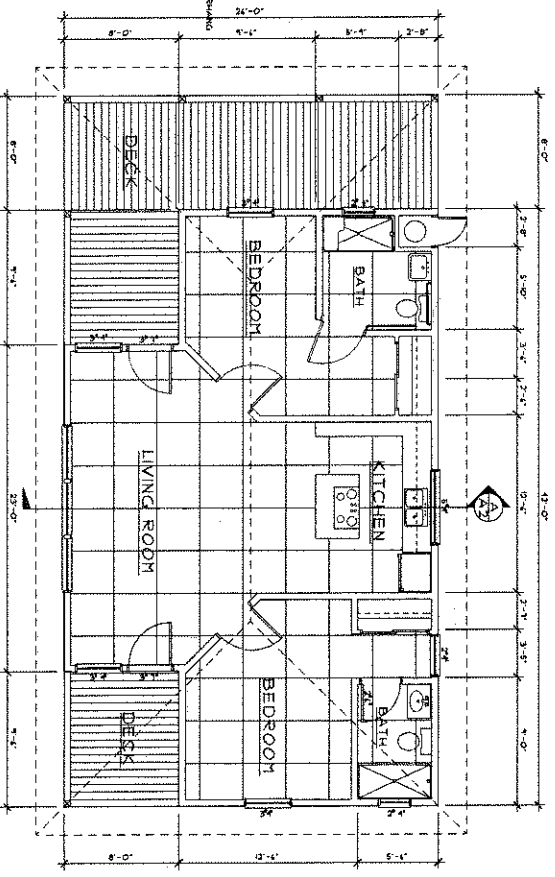
- FINISH KEY NOTES
- 1 PLAT CONCRETE TILE ROOFING
 - 2 1/2" FANTASY SIKKO BOARD 1 BATT INSUL
 - 3 1/2" BATT INSUL
 - 4 2" R. SALT SAND
 - 5 FINISH GRADE



STAFF DUPLEX SECTION 'A'
SCALE: 1/4" = 1'-0"



FACILITY CABIN ROOF PLAN
SCALE: 1/4" = 1'-0"



FACILITY CABIN FLOOR PLAN
SCALE: 1/4" = 1'-0"

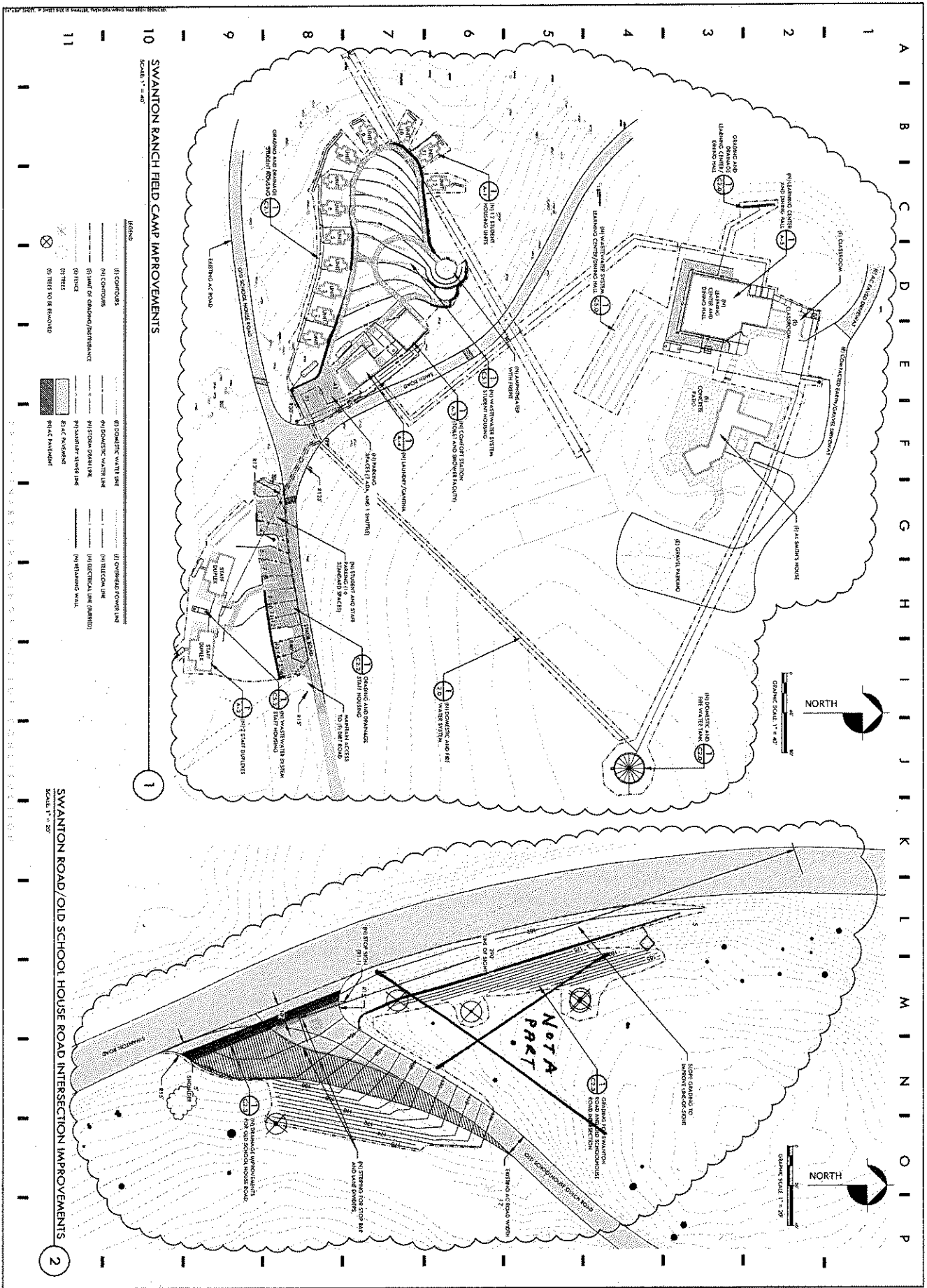
AREA: 440 SF
DECK AREA: 310 SF



CAL POLY CORP
SWANTON PACIFIC RANCH
SWANTON ROAD
DAVENPORT, CA

SWANTON/PACIFIC
FIELD CAMP
SWANTON ROAD
DAVENPORT, CA

Project: STAFF DUPLEXES
Date: 7/29/2013
Revised:
Job. No.: 1105
Sheet: A of 32



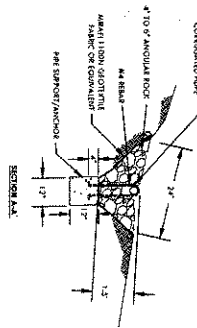
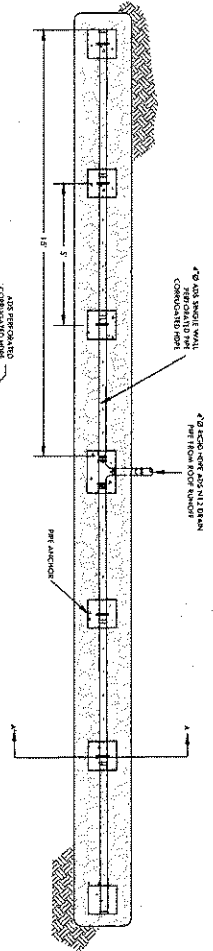
10 SWANTON RANCH FIELD CAMP IMPROVEMENTS
SCALE: 1" = 40'

- LEGEND
- (1) CONTOUR
 - (2) CONTOUR
 - (3) LIMIT OF EXISTING/RESTRICTION
 - (4) EXISTING
 - (5) TREES
 - (6) TREES TO BE REMOVED
 - (7) DOMESTIC WATER LINE
 - (8) DOMESTIC WATER LINE
 - (9) SEWER LINE
 - (10) OVERHEAD POWER LINE
 - (11) TELECOM LINE
 - (12) ELECTRICAL LINE (FIBER/OPTIC)
 - (13) ELECTRICAL LINE (POWER)
 - (14) ELECTRICAL LINE (FIBER/OPTIC)
 - (15) ELECTRICAL LINE (POWER)
 - (16) ELECTRICAL LINE (FIBER/OPTIC)
 - (17) ELECTRICAL LINE (POWER)
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 - (93) ELECTRICAL LINE (POWER)
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 - (95) ELECTRICAL LINE (POWER)
 - (96) ELECTRICAL LINE (FIBER/OPTIC)
 - (97) ELECTRICAL LINE (POWER)
 - (98) ELECTRICAL LINE (FIBER/OPTIC)
 - (99) ELECTRICAL LINE (POWER)
 - (100) ELECTRICAL LINE (FIBER/OPTIC)

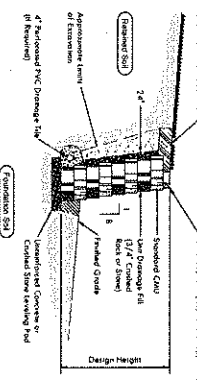
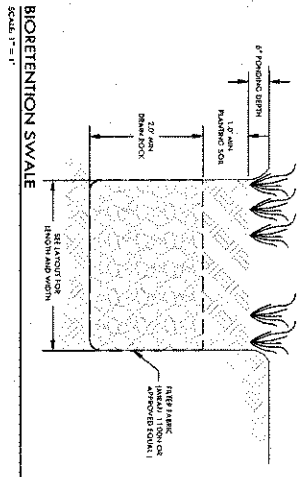
11 SWANTON ROAD/OLD SCHOOL HOUSE ROAD INTERSECTION IMPROVEMENTS
SCALE: 1" = 20'

	<p>PROJECT: SWANTON PACIFIC RANCH FIELD CAMP IMPROVEMENT PROJECT OLD SCHOOL HOUSE ROAD DAVENPORT, CALIFORNIA AP# 057-121-22 AND 057-151-03</p>	<p>CLIENT: SWANTON PACIFIC RANCH ATTN: BRIAN DIETERSICK 125 SWANTON ROAD DAVENPORT, CA 95017</p>	<p>SHEET TITLE: FIELD CAMP SITE IMPROVEMENT PLAN</p>
	<p>DATE: MAY 2013 SCALE: AS SHOWN SHEET: C1.0 3 OF 32</p>	<p>DESIGNED BY: [Signature] CHECKED BY: [Signature] DATE: MAY 2013 SCALE: AS SHOWN SHEET: C1.0 3 OF 32</p>	<p>PROJECT: SWANTON PACIFIC RANCH FIELD CAMP IMPROVEMENT PROJECT OLD SCHOOL HOUSE ROAD DAVENPORT, CALIFORNIA AP# 057-121-22 AND 057-151-03</p>

A B C D E F G H I J K L M N O P

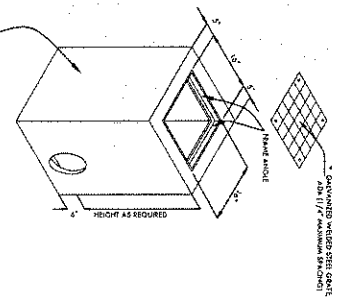


LEVEL SPREADER - LEARNING CENTER/DINING HALL
SCALE: 1" = 2'

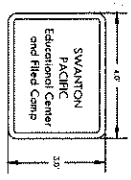


BIO-RETENTION SWALE
SCALE: 1" = 1'

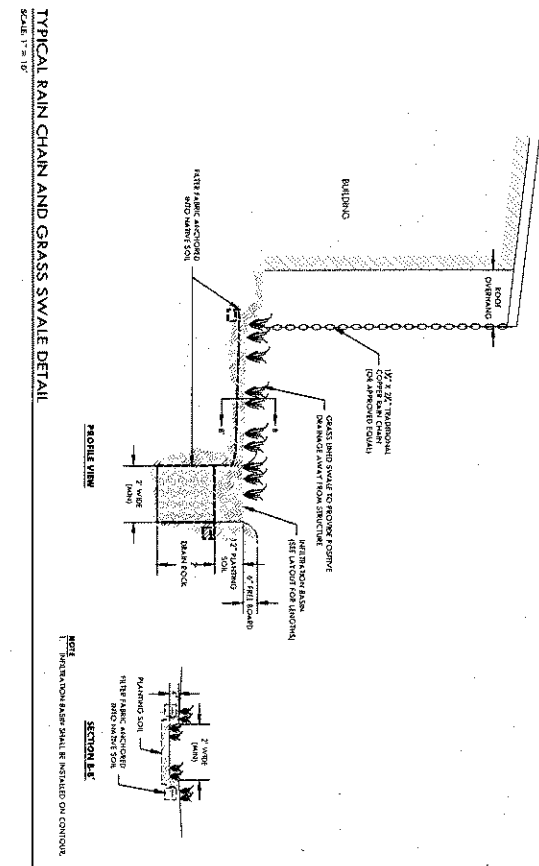
TYPICAL SEGMENTAL (CMU) RETAINING WALL
SCALE: 1" = 2'



TYPICAL CATCH BASIN
SCALE: 1" = 1'

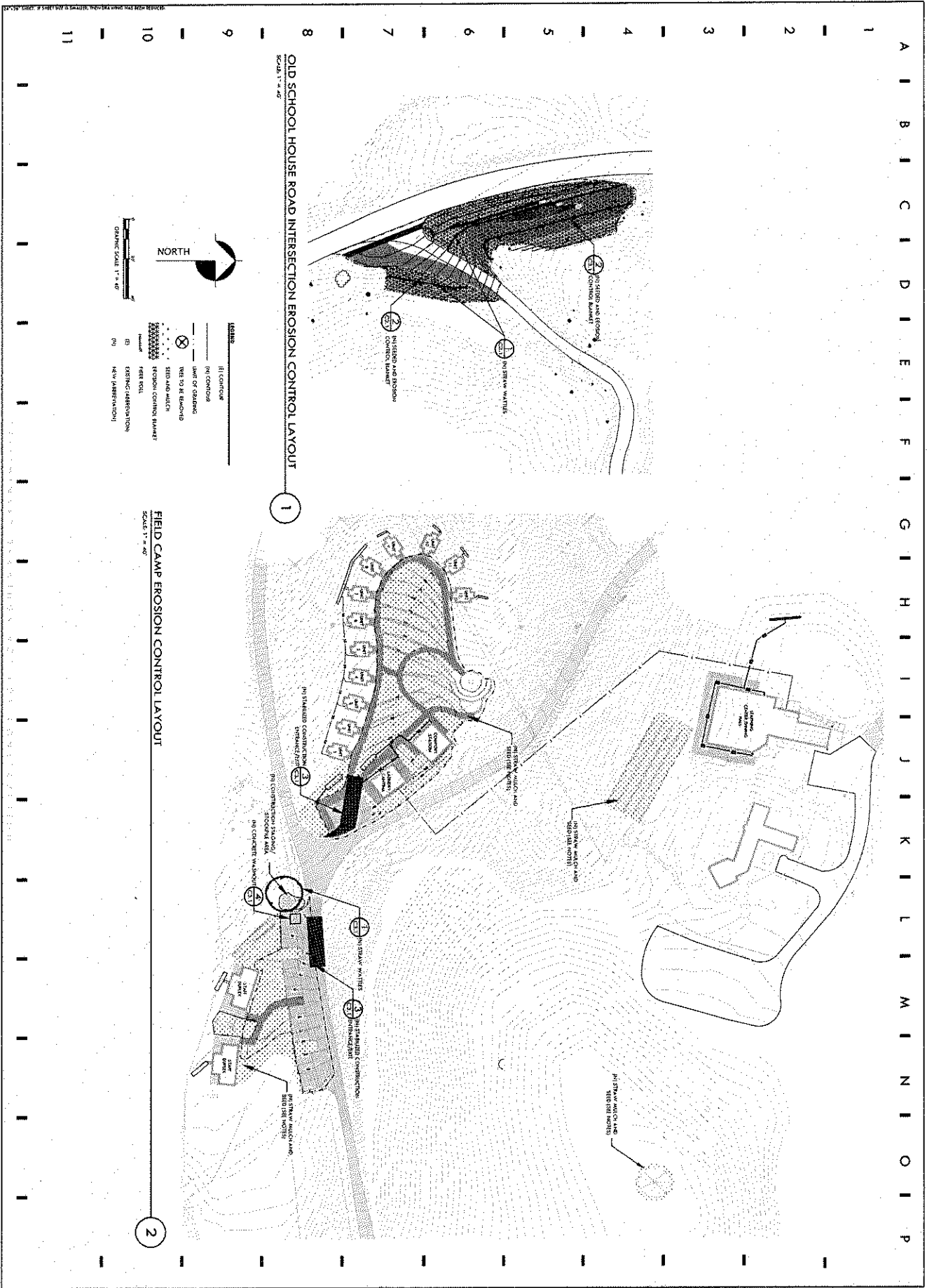


NEW ENTRY SIGN
SCALE: 1" = 2'



TYPICAL RAIN CHAIN AND GRASS SWALE DETAIL
SCALE: 1" = 10'

	PROJECT SWANTON PACIFIC RANCH FIELD CAMP IMPROVEMENT PROJECT OLD SCHOOL HOUSE ROAD DAVENPORT, CALIFORNIA APR 057-121-22 AND 057-151-03	CLIENT SWANTON PACIFIC RANCH ATTN: BRIAN DIETTERICK 125 SWANTON ROAD DAVENPORT, CA 95017	SHEET TITLE GRADING AND DRAINAGE DETAILS AND NOTES
	DATE JAN 2013	SCALE AS SHOWN	PROJECT C24 8 OF 12

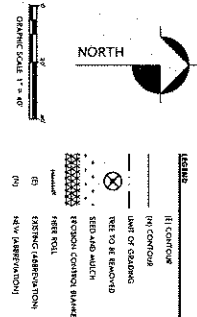


OLD SCHOOL HOUSE ROAD INTERSECTION EROSION CONTROL LAYOUT
SCALE 1" = 40'

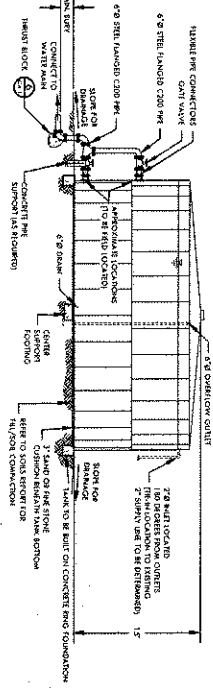
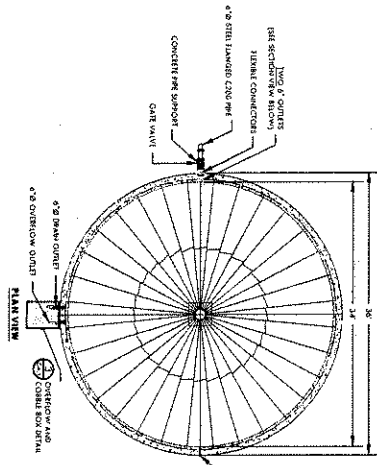
1

FIELD CAMP EROSION CONTROL LAYOUT
SCALE 1" = 40'

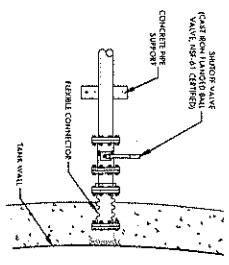
2



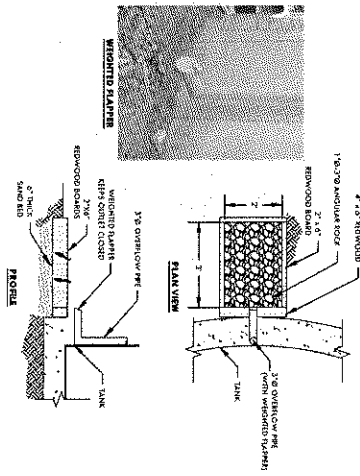
	<p>PROJECT TITLE SWANTON PACIFIC RANCH FIELD CAMP IMPROVEMENT PROJECT OLD SCHOOL HOUSE ROAD DAVENPORT, CALIFORNIA APNs: 057-121-22 AND 057-151-03</p>	<p>CLIENT SWANTON PACIFIC RANCH ATTN: BRIAN DIETERCK 125 SWANTON ROAD DAVENPORT, CA 95617</p>	<p>SHEET TITLE EROSION CONTROL OVERALL SITE LAYOUT</p>
			<p>DATE 21.12</p> <p>SCALE AS SHOWN</p> <p>NO. OF SHEETS 11</p> <p>DATE 2013</p> <p>PROJECT NO. 21.12</p> <p>SCALE AS SHOWN</p> <p>NO. OF SHEETS 11</p>



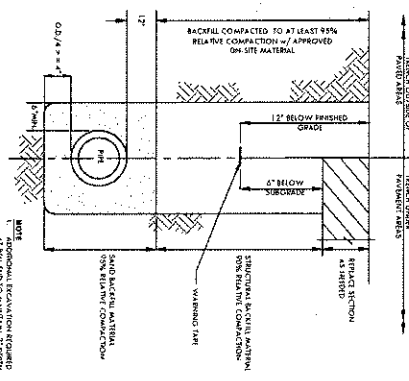
100,000 GALLON TANK AND PUMPING DETAILS
SCALE: 1/8\"/>



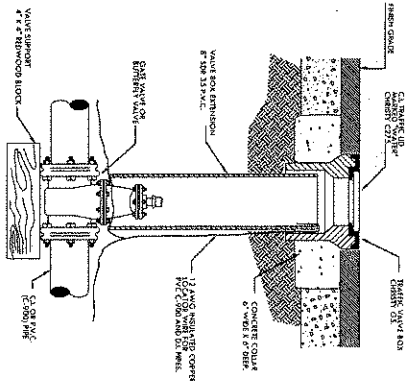
11 TYPICAL CONNECTION DETAIL
SCALE: 1/8\"/>



9 OVERFLOW & CORBLE BOX DETAIL
SCALE: 1/8\"/>



4 TYPICAL TRENCH DETAIL
SCALE: 1/8\"/>

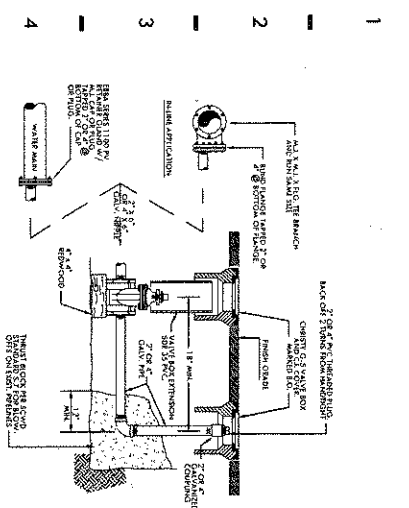


5 TYPICAL BURIED VALVE ASSEMBLY
SCALE: 1/8\"/>

6 TYPICAL THRUST BLOCK DETAILS
SCALE: 1/8\"/>

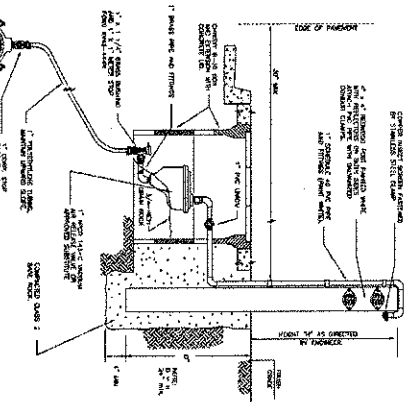
1. ALL PASTIC PIPE TO BE SCHEDULED, ACCORDING TO THESE DETAILS.
2. UNLESS OTHERWISE NOTED OR OTHERWISE SHOWN, ALL JOINTS SHALL BE MADE WITH 100% CEMENT.
3. ALL JOINTS SHALL BE CAULKED WITH AN ANTI-LEAKING COMPOUND.
4. SIZE OF THRUST BLOCKS SHALL BE DETERMINED BY THE MANUFACTURER'S RECOMMENDATIONS.
5. ALL VIEWS ARE FROM VIEW UNLESS OTHERWISE SHOWN.

	PROJECT TITLE SWANTON PACIFIC RANCH FIELD CAMP IMPROVEMENT PROJECT OLD SCHOOL HOUSE ROAD DAVENPORT, CALIFORNIA APR 4 057-121-22 AND 057-151-03	CLIENT SWANTON PACIFIC RANCH ATTN: BRIAN DIETERICK 125 SWANTON ROAD DAVENPORT, CA 95017	SHEET TITLE WATER TANK AND SYSTEM DETAILS
	DRAWN BY: JMC CHECKED BY: JMC DATE: 06/17/13 FOR NO: 1113 SCALE: AS SHOWN SHEET:	PROJECT NO: 1113 SHEET NO: 1113-1	PROJECT NO: 1113 SHEET NO: 1113-1



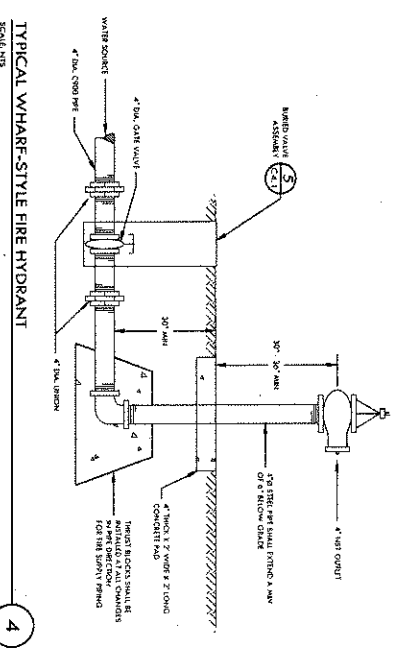
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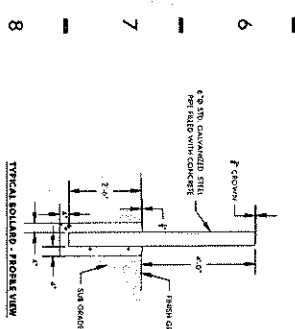
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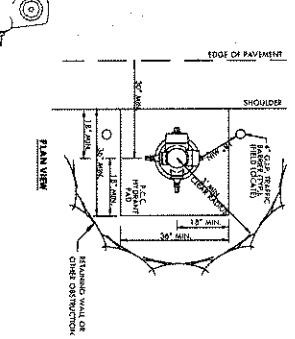
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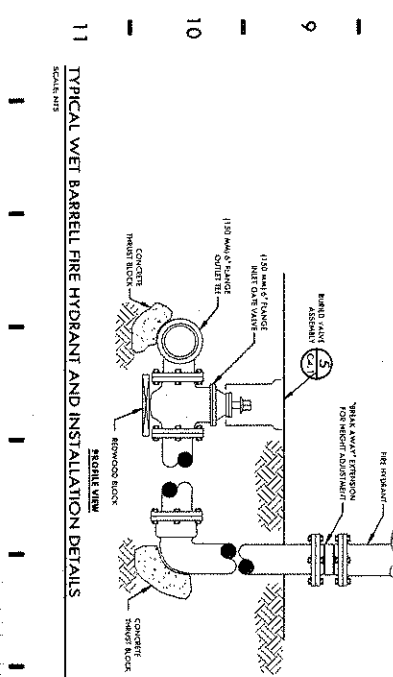
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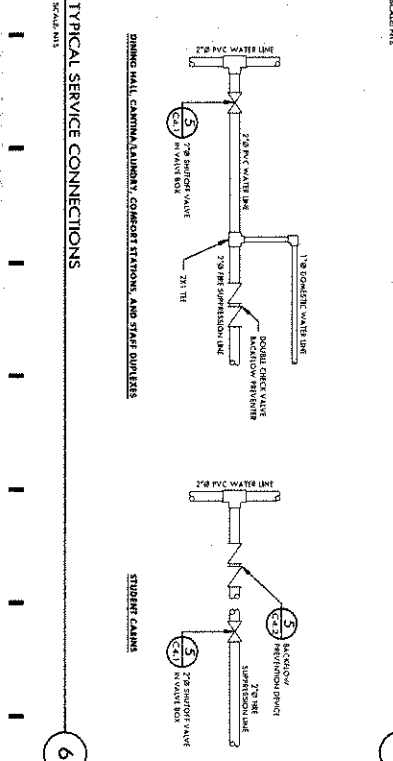
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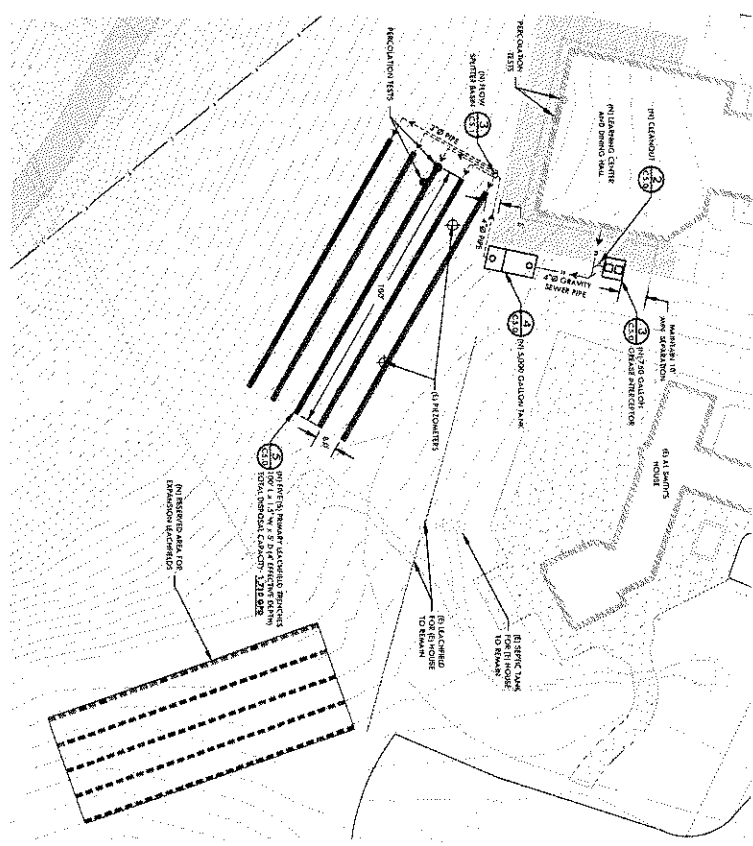
CLIENT: SWANTON PACIFIC RANCH
ATTN: BRIAN DETTERICK
125 SWANTON ROAD
DAVENPORT, CA 95017

PROJECT: SWANTON PACIFIC RANCH
FIELD CAMP IMPROVEMENT PROJECT
125 SWANTON ROAD HOUSE 100
DAVENPORT, CALIFORNIA
APR. 057-121-22 AND 057-151-03

PREPARED BY: [Logo]
FULL CODES COMPLIANT, 30%
DATE: 05/12/11

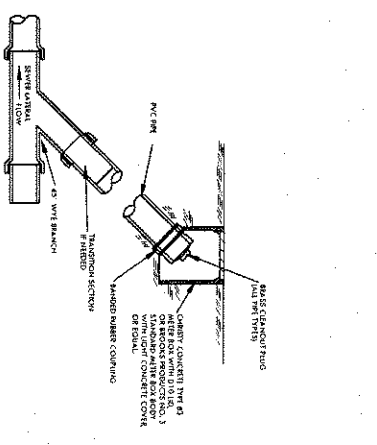
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13 OF 12

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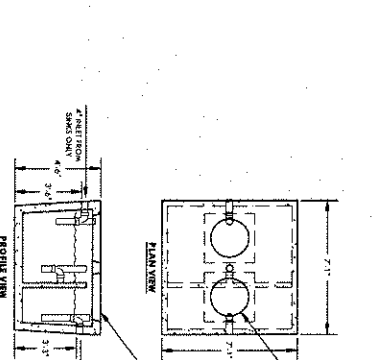


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 - (2) 5,000 GALLON TANK
 - (3) 750 GALLON GREASE INTERCEPTOR
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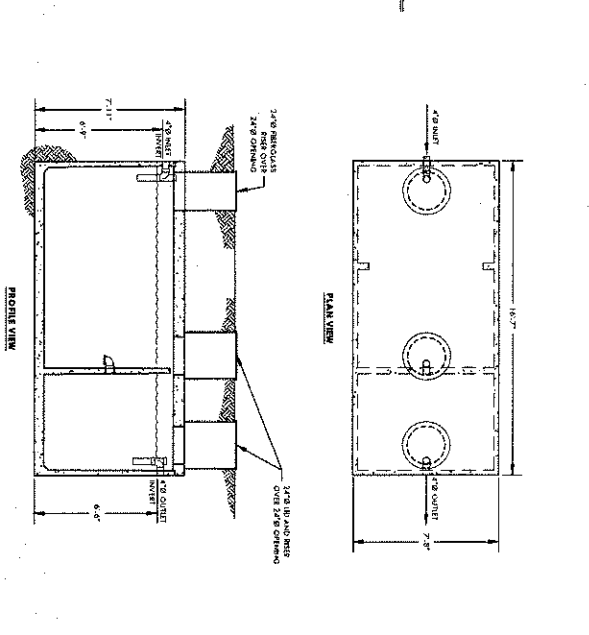
WASTEWATER SYSTEM LAYOUT - DINING HALL
SCALE: 1" = 20'



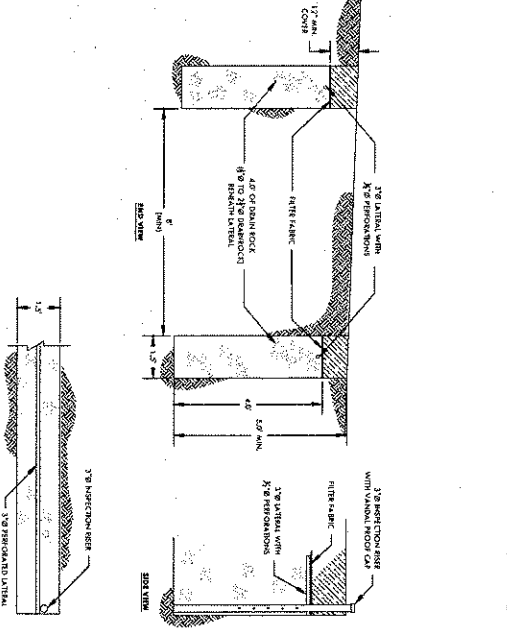
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750 GALLON GREASE INTERCEPTOR
SCALE: NTS



5,000 GALLON BAFFLED SEPTIC TANK
SCALE: 1" = 2''



LEACHFIELD DETAILS
SCALE: 1" = 2''

<p>PROJECT: SWANTON PACIFIC RANCH FIELD CAMP IMPROVEMENT PROJECT OLD SCHOOL HOUSE ROAD DAVENPORT, CALIFORNIA AP# 057-121-22 AND 057-151-03</p>	<p>CLIENT: SWANTON PACIFIC RANCH ATTN: BRIAN DIETTERICK 125 SWANTON ROAD DAVENPORT, CA 95017</p>	<p>SHEET TITLE: WASTEWATER SYSTEM LEARNING CENTER AND DINING HALL</p>	<p>DATE: 10/20/13 SCALE: AS SHOWN</p>	<p>DESIGNED BY: [Signature] CHECKED BY: [Signature] DATE: 10/20/13 SCALE: AS SHOWN</p>	<p>PROJECT NO.: [Number] SHEET NO.: [Number]</p>
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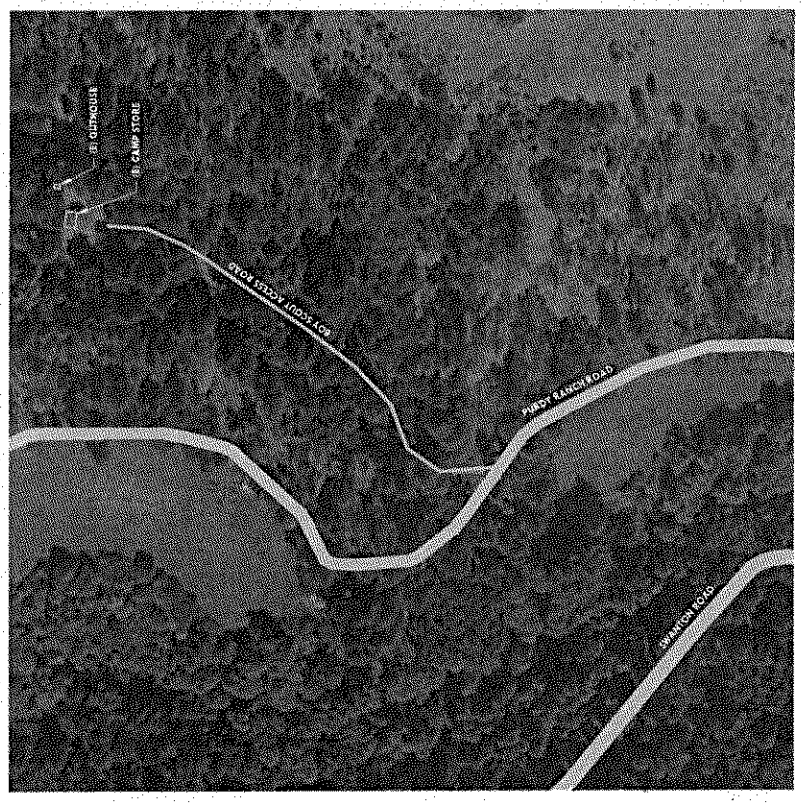
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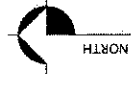
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11



BOY SCOUT CAMP SITE LAYOUT - PLAN VIEW
SCALE: NTS



1

PROFESSIONAL ENGINEERING NO. 10177 CONSTRUCTION

SHEET TITLE
SITE IMPROVEMENT
PLAN FOR THE
BOY SCOUT CAMP

CLIENT
SWANTON PACIFIC RANCH
ATTN: BRIAN DETTERCK
125 SWANTON ROAD
DANFORTH, CA 95017

PROJECT TITLE
SWANTON PACIFIC RANCH
FIELD CAMP IMPROVEMENT PROJECT
OLD SCHOOL HOUSE ROAD
DANFORTH, CALIFORNIA
APR# 05-121-22 AND 05-151-03

DATE
1/09

FULL CROSS ENGINEERING, INC.
Civil Engineering
10000 14th Street, Suite 100
San Diego, CA 92121
Tel: 619-444-1400 Fax: 619-444-1401



DRAWN BY: ELC
CHECKED BY: RMA
DATE: JULY 2013
JOB NO: 11139
SCALE: AS SHOWN
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17 OF 25

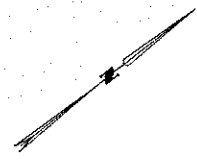
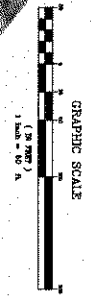
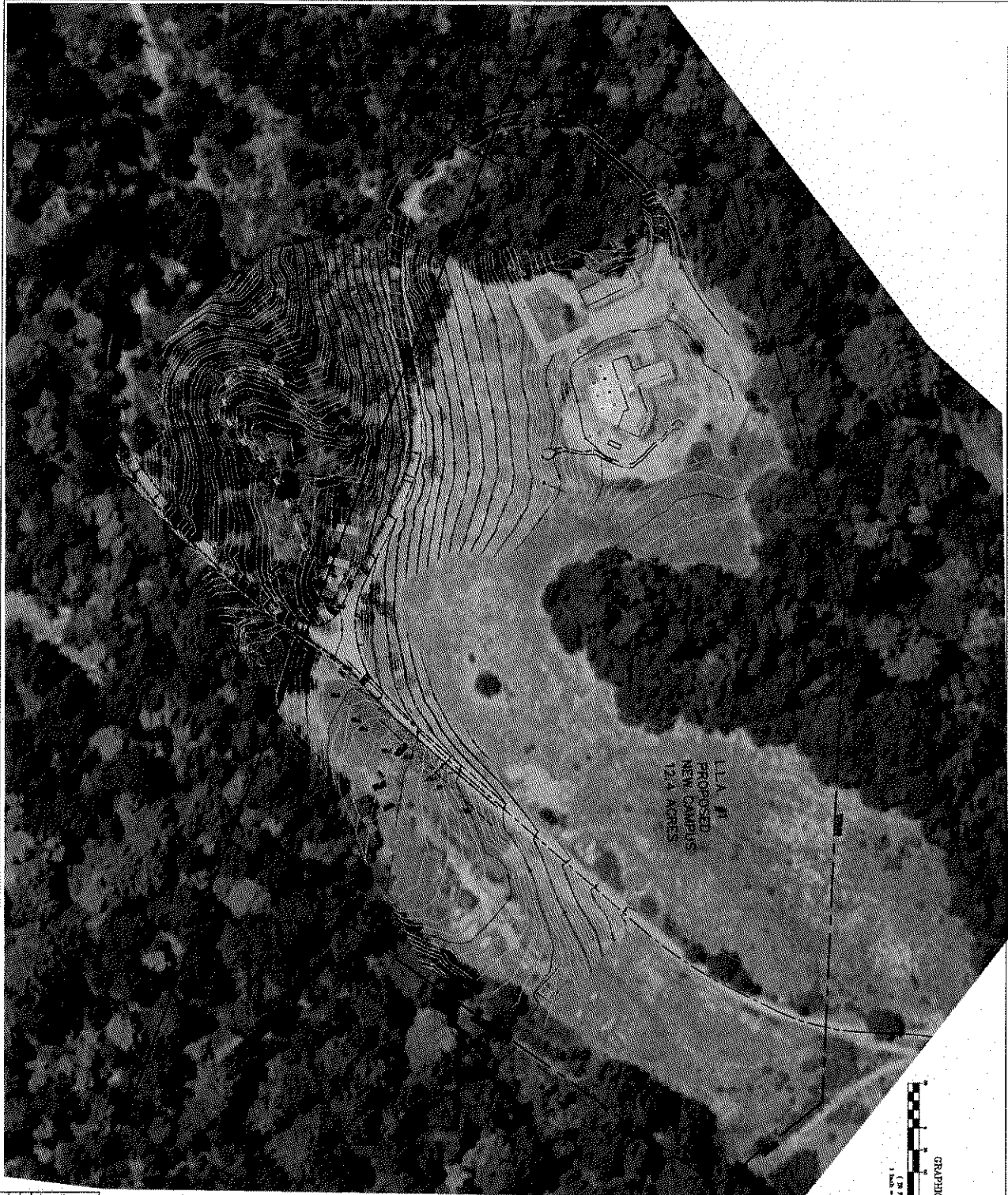
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001-101-100	2,072 S.F. (0.05 ACRES)



DUNBAR and CRAIG
 LICENSED LAND SURVEYORS
 1100 G STREET, SUITE 100
 OAKLAND, CALIFORNIA 94612
 (415) 763-2800
 FAX: (415) 763-2801

APPROVED LOT LINE ADJUSTMENT
 LICENSED LAND SURVEYORS
 LANDS OF CALIFORNIA POLYTECHNIC
 STATE UNIVERSITY FOUNDATION
 SUBJECT
 SWANSON
 COUNTY OF SANTA CRUZ, STATE OF CALIFORNIA

DATE OF REPORT: 1/11/11
 DATE: JAN 28, 2012
 SHEET NO. 2011-133
 SHEET ONE
 OF THREE



DINGBAR and CRAIG
 LICENSED LAND SURVEYORS
 1001 CHINA STREET
 SAN FRANCISCO, CALIFORNIA 94109
 (415) 774-2020
 FAX (415) 774-2021

APPROVED FOR THE SUBMITTER
 LANDS OF CALIFORNIA PARCELING
 STATE SURVEYOR'S DEPARTMENT
 COUNTY OF SAN DIEGO

SCALE: 1" = 100' ± (SEE DRAWING FOR DETAILS)
 DATE: 08/20/13
 SHEET NO. 201-13-13
 SHEET 7/10
 OF 10

**PRELIMINARY ENGINEERING GEOLOGIC FEASIBILITY INVESTIGATION
PROPOSED STAUB FIELD CAMP
900 SCHOOL HOUSE GULCH ROAD
APN 057-121-022
SWANTON PACIFIC RANCH
DAVENPORT, CALIFORNIA**

PROJECT 2341 G

For
Swanton Pacific Ranch
125 Swanton Road
Davenport, California 95017

By

**PACIFIC GEOTECHNICAL ENGINEERING
16055 Caputo Drive, Suite D
Morgan Hill, California 95037
(408) 778-2818**

November 12, 2010

**PRELIMINARY ENGINEERING GEOLOGIC FEASIBILITY INVESTIGATION
PROPOSED STAUB FIELD CAMP
900 SCHOOL HOUSE GULCH ROAD
APN 057-121-022
SWANTON PACIFIC RANCH
DAVENPORT, CALIFORNIA**

1. INTRODUCTION

1.1 GENERAL

This report presents the results of our preliminary engineering geologic feasibility investigation for a proposed field camp, at the Swanton Pacific Ranch, near Davenport, in Santa Cruz County California. The property and site location are depicted at a regional scale on the Regional Geologic Index Map (Figure 1) of this report. In this report, "site" is used to indicate the portions of the property currently proposed for field camp development. The proposed field camp facilities are split between two sites, referred to in this report as the "Al Smith House site" and the "Staub House site."

Based on the results of our investigation to date, we conclude that the conceptual development at the Al Smith House site, and access road improvements are geologically feasible to construct, provided appropriate additional investigation is undertaken to assess the integrity of the rock mass near side slopes of the ridge, and to formulate design recommendations. Subsurface investigation will be required to further assess the footprint of the conceptual development at the Staub House site.

This report outlines geologic considerations associated with the proposed development concept, and the nature of subsurface exploration and analysis that will be needed to refine and support the design of the project.

1.2 PROJECT DESCRIPTION

We understand that the proposed project consists of the construction of: student cabins (14, at the Staub House site); dining facility (at the Staub House site); comfort station; faculty cabins (2, on a ridge crest adjacent to the Al Smith House site); and possible expansions to an existing garage at the Al Smith House site (specific footprint not known yet). The details of these proposed facilities are in flux. We understand that the proposed projects will not be subject to OSHPD review. The conceptual locations of the project elements on the Ranch property is shown on Figures 3 and 4. We have based our investigation in part on the proposed project as shown on the following plan:

- *Staub Field Camp, A Learning Facility For Cal Poly, Swanton Pacific Ranch, 900 School House Gulch Road, Davenport, California* (Sheets T-1, C-1 through C-3, A-1 through A-4; dated May 19, 2009), prepared by TJ Weber Architect.

It is anticipated that some improvements will be needed for the prime access road, and possibly the alternate access road. The nature of improvements has not yet been established.

There are two access roads onto the site: an existing (northern) access road (known as School House Gulch Road) that stems off Swanton Road and climbs eastward onto the property; and a second (southern) alternate access road that stems off Swanton Road at Archibald Creek, and

traverses/climbs onto the property from the south. These two access roads join just before a single spur extends on to the Staub House site. Another access spur from School House Gulch Road extends to the Al Smith House site. A separate proposed access spur would take off from near the junction of the two prime access roads, and leads along the ridge crest to the proposed faculty cabins east of the Al Smith House site.

Utilities would be routed below-ground, making use of existing utility corridors leading to the Al Smith House site and Staub House site. Water would be supplied by an existing supply well(s) on the property, with supplemental storage tanks (locations to be determined). Sewage disposal would be through on-site septic leach fields (locations and design to be determined by others).

At this time, no grading plan has been developed. The overall concept will be a low-impact project fitted as closely to site contours as practical, in order to hold down the volume of grading.

1.3 INFORMATION PROVIDED

For this investigation we were provided with the following information:

- *Staub Field Camp, A Learning Facility For Cal Poly, Swanton Pacific Ranch, 900 School House Gulch Road, Davenport, California* (Sheets T-1, C-1 through C-3, A-1 through A-4; dated May 19, 2009), prepared by TJ Weber Architect.
- *Preliminary Geologic Evaluation, Swanton Pacific Ranch Educational Center, School House Gulch Road, Davenport, California, Santa Cruz County APN 057-121-22*; prepared for Swanton Pacific Ranch by Rogers E. Johnson & Associates [REJA Job. No. G01047-14A], dated March 11, 2002.
- *Geotechnical Investigation for Swanton Pacific Ranch Educational Center, Davenport, California*; prepared for California Polytechnic State University Foundation by Pacific Crest Engineering Inc., dated July 23, 2002.
- Untitled LIDAR "bare earth" (filtered) DEM, obtained in late 2008 by Swanton Pacific Ranch.

1.4 PREVIOUS WORK

Rogers E. Johnson & Associates performed a preliminary geologic evaluation in 2002 for a previous project concept (layout unavailable). This evaluation focused on regional geology, and on identifying which geologic hazards warranted detailed investigation. An excerpt of a 1"=2000' scale geologic map from a 1995 research report was presented. While the excerpted map was prepared for a San Gregorio fault zone research project, a fairly detailed landslide interpretation is shown that includes the project vicinity. The Rogers Johnson report identifies landslide potential as the primary geologic concern for development. The report recommends preparation of a detailed topographic base map; geologic (landslide) mapping using that base map; a subsurface program incorporating test pits and borings with oriented cores; and coordination with a geotechnical engineer during the course of geologic investigation.

Pacific Crest Engineering subsequently performed a geotechnical investigation in 2002 for a then-proposed project on the property that was focused near the Al Smith House site (listed

above). A total of 15 exploratory borings were drilled, with some of those borings in the vicinity of the proposed staff cabins, and near the Al Smith House site.

Implicit in the findings of both these early investigations were the limitations placed on landslide geologic mapping, interpretation and conclusions by the lack of a detailed topographic base map.

1.5 PURPOSE AND SCOPE OF INVESTIGATION

The purpose of our services, through the milestone of this preliminary engineering geologic feasibility report, has been to identify the primary geologic considerations associated with the current proposed project; and to develop preliminary conclusions regarding feasibility of the project elements using surficial geologic information.

Early preliminary feedback from the County Geologist stressed the need to essentially create a landslide inventory, then develop follow-on, targeted investigation elements based on those findings. This report provides a landslide inventory and interpretation; discussion of implications for project feasibility; and recommendations regarding geologic components to a design-level geotechnical investigation.

For this study, we completed the following scope of work:

- Review of available published and unpublished geologic maps and literature regarding the site and its environs.
- Study of aerial imagery of the property and its environs, using aerial photographs from the UC Santa Cruz collection, and evaluation of GoogleEarth imagery for possible stereo acquisition and analysis.
- Manipulation of 2008 LiDAR "bare earth" DEM provided by Swanton Pacific Ranch; and coordination with Cal Poly GIS/LiDAR expert Russ White.
- Geologic reconnaissance and reconnaissance-level mapping of the property and immediate vicinity.
- Project meetings, including: initial meeting with Peter Haase (Fall Creek Engineering); field meeting with project team and County Planning staff; progress review meetings with project design team members; field meeting/reconnaissance with Brian Bauldry of Bauldry Engineering (project head for geotechnical engineering); meeting at County offices with Joe Hanna (County Geologist) Kent Edler (County Civil Engineer w/ Planning Dept.), and Brian Bauldry; and field meeting with Joe Hanna (County Geologist).
- Development of geologic model for landslide analysis of the site, and conclusions regarding the geologic suitability of the proposed development.
- Preparation of this report.

2. REGIONAL SETTING

2.1 PHYSICAL

The Swanton Pacific Ranch is located approximately 4 miles north of Davenport, and about 5 miles southeast of Point Ano Nuevo, on the northwestern slopes of Ben Lomond Mountain. The

ranch and project sites are reached via Swanton Road, which follows Scott Creek upstream as it diverges northward from the coast and California Highway One.

The project sites are located in the hillslopes east of the Scott Creek drainage. These hillslopes are dissected by westward draining creeks with intervening upland areas. North of the project sites is Little Creek. South of the project sites are (in order) Winter Creek, Archibald Creek, and Molino Creek. The sites lie within the Davenport 7.5 minute topographic quadrangle.

The two access roads climb from the elevation of the Scott Creek valley floor at approximate elevation 100 or less feet above sea level, to the project vicinity near elevation 450 feet. The northern (primary) access road climbs from Swanton Road at a point just south of Little Creek. The southern (alternate) access road climbs from the floor of the Archibald Creek drainage where it meets Swanton Road.

The regional location of the site is shown on our Regional Geologic Index Map (Figure 1).

In general, ridge crests are moderately sloping (commonly on the order of 15 degrees), with steeper sideslopes commonly in the range of 30 to 40 degrees.

The ranch and vicinity support a generally dense forest cover, with local open grassy and brushy ground on hill crests and ridge crests.

Land use in the general area has historically been mainly dairying, and logging-related. The relatively gently sloping valley floor of Scott Creek and lowermost tributary creeks is currently farmed.

2.2 GEOLOGIC

The property lies on the northwestern flank of a tectonically rising block cored by metamorphic rocks that include schist, marble, and coarse-grained igneous rocks. Overlying these crystalline rocks are Tertiary age sedimentary rocks including the Santa Margarita Formation, and the overlying Santa Cruz Mudstone, which is mapped at the site.

Folding and tilting has affected the rocks in the property vicinity. A syncline (trough) axis is mapped as lying west of Scott Creek, between it and the coastline. Bedding in the project vicinity has regional westward dips of approximately 20 to 24 degrees, with dips shallowing to 4 degrees approaching the syncline.

Regional landslide maps (Cooper-Clark and Associates, 1975) show the project sites as lying within a queried large composite landslide mass with two different movement directions: westward toward Scott Creek and northward toward Little Creek. Discontinuous other queried landslide masses are mapped through the general property vicinity, some of them reflecting local topographic lows, some of them not.

Marine terraces are mapped semi-continuously along the western flank of Ben Lomond Mountain from near the San Lorenzo River northward to Point Ano Nuevo. The Quarry, Blackrock and Wilder marine terraces are shown by some workers as continuous across the lower reaches of the hillslopes encompassing the site, and by others as present north and south of the mouth of Scott Creek, but not extending significantly up into the drainage embayment itself (Weber and Allwardt, 2001).

The closest clearly marine terrace surfaces to the mouth of the modern Scott Creek are at roughly elevation 290 – 310 feet. The evolution of the interior of the Scott Creek drainage – timing of downcutting, backfilling, reincision etc. – is not clear. However, it is clear that for this

terrace to form, the local base level for Scott Creek would have also been near that terrace elevation, thus likely affecting rocks in the lower portion of a landslide complex at the property.

2.2.1 Regional Faults and Seismic Setting

The San Gregorio fault zone is the closest mapped active fault to the sites. No active faults are mapped as passing through or in close proximity to the sites.

Potential sources of significant earthquake ground shaking at the site include several active and potentially active faults in the southern San Francisco Bay area. Of these, the San Gregorio and San Andreas faults (Peninsula and Santa Cruz Mountains segments) are the largest potential seismic sources. In a regional context, all of these faults are considered elements of the San Andreas fault system, which forms the tectonic boundary between the North American and Pacific Plates. Potentially significant seismic sources include the faults listed below; additional detail for selected faults is presented in the Appendix to this report. Distances were derived from the USGS Fault and Fold Database (at <http://earthquake.usgs.gov/hazards/ffaults/>).

- San Gregorio fault, located approximately 2.3 miles (3.7 km) southwest of the site.
- San Andreas fault, located approximately 14.1 miles (22.6 kilometers) northeast of the site.
- Monterey Bay/Tularcitos fault, located approximately 11.2 miles (18.0 km) to the southeast of the site.
- Monte Vista/Shannon fault, located approximately 19.1 miles (30.7 km) northeast of the site.
- The Hayward fault (southeast extension), located approximately 30.8 miles (49.6 km) northeast of the site.
- The Calaveras fault, located approximately 33.6 miles (54.1 kilometers) northeast of the site.

Ongoing research by the Working Group on California Earthquake Probabilities (WGCEP 1990, 1996, 2003, 2008) reaffirms that damaging earthquakes are a fact of life for the San Francisco/Monterey Bay area.

The WGCEP's estimates of the probabilities of major earthquakes are now in their fourth iteration, with the greatest changes in approach being the treatment of major faults as segmented, unsegmented or capable of different rupture scenarios; in the progressive consideration of more potential seismic sources, and in use of time-independent versus time-dependent models. Current estimates (WGCEP, 2003, 2008) are most detailed for the greater San Francisco Bay Area; WGCEP (2008) estimated a 63% probability of a large (magnitude 6.7 or greater) earthquake in the San Francisco Bay area as a whole over a 30-year period; this overall probability differed only slightly from the previous (WGCEP, 2003) probability of 62%. The estimate for the Calaveras fault alone is 7% (revised down from the 11% presented by WGCEP, 2003); for the (northern) San Andreas fault alone, 21%; and for the Hayward fault, 31% (revised upward from the WGCEP (2003) value of 27%).

Both the US Geological Survey and the California Geological Survey are pressing forward with probabilistic models of expected ground shaking at a given locality, in lieu of earlier approaches that used a "deterministic" approach based on the greatest possible ground acceleration, which

did not consider how likely or unlikely a given seismic event might be. Attenuation curves continue to undergo refinement, and these refinements will affect the calculated/estimated ground motions for the project site.

The California Geological Survey's statewide probabilistic seismic hazard model (accessible at <http://redirect.conservation.ca.gov/cgs/rghm/pshamap/pshamap.asp>) provides one approach to assessing likely peak horizontal ground accelerations. Using the latitude/longitude coordinates of the Staub House site (lat 37.063801; lon -122.217882), this model predicts that the peak horizontal acceleration with a 10% chance of exceedance in the next 50 years, for a "firm rock" site, is 0.465g.

2.2.2 Regulatory Environment

The County of Santa Cruz sets development policy for the property, although regional hazard maps prepared by the State encompass the site. For sake of reference, these maps show the following:

Alquist-Priolo Earthquake Fault Zone Maps – The field camp sites are not located within an Alquist-Priolo Earthquake Fault Zone.

California Geological Survey Seismic Hazard Zone Maps – The California Geological Survey will be preparing a Seismic Hazard Map for the quadrangle encompassing the site, as mandated by the Seismic Hazard Mapping Act. As of this writing, no map has been issued that encompasses the site, and we are not aware of work significantly underway. This map series addresses the potential for earthquake induced landsliding, and liquefaction.

Seismic Design Maps - The site is shown on seismic hazard maps (CDMG, 1998) that are used in conjunction with the 1997 UBC as lying slightly less than 5km from the San Gregorio fault, which is considered an "A"- type fault. Seismic design criteria will need to be developed when a design-level geotechnical investigation is performed, as the applicable codes and the state of the practice are continually evolving.

3. SITE CONDITIONS

3.1 SITE TERRAIN

The Swanton Pacific Ranch is located on the northwestern slopes of Ben Lomond Mountain. This regional high is dissected by the westward-flowing creeks that drain into Scott Creek, and further modified by large-scale landsliding discussed below.

In general, ridge crests are moderately sloping, with steeper sideslopes commonly in the range of 30 to 40 degrees.

Drainage axes in the mountainous terrain generally are incised, typically with an inner gorge and only local alluvial terrace fragments.

3.1.1 Existing Improvements and Previous Grading

Existing improvements and previous grading are primarily associated with the primary historic ranch usages: dairying, logging, and farming. Features include:

A northern access road (School House Gulch Road and its eastern extension). This road is shown on Figures 3 and Figures 4 - 7. It is paved in its lower portion. There are culverts where this road crosses larger drainage axes.

A southern (alternate) access road (see Figures 3 and 8) that links up with the northern access road at its northern end, and with the Archibald Creek alluvial fan at its southern end. This road is entirely dirt, and has been improved since 2009 (after the Lockheed Fire) for salvage logging truck access. There are culverts where this road crosses larger drainage axes.

The "Al Smith House" itself and garage are located on a ridge crest, and reached via a short spur road stemming from the northern access road. There are associated unpaved parking and turnaround areas. The buildings and parking areas are built on a flat graded pad that appears to consist mainly of cut with a perimeter fill prism.

The "Staub House" and associated improvements (2 yurts, unpaved parking/turnaround areas). These buildings and parking areas are also likely built on a flat cut pad with a perimeter fill prism. The pad north of the Staub House has been extensively modified, probably in large part during past logging activities.

Numerous logging roads of varying age. All appear to have been constructed by cutting along the inboard edge, and sidecasting the fill onto the outboard hillslope. Locally there are graded landings and decks with more extensive fill.

Water tanks, including a cluster located on a knob crest east of the Al Smith House site. We are not aware of others.

Stock ponds, typically located in the narrow valleys separating major landslide blocks, not in drainages with large watersheds. We did not establish how these are supplied (i.e. extent of any piping, spring boxes, etc.).

The extent and location of underground utilities is not yet clear to us.

3.1.2 Drainage

Surface water currently flows by overland sheet flow generally toward swale axes that descend to the west, ultimately feeding into Scott Creek.

Despite relatively heavy rainfall experienced by coastal Santa Cruz County, we did not observe extensive gullying.

There are closed (undrained) depressions at various locations on the property. These depressions occur at boundaries between major landslide blocks, and typically are partially infilled with locally derived alluvium. Some of them contained water at the time of our field work.

At the time of our field work, Little Creek, Archibald Creek and Winter Creek all were flowing.

Culverts onsite are relatively few.

3.2 SITE GEOLOGY

We gathered data from our review of regional mapping and previous investigations, from manipulation and analysis of a LiDAR dataset, from aerial photographic analysis, and from geologic mapping. The findings from each of these are summarized below.

3.2.1 LiDAR and Aerial Photographic Analysis

This project provided an ideal opportunity to evaluate a detailed 2008 LiDAR (Light Detection and Ranging) dataset provided to us by Swanton Pacific Ranch (courtesy Brian Dietterick). This dataset was acquired in 2008, shortly following the Lockheed Fire, the western perimeter of which encroached into the general project area.

Our intent was to preliminarily evaluate the LiDAR dataset for its ability to reliably resolve the ground surface topography for landslide mapping purposes. Provided that surface appeared to be sufficiently well-resolved, we proposed to use that base map for our landslide mapping and interpretation. As a backup, we planned to use traditional stereo pairs of aerial photographs. The power of both of these approaches is the ability to consider the ground surface in three dimensions.

The quality of the LiDAR dataset far exceeded our expectations, and the information provided by it far outstripped that contained on aerial photographs. The ability of the LiDAR to "see through" the vegetative canopy revealed a wealth of topographic information simply not obtainable through aerial photographic analysis for a densely wooded site. Certain aspects of this same LiDAR dataset's accuracy have been examined quantitatively (White, 2010; Hilburn, 2010).

Briefly, the LiDAR is acquired from an aircraft equipped with a laser scanner that sends out precisely timed laser pulses as a beam is swept "lawnmower" fashion across the landscape being flown over. The position of the aircraft and certain ground points is established using GPS technology. Using computer processing, the x, y, and z coordinates of every point that returns or reflects a laser beam/pulse back to the aircraft is determined. For geologic applications, additional processing allows those returns that are due to vegetation to be filtered out, leaving only those returns associated with the ground surface. Those "bare earth" returns are then gridded to generate a DEM (digital elevation model). The LiDAR dataset can be processed differently for other purposes, such as to derive information about the forest canopy.

We examined the LiDAR imagery and aerial photographs focusing on two issues:

- Any evidence suggesting the possible presence of active fault trace(s). Among other features, we looked for features such as linear topographic elements, vegetation lineaments, aligned drainage deflections, planar truncations of landforms, and tonal lineaments.
- Any evidence suggesting past slope instability, and indications of potential future instability. Among other features, we looked for features such as topographic scarps, topographic bulges or convex lobes, arcuate topographic features, topographic reversals, disrupted drainages, and vegetative anomalies.

We manipulated the bare earth DEM to generate hillshade images to highlight subtle variations in local ground surface aspect, in particular subtle internal landslide scarps. We generated topographic profiles using the DEM to generate preliminary geologic cross-sections. We also

made use of experimental hillshade images produced by Russ White of Cal Poly to help reduce bias introduced by a single artificial illumination azimuth.

Findings of our LiDAR analysis are integrated with field findings below.

3.2.2 Geologic Reconnaissance

After completing our desktop analysis of LiDAR imagery, we performed geologic reconnaissance mapping to field check, refine, and supplement our interpretation. For this project, geologic reconnaissance mapping takes the form of geomorphic mapping, as there are very few surface outcrops of the materials making up the main landslide blocks, let alone exposures of in-situ bedrock.

We were able to gather information regarding thickness of colluvium based on cut slope exposures, cut slope height, distribution of small irregular masses of existing fill, and of course the orientation of bedding within landslide masses where exposed.

3.2.3 Earth Materials

There are four primary earth materials underlying the property: earth fill, colluvium, landslide deposits, and Santa Cruz Mudstone bedrock. A brief description of the units is provided below, and our interpretation of their inter-relationships is shown on our Landslide Maps (Figures 4 – 8) and Geologic Cross Sections (Figures 9 and 10). Colluvium is not shown on our Site Geologic Map figures, as it mantles essentially all landslide blocks and the contacts between landslide blocks. At the scale of our geologic cross-sections, the thickness of colluvium cannot be portrayed.

We have used a modified version of the ASTM method of soil description and classification, and for descriptions of hardness and weathering properties of bedrock materials we have used the ASCE Manuals and Reports on Engineering Practice - No. 5.

Earth Fill (Ef) – Existing earth fill is present along the outboard edge of existing roadways located on sloping ground, and placed in greater quantity where the existing graded access road crosses swale axes. Based on its distribution, it is derived from onsite cuts, and is composed of a mixture of colluvium and weathered rock fragments.

Colluvium (Col) - Colluvial soil at the site mantles the rock that makes up the major landslide masses, and is exposed in cut slopes along roads. Colluvial soil thickness is highly variable across the property, with thickness typically in the 3 to 5 foot range on ridge crests, and commonly over 8 feet in swale areas. Thickness in swale areas is uncertain because cut slope heights are less than the total colluvium thickness. The texture of colluvium is variable. Where we observed it in road cuts, it typically is composed of gravelly clay and sandy clay.

Landslide Deposits (Qls) – Major landslide blocks on the property measure up to hundreds to thousands of feet in maximum dimension. Based on their form, we classify the large-scale mapped landslide blocks as translational rockslides, with thicknesses (greatly) exceeding 15 feet. These landslides involve large masses of Santa Cruz Mudstone rock that we infer has detached primarily along weak interbeds. Smaller-dimensioned landslides we mapped tend to involve mainly colluvium, and are classified as earthflows.

Santa Cruz Mudstone – We include this as a map unit even though we did not observe in-situ exposures of it. There are reasonably abundant exposures of rock in roadway cut slopes, and in many localities the rock fabric of in-situ rock is preserved, even though the locality lies within a large-scale landslide block. Regionally, the unit is typically a thin- to medium bedded siliceous mudstone with non siliceous mudstone and siltstone and minor sandstone.

Where we encountered the formation onsite, it consists of deeply weathered, interbedded mudstone and sandy mudstone. Bedding ranges from thin-bedded to thicker-bedded sandy mudstone (typically 3 – 8 inches, rarely 1.5 feet thick) with thinner-bedded mudstone intervals (individual beds ½ to 3 inches). Shearing locally has destroyed the original layering of the finer, softer, weaker intervals. Weathering appears to have preferentially attacked the fine-grained, mudstone intervals and sheared intervals.

4. CONCLUSIONS AND DISCUSSION

4.1 LANDSLIDE MODEL FOR SITE

Mapping/Analysis Approach

The detail of the LiDAR bare earth DEM resolved scarp and landslide mass details at a variety of scales not hitherto possible with aerial photographic analysis and field mapping. We were able to trace confidently subtle and discontinuous scarp elements that would not have been detected in the field, or could not have been traced or linked. The sharpness of topographic details provided clues to relative ages of landform features, as did cross-cutting relationships captured by the imagery. Our observations support more focused quantitative evaluations of the Swanton Ranch LiDAR dataset accuracy, such as White's (2010) and Hilburn's (2010) analyses of the accuracy of geomorphic features imaged by LiDAR.

Enough landslide details were apparent on the LiDAR hillshade and contoured topographic base that we had to modify our mapping approach to avoid generating too cluttered a geologic map. We constructed two landslide maps, one showing inferred landslide top-of-scarp, and one showing the boundaries of major landslide blocks. Landslide top-of-scarp maps were most useful in establishing cross-cutting relationships and relative ages of landslide masses. Since the boundaries of major landslide blocks are the key features of relevance to siting of field camp structures, that approach is used on Figures 3 and 4 - 8.

Key Landslide Complex Observations

The landslide complex is unusually concentric and symmetrical, suggesting that some set of controlling factors affected all landslides in the complex in the same general fashion (see Fig. 3).

The preserved parts of the landslide complex are almost entirely extensional in their geometry (see Fig. 3). None of the compressional portion – the toe – is preserved, having been removed by Scott Creek.

The general lack of landslide toes also indicates that slide planes for constituent landslides do not daylight within the complex, but instead likely toe out at depth at Scott Creek, buried beneath alluvium (Fig. 9).

The crests of the major landslide blocks and tops-of-scarps are greatly muted and smoothed, resulting in a large radius of curvature that indicates significant age or time of exposure (Figures 4 – 8). Even the youngest of the large landslide block boundaries has a radius of curvature on the order of several to many tens of feet. This is in great contrast with the scarp's radius of curvature for a fresh roadcut landslide: on the order of inches to a foot.

The course of Scott Creek swings eastward at the toe of the landslide complex, so the last significant movement of the landslide complex pre-dates this creek position, otherwise the creek axis would be deflected westward (Fig. 3).

The last westward deflection of Scott Creek must likewise predate the elevated terrace remnant west of Scott Creek, directly opposite the landslide complex toe (Fig. 3).

The alluvial floodplain of Scott Creek upstream and downstream of the landslide complex (Fig. 3) appear to be coplanar. If significant landslide complex movement had occurred, alluvium would have been impounded upstream of the landslide toe, resulting in floodplain terraces at different elevations.

The only sizeable landslide with an expressed toe within the overall landslide complex is a failure of an oversteepened pre-existing landslide scarp. This landslide is discussed further below, as it is relevant to the Staub House site access road spur.

Inferred Origin/History of Landslide Complex

The genesis of the landslide complex at the site appears to have been fostered by a regional syncline which creates an adverse bedding orientation over a large area (see Fig. 1). In a general sense, we infer bedding to dip gently to moderately westward approximately parallel to an envelope fitting the overall modern ground surface, with bedding curving upward near Scott Creek, which would facilitate daylighting of the landslide complex (see Cross-Section A-A', Figure 9).

Marine terrace studies trace the Wilder, Blackrock and Quarry marine terraces through the Swanton Pacific Ranch property (see Figure 1.7 of Weber and Allwardt, 2001). We have not reviewed the original research that may or may not support their presence on the Swanton Ranch property in the immediate project vicinity (we are skeptical of terrace remnants within the Scott Creek drainage as far north as the project vicinity). However, if preserved terrace remnants are present, it would provide evidence that there has not been significant landslide complex movement in a time span on the order of tens of thousands to hundreds of thousands of years. For terraces to be preserved, uplift must progress for a long enough time to permit terrace differentiation, with relative stillstands of sufficient duration again for terrace morphology to form. Uplift rates of Santa Cruz coastline have been estimated at 0.10 to 0.48 m per thousand years (Bradley and Griggs, 1976; and Weber and others, 1999; both cited in Munster and Harden [2002]). Ages of the five youngest terraces in the Santa Cruz area are estimated at 65 to 226 ka (thousand years) (Perg and others, 2001; cited in Harden [2002]), based on soil chronosequence data. Terraces in the Swanton area (mouth of Scott Creek) are estimated to range in age from 105 to 545 ka (research summary in Widrig and others, 2010). Regardless of the specifics of terrace correlation, these data speak to a landscape of significant age in the range of hundreds of thousands of years.

More likely, any remnant of terrace geomorphology within the limits of the landslide complex was erased by landsliding that accompanied those higher sealevel stands. The topographically lower rocks of the landslide complex likely were saturated when sealevel and the local base level for Scott Creek were higher (relative to today's position). As noted previously, several marine terraces are mapped south and north of the mouth of Scott Creek, with the uppermost clearly marine terrace surface at the mouth of Scott Creek at approximate elevation 290 - 310 feet above sea level – well above the modern landslide complex toe elevation of approximately 60 to 80 feet above sea level. As sea level dropped and Scott Creek incised, these rocks likely remained saturated until the shoreline finally retreated from most of today's Scott Creek valley floor. In our judgment, this history of saturation of the toe of the landslide complex is a prime factor in generating the landslide complex. Now that the toe of the landslide complex is no longer at sea level, a major destabilizing factor has been removed, and the complex has remained metastable for an extended time – thousands of years as evidenced by the greatly rounded tops-of-scarps of the landslide complex interior. Scott Creek has removed the toe portion of the landslide complex, leaving only the extensional upper portion.

It is likely that earthquake ground shaking was a contributing factor to increments of landslide complex movement, although we do not have direct evidence. Slope stability modeling of the complex to assess the sensitivity of it to internal water levels and to ground shaking would be possible. However, the complexity of the site would make it extremely hard, and likely impractical, to obtain enough information to construct an accurate, detailed slope stability model.

Smaller-scale landsliding has accompanied more recent development of the local landscape, as creeks downcut and oversteepened slopes adjust.

We examined roadcuts for exposures of basal landslide planes within the landslide complex, where our model predicted that more recent erosion and incision of drainages could have exposed them. One excellent example was found on a logging road north and upslope of the Staub House flat (see roadcut between Stations 1 and 3 shown on Figure 4). At this locality, one can observe beds of undeformed sandy mudstone juxtaposed against thick (up to 5 feet thick), bedding-parallel rubble zones. The rubble zones contain equant blocks on the order of $\frac{3}{4}$ to 3 inches of sandstone and mudstone, intermixed with sheared mudstone matrix. No organics are present, confirming that these zones cannot be buried landscape surfaces. We infer that bedding parallel shearing in the weaker intervals dismembered the relatively brittle sandstone and mudstone beds, with further rotation and breakage reducing them to equant blocks.

The overall geomorphology documents a large landslide complex that experienced extensive movement long in the past. The major landforms of this complex are now greatly rounded and subdued, and further document that the major landslide blocks have remained largely static for an extended period, with relatively minor adjustments and increments of additional movement.

4.1.1 Staub House Site Access Spur Landslide

Within the landslide complex as a whole, there is an anomalous landslide of potential concern to the access spur that reaches the Staub House site. While for the Al Smith House vicinity, there are two access routes off the property, for the Staub House vicinity, there is a sole access spur past the junction of the two primary access roads (see Fig. 3). This access spur traverses the toe of a landslide, raising the question of its potential to disrupt or cut access to the Staub House site.

This landslide (see Figures 3, 4, and 5) is unusual in that it is one of very few large landslides internal to the overall landslide complex that has an expressed landslide toe. We interpret this landslide to reflect a localized failure of an oversteepened ancient landslide headscarp. The source headscarp which failed is aged, as indicated by its smooth form, and large radius of curvature. The headscarp of the inset landslide is significantly sharper, indicating a somewhat younger feature. The landslide has come to rest at its current position as a result of transitioning from the steep headscarp source area onto more gently sloping ancient landslide deposits at its toe. The ancient landslide deposits overridden by the younger slide are visible to either side, and can be projected beneath it.

This transition is illustrated by geologic cross-section B-B' (see Figure 9). The basal plane of the inset slide must deflect upwards and daylight at this transition.

In map view, the slide's width narrows as the toe is approached. This is due to its position, wedged between two adjacent ancient landslide masses (see cross-section C-C'; Figure 10).

In summary, we judge that the inset landslide mass has a low potential to reactivate and disrupt the Staub House site access road.

4.2 LANDSLIDE STABILITY

In the following sections, we discuss our general assessment of slope stability with respect to the proposed project, both at the deep-seated scale and the shallow scale.

4.2.1 Qualitative Stability Assessment

Deep-Seated Landsliding - We preliminarily judge the potential for deep-seated landslide movement to adversely affect the site improvements to be acceptably low for improvements located away from boundaries between landslide blocks.

Shallow Landsliding - We judge the potential for shallow landsliding (involving colluvium and/or the uppermost 1 to 2 feet of deeply weathered bedrock) to be low on ridge crests, moderate on side slopes, and moderate to high for unsupported colluvial cut slopes. The potential for upslope shallow failures to affect road segments will need to be addressed at later stages of project design. Provided these are addressed, in our judgment the potential for shallow landsliding to adversely affect the proposed improvements can be reduced to an acceptably low level.

Significant soil creep occurs on many of the hillslopes on the property. Improvements proposed on slopes may need to take soil creep into design consideration; this should be addressed during design-level geotechnical investigation.

4.2.2 Seismically Induced Landsliding

As alluded to above, our qualitative judgment based on the available data is that ridge crest portions of the property are likely stable under seismic conditions, provided subsurface exploration indicates there is no evidence of rock mass dilation, or of throughgoing weak beds or fracture sets in an adverse orientation. Based on our mapping, future landsliding is most likely to involve colluvium and the uppermost interval of most-deeply-weathered rock (on the order of 1-2 feet where we have observed it) on slopes.

4.3 SEISMIC HAZARDS

Our judgment regarding various primary and secondary seismic hazards is summarized below. Specific seismic design criteria should be chosen at the time of design-level geotechnical investigation, based on codes and practice in effect at that time.

- In our judgment, the potential for fault ground rupture and for coseismic faulting to occur at the site is low, as evidenced by a lack of observed lineaments, and a lack of mapped active faulting in the site vicinity or projecting toward it.
- In our judgment, the potential for ridgetop fissuring/shattering is not yet known, pending subsurface information regarding presence or absence of fissuring and dilation in the rock masses underlying those areas. We are confident that test pit data can provide clear data on this, as the site has experienced many large earthquakes from a variety of sources, which would have provided multiple opportunities for this process to occur and progress.
- In our judgment the potential for liquefaction and associated lateral spreading of the hillside portions of the property is judged to be very low, based on texture of soils at the site, and the apparent lack of a shallow water table. We cannot comment on the the alluvial floors of Scott Creek and tributaries such as Alexander and Molino Creeks.

OTHER GEOLOGIC HAZARDS

For completeness' sake, we herein address other geologic hazards commonly included in engineering geologic reports, as referenced in CGS Note 48 (rev. 2007).

Our scope of work excludes a Phase I environmental site assessment of the site, and characterization of hazardous materials. Nevertheless, we are not aware of naturally occurring hazardous materials present at the site (e.g. serpentinite or tremolite with asbestiform mineral habit; methane, hydrogen sulfide; petroleum).

No new drinking water supply systems are proposed; hence ground-water quality concerns are not within our scope.

Feasibility of on-site septic systems or system improvements are not within our current scope.

Hydro-collapse of soils is a phenomenon that is typically associated with dry-climate settings, not the marine-influenced climate of the property. In our judgment, the potential for hydro-collapse of on-site soils is very low.

The site is not located in proximity to an active volcanic center (Jennings, 1977).

The proposed field camp sites are located some distance inland, and at an elevation hundreds of feet above sea level, and therefore are not subject to a tsunami hazard.

The site is not located within a flood zone, as mapped by FEMA..

The site is not underlain by earth materials known to emit significant quantities of radon gas. According to Environmental Protection Agency (EPA) regional maps (accessible at <http://www.epa.gov/radon/states/california.html#zone%20map>), the site lies within a region with a "moderate" potential for "average" indoor radon screening levels ranging from 2 to 4 pCi/L. Of

2 radon tests reported within the 95017 zip code, zero had reported levels above 4 pCi/L (tabulation of California Dept. of Health Services, accessible at <http://www.cdph.ca.gov/healthinfo/environhealth/Documents/Radon/CaliforniaRadonDatabase.pdf>)

4.4 GEOLOGIC CONSIDERATIONS FOR PROJECT CONCEPT

Based on our investigation to date, which is based on surface expression of geology and does not incorporate subsurface investigation, we have the following preliminary conclusions.

In general, sites centered on ridge crest areas, and not astride landslide block boundaries, have a relatively high likelihood of being geologically suitable. These are parts of the landscape which appear to have remained relatively stable, even if they do lie within landslide masses which have experience wholesale translation at times in their past.

In general, sites on topographic flats will require additional investigation to assess whether there has been internal deformation and offset.

Garage Expansion (at Al Smith House site) - We preliminarily conclude that the proposed expansions to the existing garage at the Al Smith House site (see Fig. 4) are geologically suitable, subject to confirmation with subsurface investigation. There are existing small-diameter borings (precise locations unknown) in the general vicinity. However, the geologic issues focus on disaggregation of the rock mass as a whole, which is extremely difficult (or impossible) to confidently assess in a small sample.

The issues to be addressed by subsurface investigation include:

- Thickness of colluvium
- Evidence of rock creep
- Evidence of ridgetop fracturing or fissuring
- Orientation of bedding with respect to nearby steep hillslopes

There is existing subsurface information from small-diameter borings (logs contained in Rogers Johnson, 2002) which will form an important starting point for the geotechnical design investigation.

Faculty (Staff) Housing (ridge crest east of Al Smith House site) - We preliminarily conclude that the staff housing site (see Fig. 5) is geologically suitable, subject to confirmation with subsurface investigation. There are existing small-diameter borings (precise locations unknown) in the vicinity. As with the improvements at the Al Smith House site, the geologic issues focus on disaggregation of the rock mass as a whole, which is extremely difficult (or impossible) to confidently assess in a small sample.

The issues to be addressed by subsurface investigation include:

- Thickness of colluvium
- Evidence of rock creep
- Evidence of ridgetop fracturing or fissuring
- Orientation of bedding with respect to nearby steep hillslopes

As with the Al Smith House vicinity, there is existing subsurface information from small-diameter borings (logs contained in Rogers Johnson, 2002) which will form an important starting point for the geotechnical design investigation.

Dining Facility, Comfort Station (Staub House site) – We preliminarily conclude that the access road (see Fig. 4) to the graded flat on which these two facilities are proposed is geologically suitable, based on the inferred metastable position of the landslide toe that reaches the access road.

The existing Staub House and yurts appear to be located on a ridge that constitutes a preserved landslide scarp which has not undergone internal offset (see Fig. 4, 5), and we preliminarily conclude that the approximate footprints of these existing structures are geologically suitable, should project needs dictate their redevelopment.

The proposed dining facility and comfort station would be located on the extensively modified flat area to the north, and in our judgment there is not yet sufficient information to assess whether there are offsets between landslide blocks that traverse parts of this pad.

The issues to be addressed by further investigation include:

- Presence/absence of landslide block boundaries, and their orientation(s)
- Evidence of rock creep (for areas near the outermost edge of the pad)
- Orientation of bedding with respect to nearby steep hillslopes (for areas near the outermost edge of the pad)

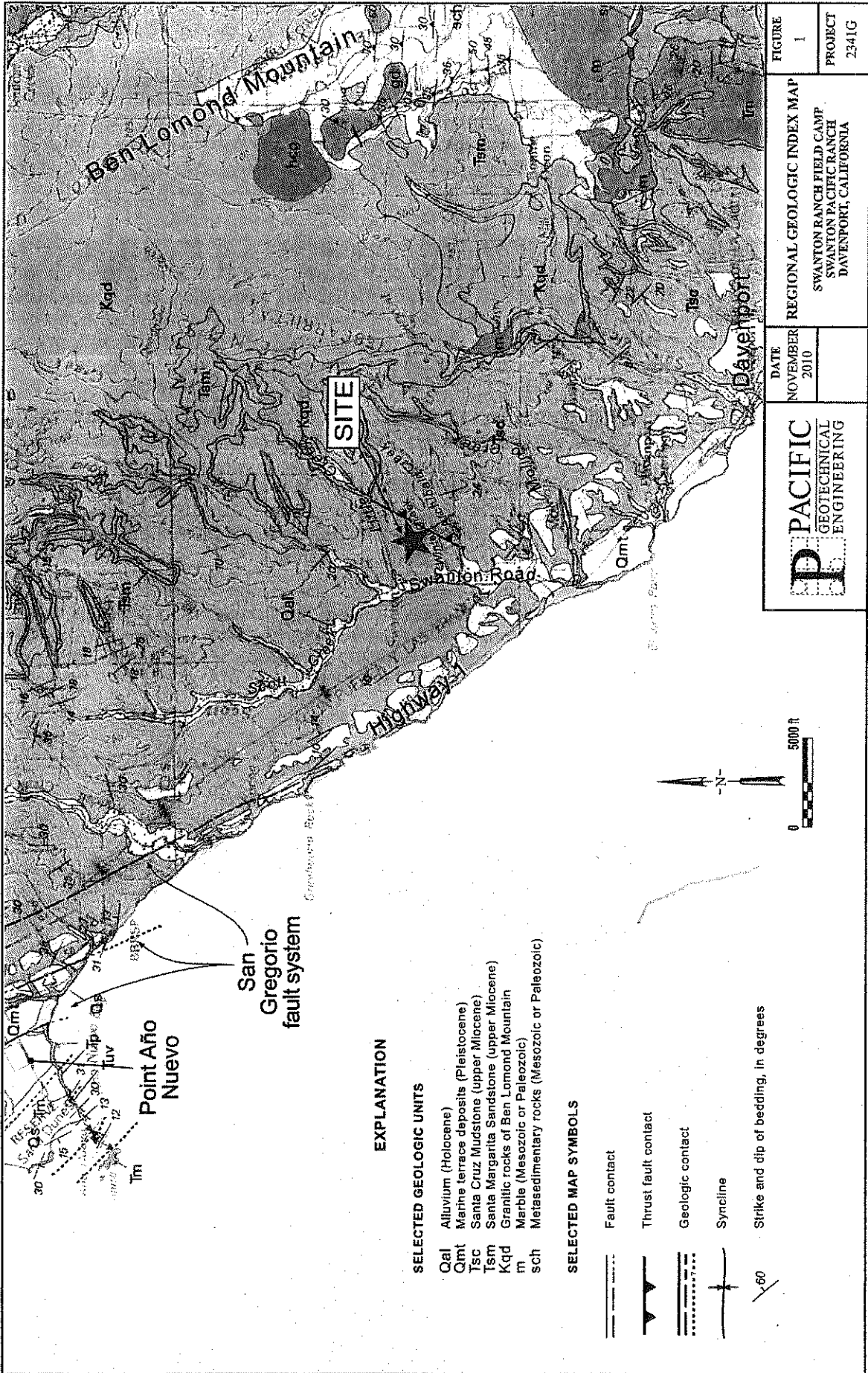
Northern Access Road – We preliminarily conclude that the northern access road (from Swanton Road to the junction with the alternate access) is geologically suitable, provided design-level geotechnical investigation is performed to design mitigation for shallow landsliding that affects a portion of the roadway next to the sawyering competition area.

Specific road-related improvements, if needed, have not yet been proposed. These could include road widening, fire turn-outs, and turn radius modifications. Depending on their nature, these may require geotechnical investigation for their design.

Alternate Access Road – We preliminarily conclude that the alternate access road (from the junction with the northern access road, southward to its lower terminus at Archibald Creek) is geologically suitable for use as a secondary/emergency access. Its current use as a logging haul road during dry months indicates that access can be maintained along this corridor. Performance issues will likely center on long-term stability of cut slopes, and stability of side-cast fill prisms.

5. RECOMMENDATIONS

In order to substantiate the preliminary conclusions presented here with respect to specific site suitability, we recommend that subsurface investigation be performed as outlined above. This investigation should be scoped and carried out in coordination with the project geotechnical engineer (Bauldry Engineering) in order to maximize the amount of useful information obtained.



SITE

Point Año Nuevo

San Gregorio fault system

EXPLANATION

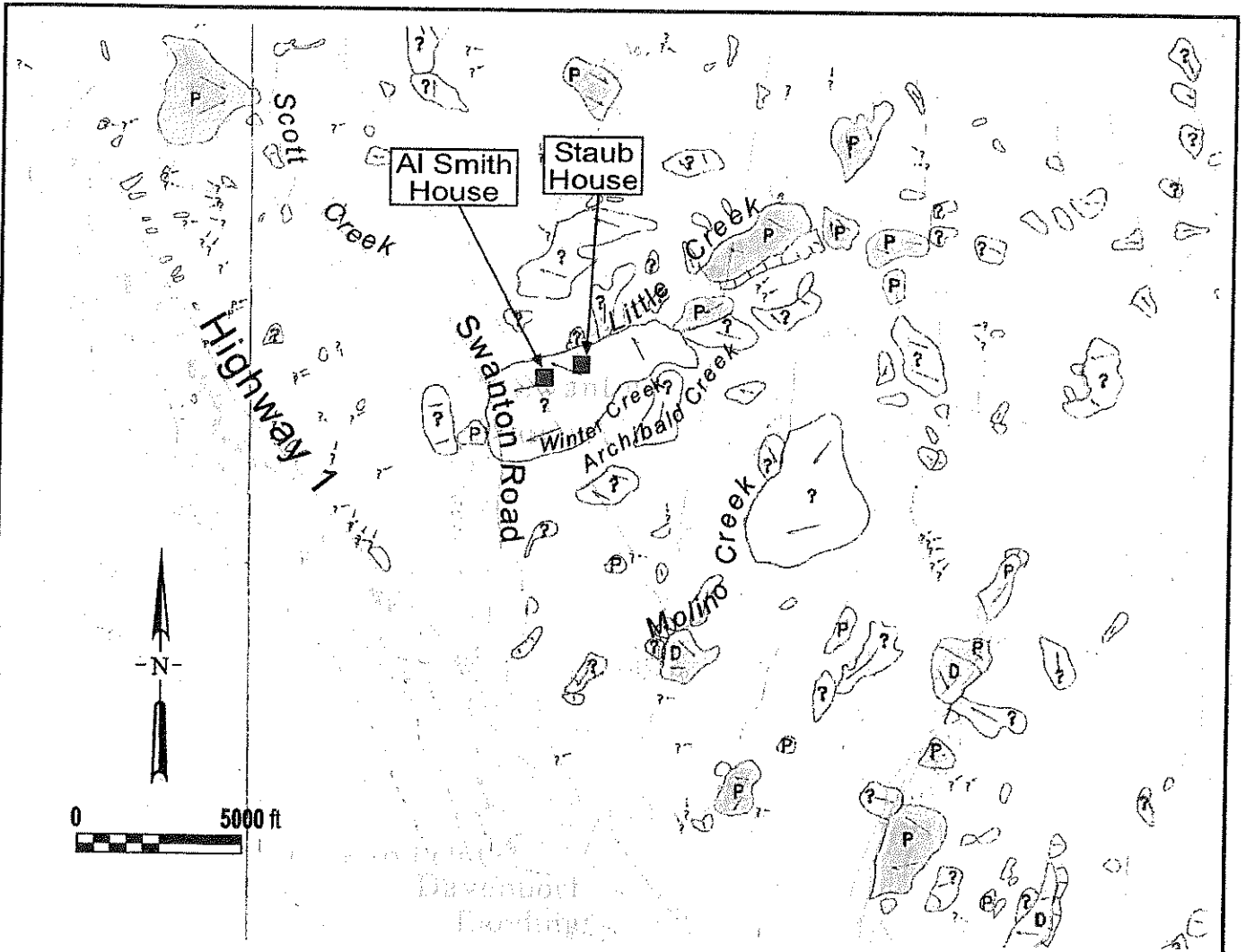
SELECTED GEOLOGIC UNITS

- Qal Alluvium (Holocene)
- Qmt Marine terrace deposits (Pleistocene)
- Tsc Santa Cruz Mudstone (upper Miocene)
- Tsm Santa Margarita Sandstone (upper Miocene)
- Kqd Granitic rocks of Ben Lomond Mountain
- m Marble (Mesozoic or Paleozoic)
- sch Metasedimentary rocks (Mesozoic or Paleozoic)

SELECTED MAP SYMBOLS

- Fault contact
- Thrust fault contact
- Geologic contact
- Syncline
- Strike and dip of bedding, in degrees

	DATE NOVEMBER 2010	REGIONAL GEOLOGIC INDEX MAP SWANTON RANCH FIELD CAMP SWANTON PACIFIC RANCH DAVENPORT, CALIFORNIA	FIGURE 1
			PROJECT 2341G



EXPLANATION



Large landslide deposit - More than 500 feet in maximum dimension. Arrows indicate general direction of downslope movement (omitted for lack of space on smaller landslides)



Small landslide deposit and gully - 50 to 500 feet in maximum dimension. Arrow indicates general direction of downslope movement and is centered over location of deposit. Included are gullies which exhibit observable side bank slumping.



definite rapid landslide deposit



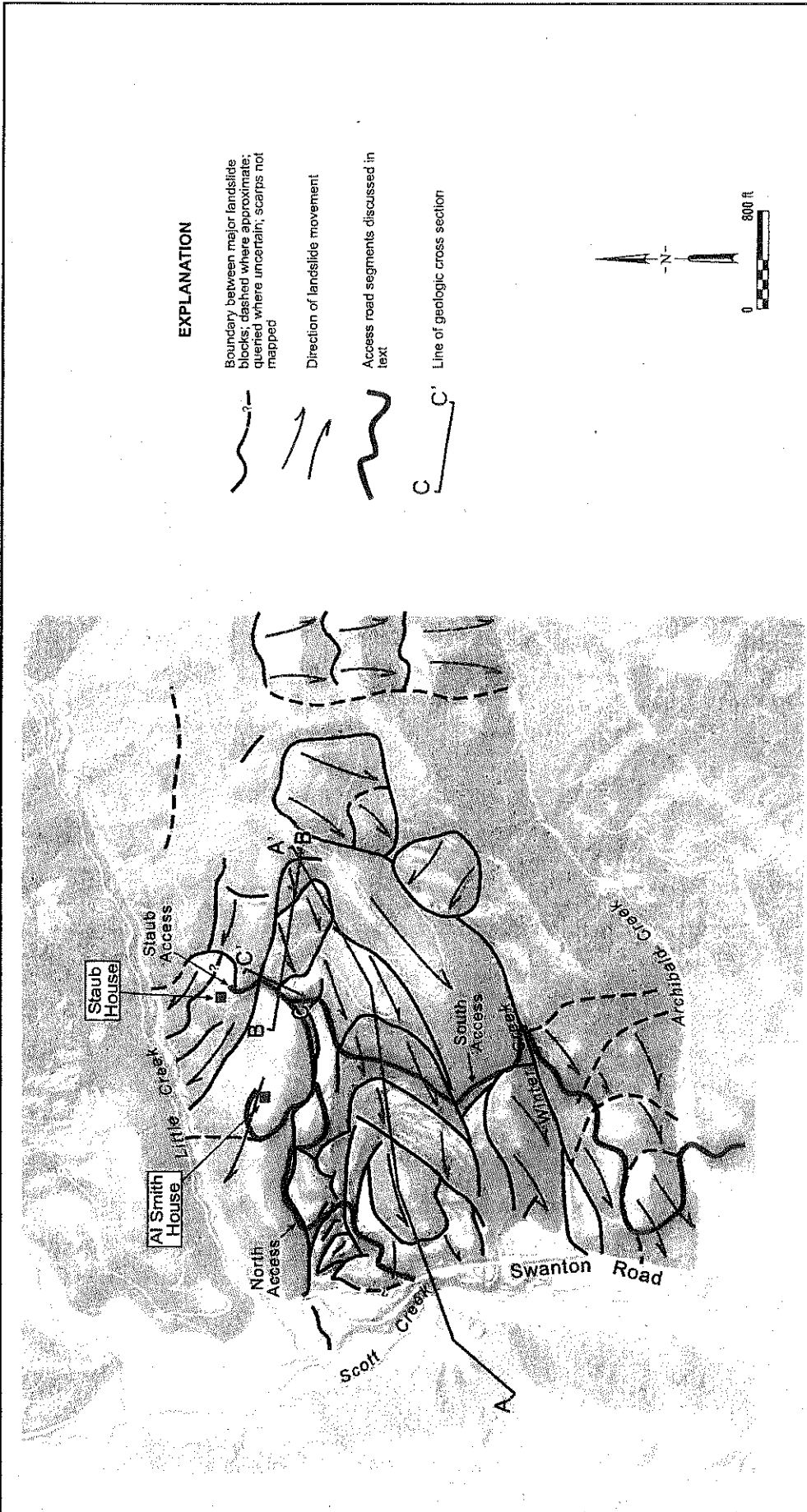
probable landslide deposit



questionable landslide deposit

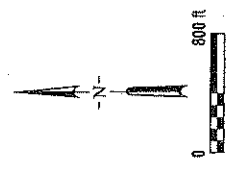
BASE MAP: Modified from Cooper-Clark and Associates, digital compilation by Roberts and others (1998).

	<p>DATE NOVEMBER 2010</p>	<p>COOPER CLARK LANDSLIDE MAP</p>	<p>FIGURE 2</p>
		<p>SWANTON RANCH FIELD CAMP SWANTON PACIFIC RANCH DAVENPORT, CALIFORNIA</p>	<p>PROJECT 2341G</p>



EXPLANATION

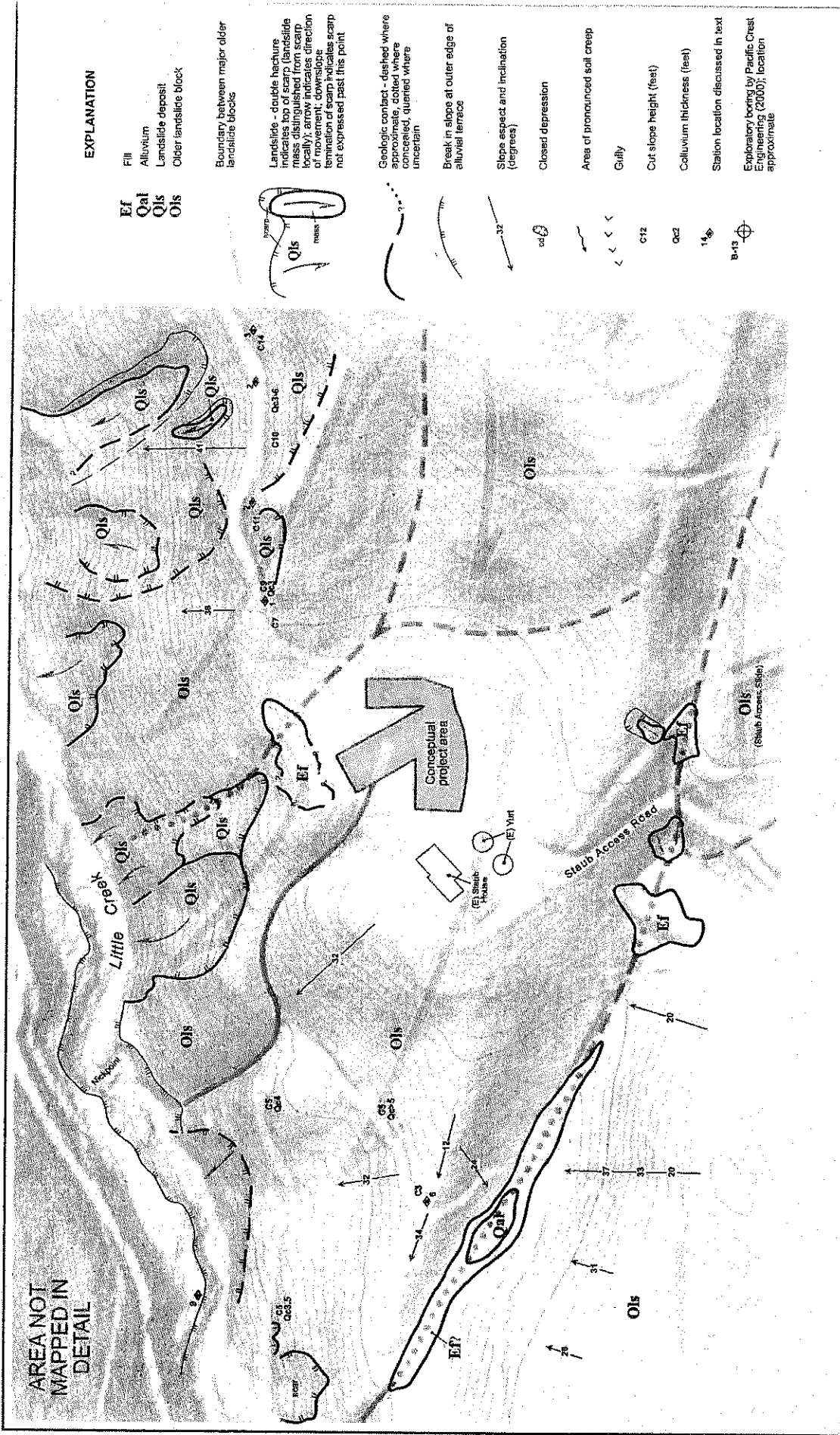
- Boundary between major landslide blocks; dashed where approximate; queried where uncertain; scarps not mapped
- Direction of landslide movement
- Access road segments discussed in text
- Line of geologic cross section



NOTES:

1. The base maps for this and other hillshade figures were prepared from 2008 LIDAR DEM provided by Swanton Pacific Ranch. Hillshade is generated using Global Mapper software. On this figure hillshade is illuminated from azimuth 045 and exaggerated to accentuate differences in slope aspect.
2. For clarity, only boundaries between landslide blocks are shown. Landslide scarps are not identified on this figure.

	DATE NOVEMBER 2010	FIGURE 3
	SCHEMATIC LANDSLIDE MAP SWANTON RANCH FIELD CAMP SWANTON PACIFIC RANCH DAVENPORT, CALIFORNIA	
PROJECT 2341G		



EXPLANATION

- Ef Fill
- Qal Alluvium
- Qls Landslide deposit
- Ols Older landslide block

Boundary between major older landslide blocks

Landslide - double hachure indicates top of scarp (landslide mass distinguished from scarp locally); arrow indicates direction of movement; slope angle of scarp termination (to north of scarp not expressed past this point)

Geologic contact - dashed where approximate, dotted where concealed, quanted where uncertain

Break in slope at outer edge of alluvial terrace

Slope aspect and inclination (degrees)

Closed depression

Area of pronounced soil creep

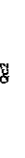
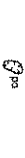
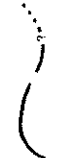
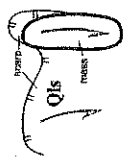
Gully

Cut slope height (feet)

Colluvium thickness (feet)

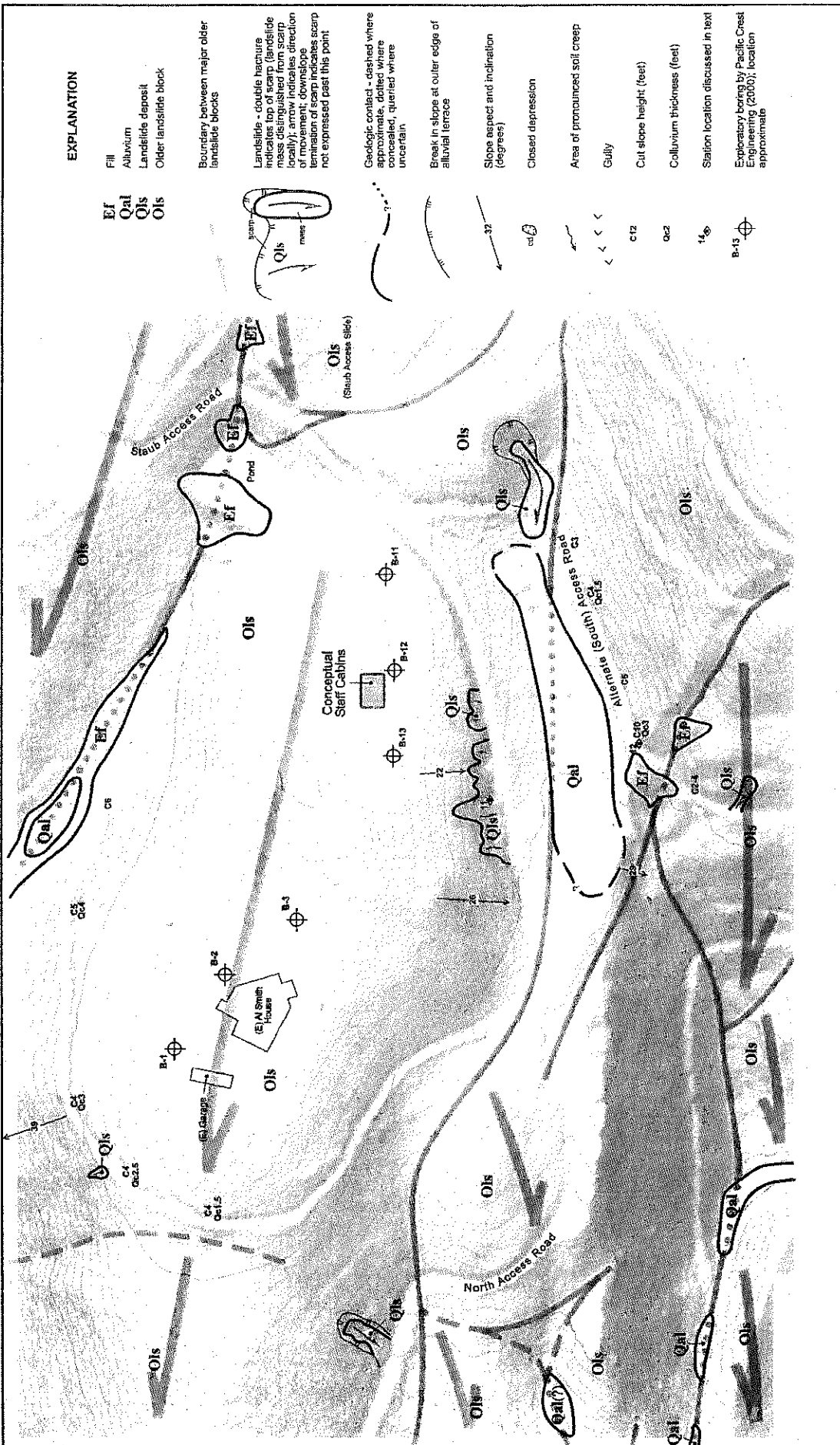
Station location discussed in text

Exploratory boring by Pacific Crest Engineering (2000); location approximate



PACIFIC GEOTECHNICAL ENGINEERING	DATE NOVEMBER 2010	LANDSLIDE MAP 1 of 5	FIGURE 4
	SWANTON RANCH FIELD CAMP SWANTON PACIFIC RANCH DAVENTPORT, CALIFORNIA		PROJECT 2341G

NOTE: Base map prepared from 2006 LIDAR DEM provided by Swanton Pacific Ranch. Source LIDAR was filtered and gridded to generate a "bare earth" DEM. Hillslope and contouring generated using Global Mapper software.



EXPLANATION

- EF Fill
- Qal Alluvium
- Ols Landslide deposit
- Ois Older landslide block

Boundary between major older landslide blocks

Landslide - double hachure indicates top of scarp (landslide mass distinguished from scarp locally); arrow indicates direction of movement; down slope termination of scarp indicates scarp not expressed past this point

Geologic contact - dashed where approximate, dotted where concealed, queried where uncertain

Break in slope at outer edge of alluvial terrace

Slope aspect and inclination (degrees)

Closed depression

Area of pronounced soil creep

Gully

Cut slope height (feet)

Colluvium thickness (feet)

Station location discussed in text

Exploratory boring by Pacific Crest Engineering (2000), location approximate

FIGURE 5

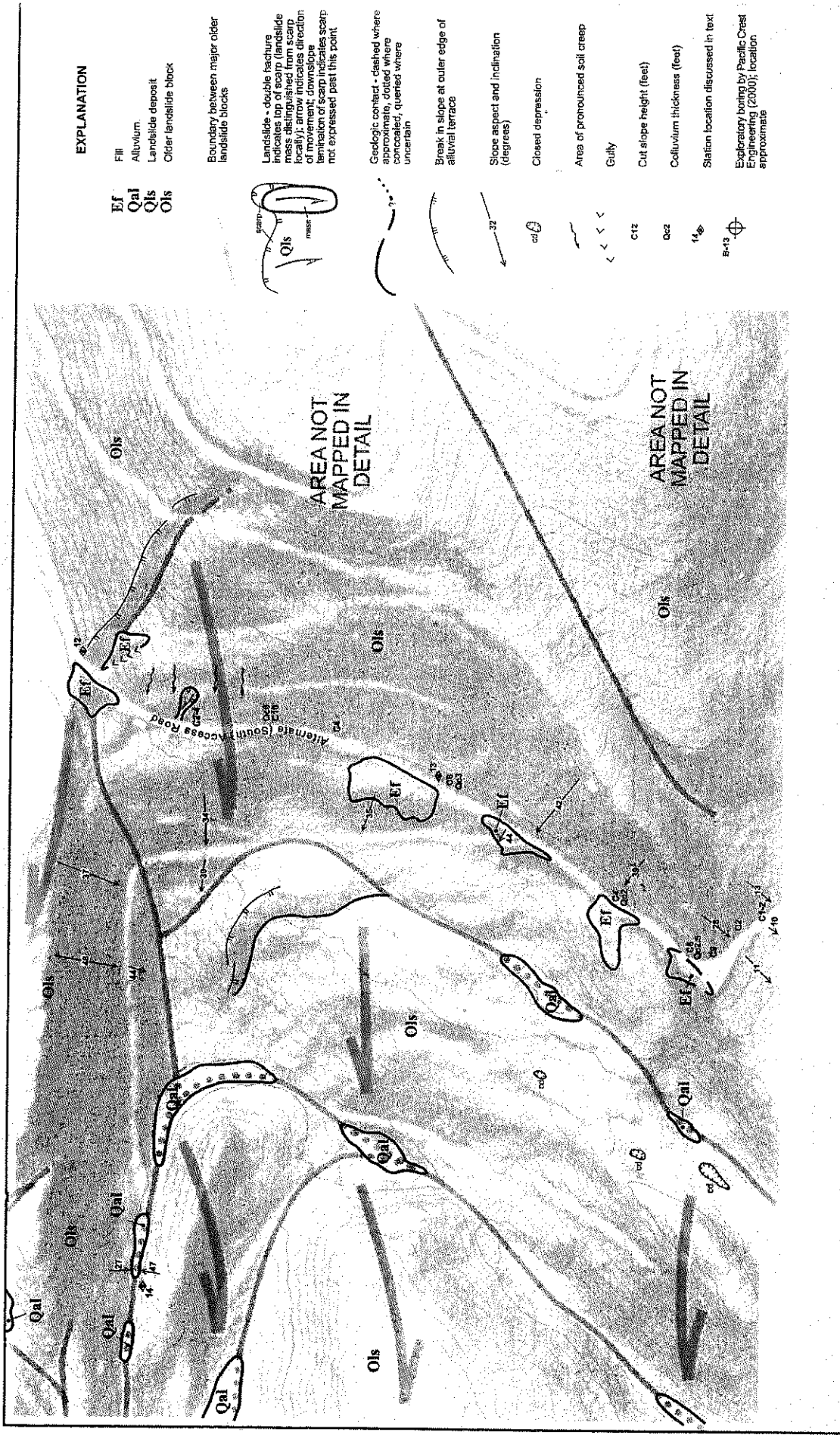
LANDSLIDE MAP 2 of 5

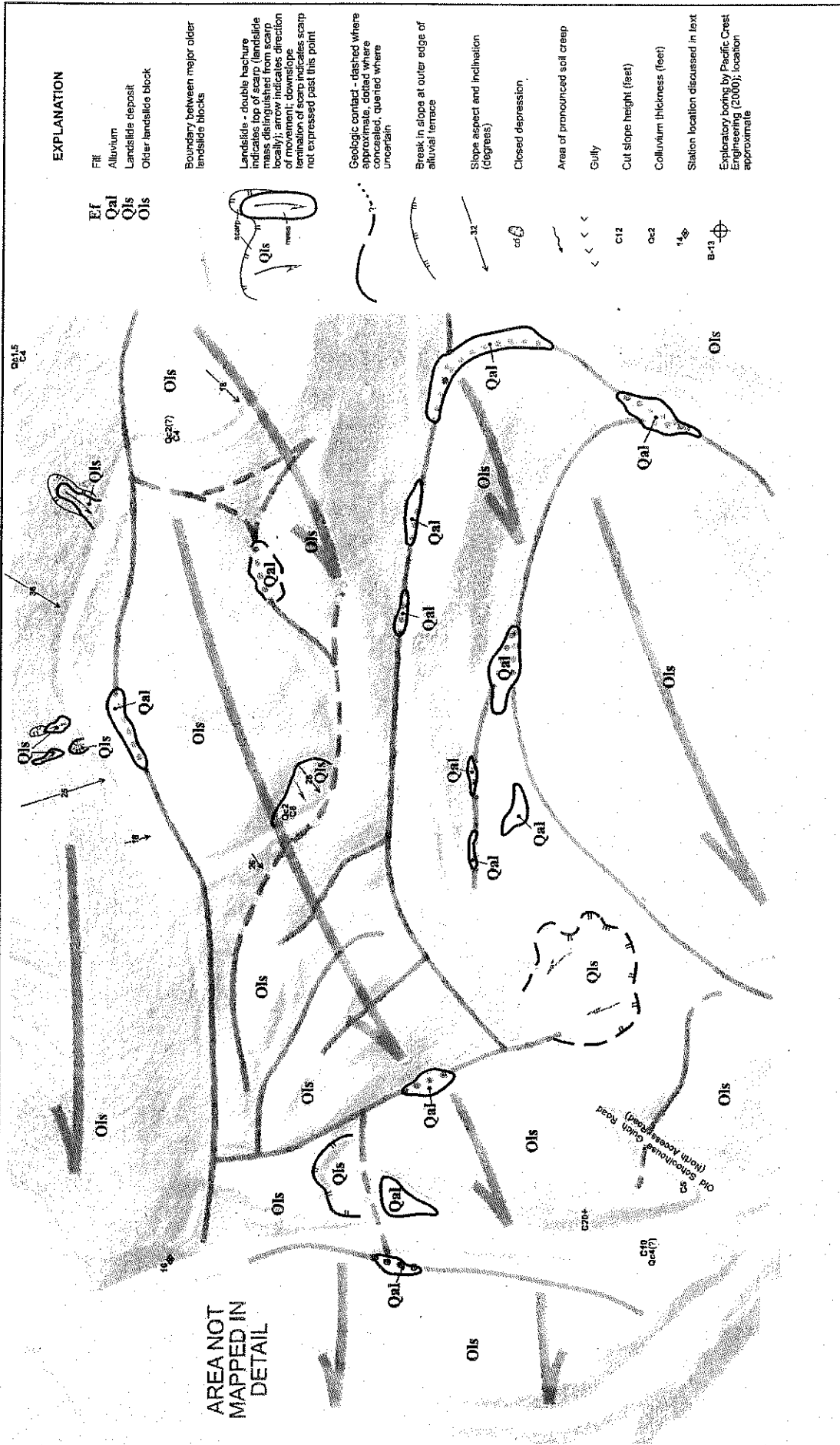
SWANTON RANCH FIELD CAMP
SWANTON PACIFIC RANCH
DAVENPORT, CALIFORNIA

DATE NOVEMBER 2010



NOTE: Base map prepared from 2008 LIDAR DEM provided by Swanton Pacific Ranch. Source LIDAR was filtered and gridded to generate a "bare earth" DEM. Hillshade and contouring generated using Global Mapper software.





EXPLANATION

- E1 Alluvium
- Qal Landslide deposit
- Qls Older landslide block
- Ols Boundary between major older landslide blocks

Landslide - double hachure indicates top of scarp (landslide mass distinguished from scarp locally); arrow indicates direction of movement; downslope termination of scarp indicates scarp not expressed past this point

Geologic contact - dashed where approximate, dotted where concealed, queried where uncertain

Break in slope at outer edge of alluvial terrace

Slope aspect and inclination (degrees)

Closed depression

Area of pronounced soil creep

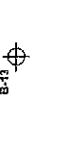
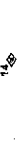
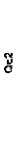
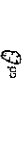
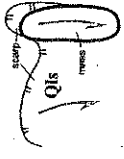
Gully

Cut slope height (feet)

Colluvium thickness (feet)

Station location discussed in text

Exploratory boring by Pacific Crest Engineering (2000); location approximate



AREA NOT MAPPED IN DETAIL

FIGURE 7

LANDSLIDE MAP 4 of 5

SWANTON RANCH FIELD CAMP
SWANTON PACIFIC RANCH
DAVENPORT, CALIFORNIA

DATE NOVEMBER 2010



NOTE: Base map prepared from 2008 LIDAR DEM provided by Swanton Pacific Ranch. Source LIDAR was filtered and gridded to generate a "bare earth" DEM. Hillshades and contours generated using Global Mapper software.



EXPLANATION

- Ef Fill
- Qal Alluvium
- O1s Landslide deposit
- O1s Older landslide block

Boundary between major older landslide blocks

Landslide - double hachure indicates top of scarp (landslide mass distinguished from scarp below); arrow indicates direction of movement; termination of scarp indicates scarp not expressed past this point

Geologic contact - dashed where approximate, dotted where concealed, queried where uncertain

Break in slope at outer edge of alluvial terrace

Slope aspect and inclination (degrees)

Closed depression

Area of pronounced soil creep

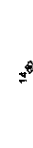
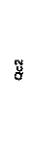
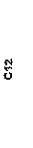
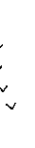
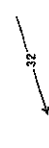
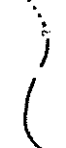
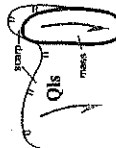
Gully

Cut slope height (feet)

Colluvium thickness (feet)

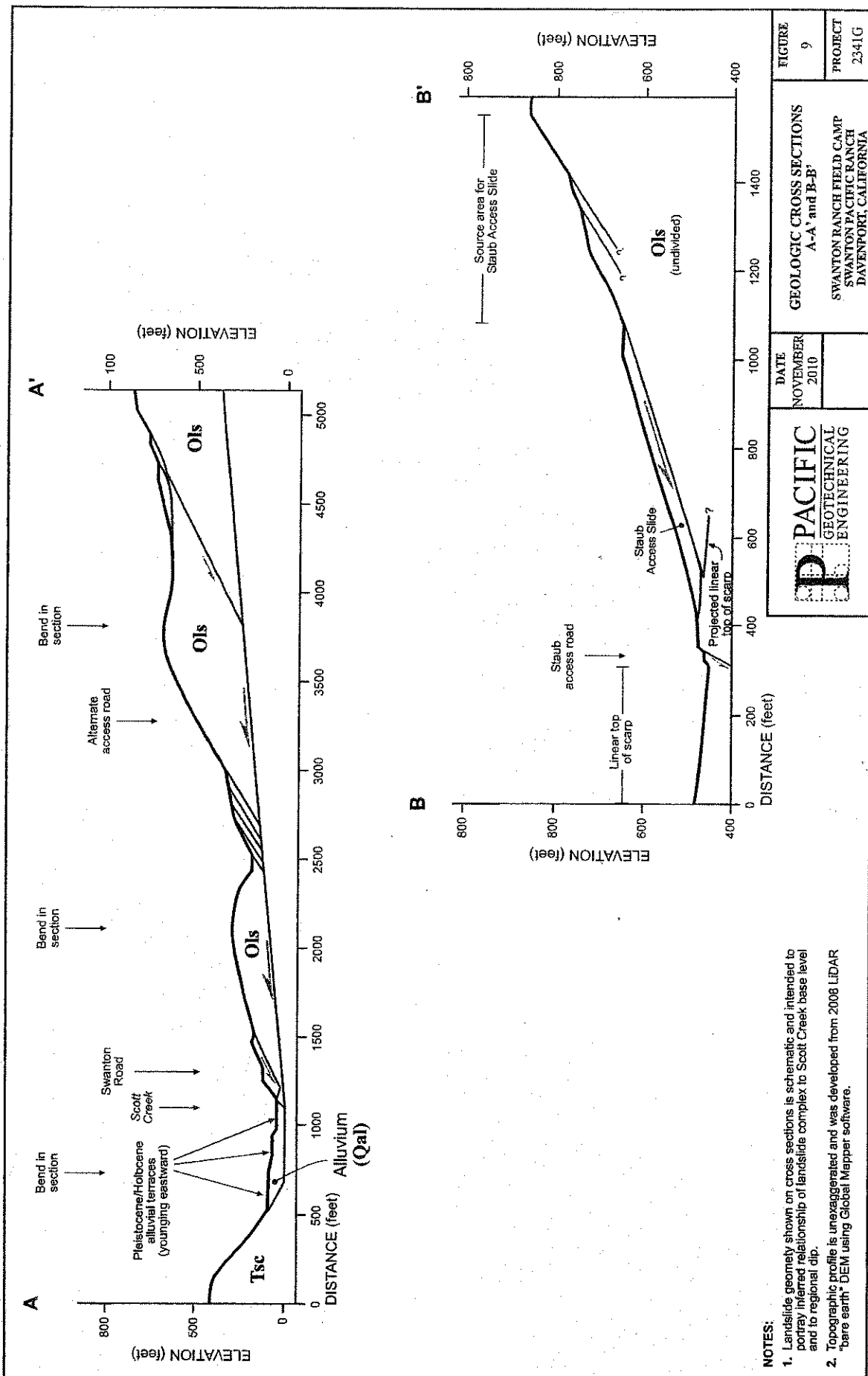
Station location discussed in text

Exploratory boring by Pacific Crest Engineering (2000); location approximate



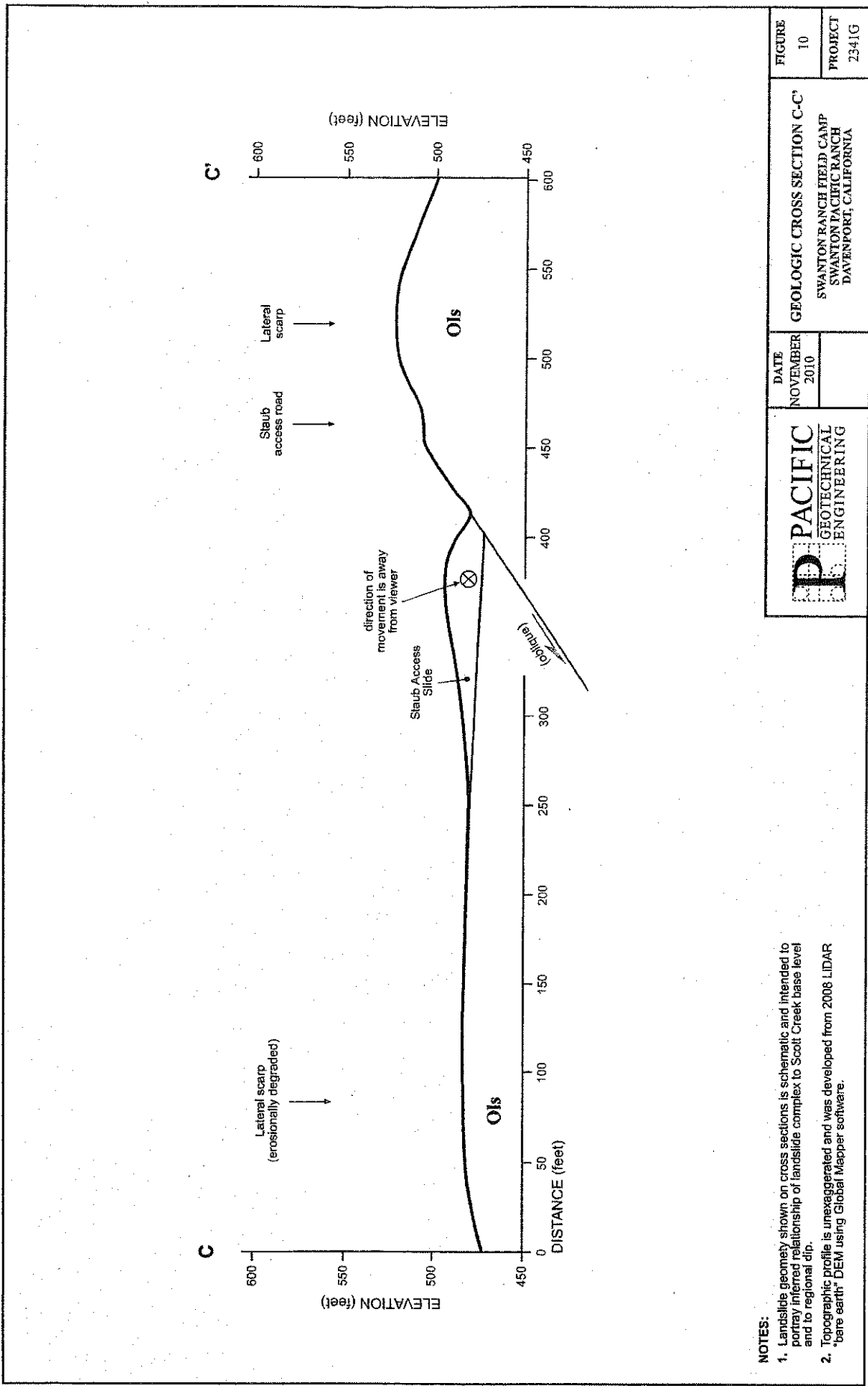
	DATE	NOVEMBER 2010	LANDSLIDE MAP 5 of 5 SWANTON RANCH FIELD CAMP SWANTON/PACIFIC RANCH DAVENPORT, CALIFORNIA	FIGURE	8
					PROJECT

NOTE: Base map prepared from 2008 LIDAR DEM provided by Swanton Pacific Ranch. Source LIDAR was filtered and graded to generate a "bare earth" DEM. Hillshade and contouring generated using Global Mapper software.



		DATE	NOVEMBER 2010	GEOLOGIC CROSS SECTIONS A-A' and B-B' SWANTON RANCH FIELD CAMP SWANTON PACIFIC RANCH DAVENPORT, CALIFORNIA	FIGURE	9
					PROJECT	2341G

- NOTES:**
1. Landslide geometry shown on cross sections is schematic and intended to portray inferred relationship of landslide complex to Scott Creek base level and to regional dip.
 2. Topographic profile is unexaggerated and was developed from 2008 LIDAR "bare earth" DEM using Global Mapper software.



	DATE	NOVEMBER 2010	GEOLOGIC CROSS SECTION C-C' SWANTON RANCH FIELD CAMP SWANTON PACIFIC RANCH DAVENPORT, CALIFORNIA	FIGURE	10
					PROJECT

- NOTES:**
1. Landslide geometry shown on cross sections is schematic and intended to portray inferred relationship of landslide complex to Scott Creek base level and to regional dip.
 2. Topographic profile is unexaggerated and was developed from 2008 LIDAR "bare earth" DEM using Global Mapper software.



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

January 23, 2011

Swanton Pacific Ranch
125 Swanton Road
Davenport, California 95017

**Subject: Review of Engineering Geology by PACIFIC GEOTECHNICAL ENGINEERING
Dated November 12, 2010: Project: 2341 G
APN 057-121-22, Application #: REV10-0096**

Dear Swanton Pacific Ranch,

The purpose of this letter is to inform you that the Planning Department has accepted the Engineering Geology report by Pacific Geotechnical Engineering (hereafter Engineering Geology Report) for the proposed Staub Field Camp. The goal of the report was to determine the overall affect of older landsliding on the development of the Staub Field house project, and to guide the establishment of the goals for the design level geotechnical report.

We also believe that the report has clarified the majority of issues needed to allow the processing of the geologic issues of a Initial Study for the Staub Field Camp project. An Initial Study is a document required by the California Environmental Quality Act (hereafter CEQA) for certain types of projects, and your County project planner will determine if an Initial Study is required based upon the final project's characteristics and the Act's requirements. We cannot make that determination now based upon the information that has been submitted, but the processing of the CEQA documents takes time, and therefore, may be a critical phase of permitting process.

The following conditions and additional comments indicate the areas of specific interest to the County to issue a Grading and Building Permit for the entire project as outlined within the Engineering Geology Report. Several of the conditions are similar or the same as the goals for the design level geotechnical report outlined in the engineering geology report. After these conditions and comments is a short list of requirements to complete the geologic section of an Initial Study for a project that excludes the Conceptual Project Area shown on the engineering geology reports Figure 4, and for a project that includes the Conceptual Project Area.

Conditions of the approval of the engineering geology report:

1. All of the conclusions and recommendations of the report must be followed in developing the final technical design investigation and reports.
2. Septic systems must be located by their designer and the engineering geologist to avoid destabilizing slopes, and to avoid other physical constraints.

(over)

ATTACHMENT 6

3. The water system infrastructure must be evaluated by the project engineering geologist to confirm that the system is suitably located to avoid instability. If the existing water tanks and water lines are to be used as part of the new developments (which I assume will happen), the engineering geologist and geotechnical engineer must confirm that the tanks have been placed in stable locations with adequate geotechnical characteristics to support the foundations of the tanks.
4. The preliminary assessment of the access roadway concludes that the access roadway to the graded flat is geologically suitable. This must be confirmed by exploration and analysis of both the underlying landslide and the slope stability analysis of the roadway's excavation and fill. The engineering geologist will need to assist the geotechnical engineer in developing a detailed cross-section(s) to analyze the stability of the landslide, roadway excavation, and fill.
5. The engineering geologist must review the various legacy logging features along the access roadways and proposed expansion of the Staub Field Camp.
6. The engineering geologist and geotechnical engineer must inventory the primary and secondary access roadway for long-term stability of the roadway excavation and fills particularly with regards to shallow landsliding, and the stability of the outfalls of the existing culverts and water diversion swales and berms.
7. Pacific Geotechnical Engineering's geologist must assist Bauldry Engineering in the exploration phase of the project, and, as necessary, must co-log the borings that are completed for the design phase.
8. Final plans shall reference the report and include a statement that the project shall conform to the report's recommendations. The grading plan must be prepared by a civil engineer.
9. Prior to building permit issuance a *plan review letter* shall be submitted to Environmental Planning. After plans are prepared that are acceptable to all reviewing agencies, please submit a geotechnical plan review letter that states the project plans conform to the recommendations of the geotechnical report. *Please note that the plan review letter must reference the final plan set by last revision date.* The author of the report shall write the *plan review letter*.
10. Please submit an electronic copy of the soils report in .pdf format via compact disk or email to: pln829@co.santa-cruz.ca.us. Please note that the report must be generated and/or sent directly from the soils engineer of record.
11. A declaration of geologic hazards may need to be recorded based upon the outcome of the final reports on the project.

The County has the following additional comments:

- The County would suggest that the County civil engineer and/or engineering geologist meet with the project team after the exploration phase and before the grading plans have been completed to discuss the location of Fire Department turn-arounds, and other grading features.

- The County Geologist must examine the trenching and other exploration of for the new Staub Field Camp area.
- Please submit a copy of the Geotechnical Investigation for Swanton Pacific Ranch Educational Center Davenport, California prepared for California Polytechnic State University Foundation by Pacific Crest Engineering, Inc. dated July 23, 2002.
- Please submit a copy of the Preliminary Geologic Evaluation, Swanton Pacific Ranch Educational Center, School House Gulch Road, Davenport, California Santa Cruz County, APN 057-121-22; prepared for Swanton Pacific Ranch by Rogers E. Johnson and Associates (REJA Job. No. G01047-14A), dated March 11, 2002.

Initial Study Information:

The following additional information is required for an initial study of the development of the facility area, and garage expansion:

1. The engineering geologist must review the existing and/or proposed water and septic systems to confirm that they are stable and suitable to serve the facility area development (two cabins.)

In addition to Item 1 for the proposed development of habitable structures within the vicinity of the Conceptual Project Area as indicated on Figure 4:

2. The engineering geologist (with the assistance of the geotechnical engineer) must review the existing and/or proposed water and septic systems to confirm that they are stable and suitable to serve the Conceptual Project Area.
3. The engineering geologist must complete their investigation into the stability of the Conceptual Project Area. If necessary, the geotechnical engineer may need to assist the engineering geologist in the assessment of the stability of the Conceptual Project Area.
4. The engineering geologist and geotechnical engineer must evaluate the reservoir and related fill below the assess roadway to the Staub House to confirm that the reservoir does not adversely affect the stability of the slope.

After building permit issuance the soils engineer must remain involved with the project during construction. Please review the Notice to Permits Holders (attached).

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 the Yurts do not appear to have a building permit. You may want to consult with the Building Department to determine if they need permits, and obtain these as part of the project(s).

Please note that are comments are based upon the amount of work that your consultants have completed. Additional subsurface work and quantitative analysis by the Bauldry Engineering and Pacific Geotechnical Engineer may change some of these preliminary determinations.

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) 454-3175 if we can be of any further assistance.

Sincerely,



Joe Hanna
County Geologist

Cc: Carolyn Banti PE, Environmental Planning
PACIFIC GEOTECHNICAL ENGINEERING
owner (if different from applicant)



Dees & Associates, Inc.
Geotechnical Engineers

501 Mission Street, Suite 8A Santa Cruz, CA 95060

Phone (831) 427-1770 Fax (831) 427-1794

June 22, 2012

Project No. SCR-0563

SWANTON PACIFIC RANCH
Brian Dietterick
900 School House Gulch Road
Davenport, California 95017

Subject: Geotechnical Investigation

Reference: Proposed Field Camp, Staff Cabins and Learning/Dining Center
900 School House Gulch Road
APN 057-121-22
Santa Cruz County, California

Dear Mr. Dietterick:

As requested, we have completed a Geotechnical Investigation for the Staub Field Camp improvements proposed at the referenced site. The purpose of our investigation was to evaluate the soil conditions in the vicinity of the proposed improvements and provide geotechnical recommendations for their design and construction.

A geologic investigation was prepared for the development by Pacific Geotechnical Engineering. We worked with Pacific Geotechnical Engineering during our investigation and preparation of this report.

This report presents the results, conclusions and recommendations of our investigation. If you have any questions regarding this report, please call our office.

Very truly yours,

DEES & ASSOCIATES, INC.

Rebecca L. Dees
Geotechnical Engineer
G.E. 2623



Copies: 1 to Addressee
4 to Fall Creek Engineering
1 to Pacific Geotechnical Engineering

GEOTECHNICAL INVESTIGATION

Introduction

This report presents the results of our Geotechnical Investigation for the Staub Field Camp improvements proposed at 900 School House Gulch Road in Santa Cruz County, California. The field camp improvements include student housing, faculty housing, a comfort station, laundry/cantina facility, an amphitheater, a dining hall/learning center and new water tanks.

Purpose and Scope

The purpose of our investigation was to explore and evaluate surface and near surface soil conditions in the vicinity of the proposed improvements and provide geotechnical recommendations for their design and construction.

The specific scope of our services was as follows:

1. Site reconnaissance and review of available data in our files pertinent to the site and vicinity, including: the Preliminary Engineering Geologic Feasibility Investigation, prepared by Pacific Geotechnical Engineering, dated November 12, 2010; Revised Staub Housing Cluster Site letter, prepared by Pacific Geotechnical Engineering, dated July 26, 2011, Exploratory Test Pit Findings, memorandum, prepared by Pacific Geotechnical Engineering, dated June 20, 2012 and Review of Engineering Geology by PACIFIC GEOTECHNICAL ENGINEERING letter, prepared by the County of Santa Cruz, dated January 23, 2011.
2. Exploration of subsurface conditions consisting of logging and sampling of eight (8) borings drilled 6.5 to 16.5 feet beneath the surface and observation of five (5) test pits excavated up to 5.5 feet below the ground surface.
3. Laboratory testing to evaluate the engineering properties of the subsoils.
4. Discussions and meetings with Pacific Geotechnical Engineering, Fall Creek Engineering and the County of Santa Cruz.
5. Engineering analysis and evaluation of the resulting field and laboratory test data. Based on our findings, we have developed geotechnical design criteria for general site grading, foundations, retaining walls, concrete slabs-on-grade and general site drainage and erosion control.
6. Preparation of this report presenting the results of our investigation.

Project Location and Description

The 384 acre site is located at 900 School House Gulch Road in Davenport, California, Figure 1. The project area is located in a mountainous region located east of Scotts

Creek and generally between Little Creek to the north and Archibald Creek to the south.

The site is developed with a paved road (Schoolhouse Gulch Road) (identified as the northern access road in the Pacific Geotechnical Engineering report) and a secondary access road that connects with School House Road and trends south back to Swanton Road. There are several structures on the site. Structures located near the proposed building sites include a residence and a detached garage structure at the "Al Smith" site and an existing water tank next to the proposed water tanks site.

The project consists of constructing twelve (12) student cabins, a laundry/cantina building, a comfort station, an amphitheater, two (2) faculty housing units, parking and a dining hall/learning center addition. The student cabins, laundry/cantina building, comfort station and amphitheater will be located on a broadly shaped spur ridge at the intersection of Old School House Road and the driveway to the "Al Smith" house, Figure 2. The two (2) faculty housing units and 16 parking spaces will be located on a narrow, gently sloping alluvial flat located just east of the student housing area, and the dining hall/learning center will be added to the existing garage structure at the "Al Smith" homesite. See Figures 2 to 4.

Field Investigation

Subsurface conditions at the site were explored on March 9, 2012 with eight (8) borings and five (5) test pits. Our borings were drilled with 6-inch diameter continuous flight auger equipment mounted on a truck. The borings were drilled between 6.5 and 16.5 feet in depth. Five test pits were excavated by Pacific Geotechnical Engineering on June 7, 2012. The test pits ranged from about 2 to 5.5 feet in depth. Our firm observed the test pits and reviewed the test pit logs.

The approximate locations of our borings and the test pits are indicated on our Site Plan, Figure 2. The test boring logs prepared by our firm and the test pit logs prepared by Pacific Geotechnical Engineering are included on Figures 6 to 18, attached.

The soils observed in the test borings were logged in the field and described in accordance with the Unified Soil Classification System (D2487 and D2488), Figures 5. The Test Boring Logs denote subsurface conditions at the locations and times observed, and it is not warranted they are representative of subsurface conditions at other locations or times.

Representative soil samples were obtained from the exploratory borings at selected depths, or at major strata changes. These samples were recovered using the 3.0-inch O.D. Modified California Sampler (L) or the Standard Terzaghi Sampler (T). The penetration resistance blow counts for the (L) and (T) noted on the boring logs were obtained as the sampler was dynamically driven into the in situ soil. The process was performed by dropping a 140-pound hammer a 30-inch free fall distance and driving the sampler 6 to 18 inches and recording the number of blows for each 6-inch penetration interval. The blows recorded on the boring logs present the accumulated number of

blows that were required to drive the last 12 inches. The blow counts indicated on the logs have been converted to equivalent standard penetration test (SPT) values.

Laboratory Testing

The laboratory testing program was directed toward a determination of the physical and engineering properties of the soils underlying the site. Moisture content and dry densities were performed on representative soil samples to determine the consistency of the soil and the moisture variation throughout the explored soil profile. Atterberg Limits and grain size analyses were performed to aid in soil classification. Direct shear testing was performed to determine the strength of the foundation zone soil. The results of all field and laboratory testing appear on the "Logs of Test Borings", opposite the sample tested.

Subsurface Soil Conditions

The Santa Cruz County Geologic Map indicates the site is underlain by Santa Cruz Mudstone (upper Miocene), which is described as, "Medium-to thick-bedded and faintly laminated, blocky-weathering, pale-yellowish-brown siliceous organic mudstone". The Preliminary Engineering Geologic Feasibility Investigation by Pacific Geotechnical Engineering indicates the proposed building sites are underlain by Landslide Deposits overlain by a thin layer of Colluvium and Alluvium. The landslide deposits are large displaced bedrock units with a thin colluvial soil cover. Most of the project area is underlain by the landslide deposits and colluvium. A small area of Alluvial deposits exist below the faculty housing site.

The bedrock is highly fractured and varies across the site. In general, our borings encountered silt and mudstone gravels with varying amounts of silt and gravel to the depth of our borings. There is a thin colluvial layer on top of the mudstone that is about 2 feet deep at the student housing site, 2.5 to over 6 feet deep at the "Al Smith" learning center site, about 10 feet deep at the proposed amphitheater site and 2 to over 6.5 feet deep at the faculty housing site.

The silts have a low plasticity index indicating the soils have a low expansion potential. There is clay in the top 2.5 to 3.5 feet of soil at the proposed Learning Center at the "Al Smith" site. The clay has a moderate to high expansion potential, however, our analysis indicates light building loads will resist uplift from expansion of the clays.

The soils below the site are classified as a Site Class "D" for analysis using the 2010 California Building Code.

Groundwater

Groundwater was only encountered in Boring 6, drilled at the faculty housing site. The water is perched on the underlying mudstone and was encountered 4.5 feet below grade.

Seismicity

The project site is located about 4.0 kilometers (2.5 miles) northeast of the offshore San Gregorio Fault, 18.1 kilometers (11.1 miles) northwest of the Monterey-Tularcitos Fault, 22.2 kilometers (13.6 miles) southwest of the Zayante-Vergeles Fault, and 22.3 kilometers (13.7 miles) southwest of the San Andreas Fault.

The San Andreas Fault is the largest and most active of the faults, however, each fault is considered capable of generating moderate to severe ground shaking. It is reasonable to assume that the proposed development will be subject to at least one moderate to severe earthquake from one of the faults during the next fifty years.

The Seismic Design Category (SDC) for structures with an occupancy category of I or II is "E" for analysis using the 2010 California Building Code. The following ground motion parameters may be used in seismic design and were determined using the USGS Ground Motion Parameter Calculator: Ss, Site Class B (0.2 sec) = 1.841g; S1, Site Class C (1.0 sec) = 0.837g; SMs, Site Class D (0.2 sec) = 1.841g; SM1, Site Class D (1.0 sec) = 1.255g; SDs, Site Class D (0.2 sec) = 1.228g; SD1, Site Class D (1.0 sec) = 0.837g.

Liquefaction

Liquefaction occurs when saturated fine grained sands, silts and sensitive clays are subject to shaking during an earthquake and the water pressure within the pores build up leading to loss of strength. There is a low potential for liquefaction to affect the proposed development due to the lack of a groundwater table over most of the project site and the density and consistency of the subsoils below the groundwater encountered below the faculty housing site.

Landsliding

The Cooper-Clark landslide map indicates the site is underlain by a very large landslide. The landsliding potential at the site was evaluated by Pacific Geotechnical Engineering and discussed in their Preliminary Engineering Geologic Feasibility Investigation, dated November 12, 2010 and their Revised Staub Housing Cluster Site letter, dated July 26, 2011.

Their report and letter indicate the entire project area is underlain by a large landslide complex that is comprised of large blocks of displaced bedrock. They have concluded the potential for significant movement between the mapped landslide blocks to be low and the proposed sites for the student and staff cabins are geologically acceptable as long as the structures are not placed on top of the landslide boundaries. Based on the preliminary site plan provided to us, the proposed structures are not located on the landslide boundaries.

Ridgetop Shattering, Soil Creep and Rock Creep

Ridgetop shattering is a phenomenon where the surface soils or weakly cemented bedrock at the top of ridgelines shatter and form open fissures at the ground surface

during intense seismic shaking. Soil and rock creep occurs when the surface soils or rock slowly move in a downhill direction during wetting and drying cycles.

Five test pits were excavated at the site by Pacific Geotechnical Engineering to evaluate the potential for ridgetop shattering and creep at the proposed building sites. Our firm and Joe Hanna and Carolyn Burke from the County of Santa Cruz Planning Department also observed the five test pits.

There were no signs of ridgetop shattering or rock creep observed in the test pits. Based on the lack of evidence there is a low potential for ridgetop shattering or creep to affect the proposed improvements.

DISCUSSIONS AND CONCLUSIONS

Based on the results of our investigation and review of the geologic reports prepared by Pacific Geotechnical Engineering, the proposed improvements at the site are feasible provided the recommendations presented in this report and the geologic reports by Pacific Geotechnical Engineering are incorporated into the design and properly followed during construction of the development. Structures designed and constructed in accordance with the recommendations of this report and the geologic report are subject to "Ordinary" risks as defined in the "Scale of Acceptable Risks from Seismic and Non-Seismic Hazards", Appendix B.

Primary geotechnical concerns for the project include locating structures off landslide boundaries, embedding foundation into firm soil or bedrock, setting foundations back from slopes and designing for strong seismic shaking.

All structures should be located off the landslide boundaries identified in the Preliminary Engineering Geologic Feasibility Investigation, by Pacific Geotechnical Engineering, dated November 12, 2010.

Conventional spread footing foundations embedded into firm, native soil may be used to support structures located on slopes less than 20 percent. Drilled piers should be used for structures located on slopes steeper than 20 percent. The base of foundations should be embedded into firm, native soil and be setback at least 10 feet from the adjacent slope face, measured horizontally. Firm, native soil is generally located 12 to 18 inches below the ground surface. There was about 2 to 2.5 feet of fill encountered in Test Pit 4, excavated just below the southwest corner of the proposed learning center at the "Al Smith" site.

The water tank pads will be graded level. We recommend either excavating the tank pad entirely into weathered bedrock (about 24 inches below existing grade) or placing the tank pad on engineered fill. If engineered fill is used to support the tanks, the fill should extend down to weathered bedrock with at least the top 2 feet of soil compacted to 90 percent relative compaction.

Concrete ringwall and slab-on-grade foundations are typically used to support steel water tanks, however, the type of foundation necessary for the new water tank should be determined by your designer. Recommendations for both concrete ringwalls and concrete slabs-on-grade are provided in this report.

Structures should be designed to resist strong seismic shaking. Structures designed in accordance with current seismic design requirements should react well to seismic shaking.

RECOMMENDATIONS

The following recommendations should be used as guidelines for preparing project plans and specifications:

General Site Grading

1. The geotechnical engineer should be notified **at least four days** prior to any grading or foundation excavating so the work in the field can be coordinated with the grading contractor and arrangements for testing and observation can be made. The recommendations of this report are based on the assumption that the geotechnical engineer will perform the required testing and observation during grading and construction. It is the owner's responsibility to make the necessary arrangements for these required services.
2. Grading is anticipated to consist of grading level pads for the proposed water tanks, foundation excavations, subgrade preparation below concrete slabs-on-grade and minor surface grading for drainage. No other earthwork should be performed without our review.
3. The subgrade soil below exterior concrete slabs-on-grade should be moisture conditioned and compacted in a good workmanship manner to provide a firm, uniform surface for slab support.
4. The water tank pads will be graded level. Minor cuts and fills are anticipated to achieve a level pad grade. We recommend either excavating the tank pad entirely into weathered bedrock (about 24 inches below existing grade) or placing the tank pad on engineered fill. If engineered fill is used to support the tanks, the fill should extend down to weathered bedrock with at least the top 2 feet of soil compacted to 90 percent relative compaction.
5. Areas to be graded or receive foundations should be cleared of all obstructions and vegetation. Existing depressions or voids created during site clearing should be backfilled with engineered fill.
6. Areas to receive engineered fill should be scarified, moisture conditioned to 2 to 3 percent over optimum moisture content and compacted to at least 90 percent relative compaction.
7. Engineered fill should be moisture conditioned between 2 to 3 percent over optimum moisture content, placed in thin lifts less than 8-inches in loose thickness and compacted to at least 90 percent relative compaction. Where referenced in this report, Percent Relative Compaction and Optimum Moisture Content shall be based on ASTM Test Designation D1557-00.
8. The on-site soils are generally suitable for use as engineered fill. Soils used for

engineered fill below improvements should be granular, have a Plasticity Index less than 15, be free of organic material, and contain no rocks or clods greater than 6 inches in diameter, with no more than 15 percent larger than 4 inches. There are some clayey surface soils, particularly at the "Al Smith" site, that have a Plasticity Index greater than 15 and are moderately expansive. Expansive clays should not be used as engineered fill.

9. Engineered fill should be observed and tested by our firm. One in-place density test should be performed for every 12 vertical inches of soil placed for fill slopes and below structures, one test should be performed for every 500 square feet of area and one test should be performed whenever there is a definite suspicion of a change in the quality of moisture control or effectiveness in compaction.

10. After the earthwork operations have been completed and the geotechnical engineer has finished his observation of the work, no further earthwork operations shall be performed except with the approval of and under the observation of the geotechnical engineer.

Foundations

11. Conventional spread footing foundations may be used to support structures located on slopes less than 20 percent. Drilled piers should be used for structures located on slopes steeper than 20 percent.

12. Foundations should be embedded into firm, native soil and have at least 10 feet of soil between the base of the foundation and the adjacent slope face. Firm, native soil is generally located 12 to 18 inches below the ground surface. There was about 2 to 2.5 feet of fill encountered in Test Pit 4, excavated just below the southwest corner of the proposed learning center at the "Al Smith" site.

Spread Footing Foundations

13. Spread footings should be embedded at least 18 inches below the lowest adjacent grade and be at least 12 inches wide.

14. Footings located adjacent to other footings or utility trenches should have their bearing surfaces founded below an imaginary 1.5:1 plane projected upward from the bottom edge of the adjacent footings or utility trenches.

Amphitheater, Comfort Station, Faculty Housing and Learning Center

15. Foundations designed in accordance with the above may be designed for an allowable soil bearing pressure of 1,800 psf. The allowable bearing capacity may be increased by 1/3 for short term seismic and wind loads.

16. Lateral load resistance for structures supported on footings may be developed in friction between the foundation bottom and the supporting subgrade. A friction coefficient of 0.20 is considered applicable. Where footings are poured neat against firm

subgrade, a passive lateral earth pressure of 150 pcf may be used. The top 12 inches of soil should be neglected in passive design.

17. Total and differential settlements under the proposed light building loads are anticipated to be less than 1 inch and 1/2 inch respectively.

18. The foundation trenches should be kept moist and thoroughly cleaned of slough or loose materials prior to pouring concrete.

19. Prior to placing concrete, foundation excavations should be observed by the soils engineer.

Student Housing and Laundry/Cantina

20. Foundations designed in accordance with the above may be designed for an allowable soil bearing pressure of 2,500 psf. The allowable bearing capacity may be increased by 1/3 for short term seismic and wind loads.

21. Lateral load resistance for structures supported on footings may be developed in friction between the foundation bottom and the supporting subgrade. A friction coefficient of 0.30 is considered applicable. Where footings are poured neat against firm subgrade, a passive lateral earth pressure of 200 pcf may be used. The top 12 inches of soil should be neglected in passive design.

22. Total and differential settlements under the proposed light building loads are anticipated to be less than 1 inch and 1/2 inch respectively.

23. The foundation trenches should be kept moist and thoroughly cleaned of slough or loose materials prior to pouring concrete.

24. Prior to placing concrete, foundation excavations should be observed by the soils engineer.

Pier and Grade Beam Foundations

25. Pier and grades beam foundations should be used where slopes exceed 20 percent.

26. Drilled piers should be embedded at least 6 feet below grade, be embedded at least 3 feet into firm, native soil and be at least 12 inches in diameter.

27. Piers designed in accordance with the above may be designed for an allowable end bearing of 8,000 psf. The bearing capacity may be increased by 1/3 for short term wind and seismic loads. (Specific pier criteria can be developed for known footing loads if requested).

28. For passive lateral resistance an equivalent fluid weight (EFW) of 400 pcf times 2.5

pier diameters may be used below 3 feet. The top 3 feet of pier length, all fill and any portion of the pier with less than 8 feet of soil between the pier and the adjacent slope face, measured horizontally, should be neglected in passive design.

29. Total and differential settlements under the proposed light building loads are anticipated to be less than 1 inch and 1/2 inch respectively.

30. The piers should be thoroughly cleaned of slough or loose materials prior to pouring concrete.

31. Prior to placing concrete, pier excavations should be observed by the soils engineer.

Concrete Ringwall and Conventional Spread Footings

32. Concrete ringwall and conventional spread footing foundations should be embedded at least 12 inches below the lowest adjacent grade and be embedded into firm, native soil or compacted engineered fill per the grading recommendations of this report. Actual footing depths and widths should be as required by the structural designer based on the actual loads transmitted to the foundation and applicable design standards.

33. Footings located adjacent to other footings or utility trenches should have their bearing surfaces founded below an imaginary 1.5:1 plane projected upward from the bottom edge of the adjacent footings or utility trenches.

34. The foundation trenches should be kept moist and be thoroughly cleaned of slough or loose materials prior to pouring concrete. Footings should be deepened if any soft spots are encountered at the base of the footing excavations.

35. Foundations designed in accordance with the above may be designed for an allowable soil bearing pressure of 2,500 psf for dead plus live loads. This value may be increased by one-third to include short-term seismic and wind loads.

36. Total and differential settlements under the proposed loads are anticipated to be less than 1 inch and 1/2 inch respectively.

37. Lateral load resistance for structures supported on footings may be developed in friction between the foundation bottom and the supporting subgrade. A friction coefficient of 0.30 is considered applicable. Where footings are poured neat against firm, native soil or engineered fill, a passive lateral pressure of 200 pcf, equivalent fluid weight, may be assumed. The top 12 inches of soil should be neglected in passive design.

38. Prior to placing concrete, foundation excavations should be thoroughly cleaned and observed by the soils engineer.

Retaining Walls

39. No retaining walls are currently proposed as part of the project. Retaining wall criteria can be developed for retaining walls on a case-by-case basis if requested.

Exterior Concrete Slabs-on-Grade

40. The top 8 inches of subgrade soil below exterior concrete slabs-on-grade should be scarified, moisture conditioned and compacted in a good workmanship manner.

41. All slabs-on-grade can be expected to suffer some cracking and movement. However, thickened exterior edges, a well prepared subgrade including pre-moistening prior to pouring concrete, adequately spaced expansion joints and good workmanship should reduce cracking and movement.

Parking and Driveways

42. The top 8 inches of subgrade soil below parking and driveway areas should be scarified, moisture conditioned to 2 to 3 percent over optimum moisture content and compacted to at least 95 percent relative compaction.

43. The aggregate base below pavements should be moisture conditioned and compacted to at least 95 percent relative compaction.

Site Drainage

44. Controlling surface and subsurface runoff is important to the performance of the project.

45. Surface drainage should include provisions for positive gradients so that surface runoff is not permitted to pond adjacent to foundations or other improvements. Where bare soil or pervious surfaces are located next to the foundation, the ground surface within 10 feet of the structure should be sloped at least 5 percent away from the foundation. Where impervious surfaces are used within 10 feet of the foundation, the impervious surface within 10 feet of the structure should be sloped at least 2 percent away from the foundation. Swales should be used to collect and remove surface runoff where the ground cannot be sloped the full 10 foot width away from the structure. Swales should be sloped at least 2 percent towards the discharge point.

46. Full roof gutters should be placed around the eaves of the structures. Discharge from the roof gutters should be conveyed away from the downspouts and discharged in a controlled manner.

47. Concentrated runoff should be dispersed around the site or discharged into established drainages.

48. Concentrated runoff should not be allowed to flow over slopes in an uncontrolled manner. Concentrated runoff should be dispersed at least 25 feet from slopes steeper

than 30 percent and at least 10 feet from foundations.

49. The location of all drainage outlets should be reviewed and approved in the field prior to installation.

Plan Review, Construction Observation, and Testing

50. Dees & Associates, Inc. should be provided the opportunity for a general review of the final project plans prior to construction to evaluate if our geotechnical recommendations have been properly interpreted and implemented. If our firm is not accorded the opportunity of making the recommended review, we can assume no responsibility for misinterpretation of our recommendations. We recommend that our office review the project plans prior to submittal to public agencies, to expedite project review. Dees & Associates, Inc. also requests the opportunity to observe and test grading operations and foundation excavations at the site. Observation of grading and foundation excavations allows anticipated soil conditions to be correlated to those actually encountered in the field during construction.



September 9, 2012

Brian C. Dieterick
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San Luis Obispo, CA 93407
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**Subject: Drainage Analysis for Proposed Field Camp
Swanton Pacific Ranch, Santa Cruz, California
APN: 057-121-22 (Smith House) and 057-151-03 (Field Camp)**

Dear Brian:

Fall Creek Engineering, Inc., (FCE) has prepared this drainage analysis for the proposed field camp at Swanton Pacific Ranch. The purpose of this letter is to present our evaluation of the existing and proposed drainage conditions at the site. In summary, FCE recommends on-site retention of all stormwater through the use of best management practices (BMPs) that include bioretention swales and slope infiltration.

INTRODUCTION

California Polytechnic State University, San Luis Obispo (Cal Poly) operates the Swanton Pacific Ranch (Ranch) as a hands-on educational facility emphasizing resource conservation applied through sustainable management techniques. Throughout the year, the Ranch offers short courses that extend from 3 to 5 weeks with most of the courses occurring during the summer months. During these courses, the students live in temporary housing at the Field Camp and work throughout the Ranch.

The Ranch is proposing to improve the facility by providing new student cabins, staff duplexes, a central kitchen/dining room facility, a learning center, and an outdoor space for student activities. All improvements will occur on parcel 057-121-22, a 382.4-acre parcel that currently includes the Al Smith house (Smith house) and student housing.

The project will include onsite drainage improvements that are designed to retain and infiltration runoff from the new buildings and surrounding areas. The new systems will include the use of grass lined rock infiltration trenches and bio-retention swales. Figure 1 presents a layout of the proposed site and drainage improvements and Sheets C2.1, C2.2, C2.3, and C2.4 of the accompanying plans present a more detailed layout and details.

FCE has performed drainage calculations for the proposed drainage improvements on the property. This letter report presents the drainage calculations.

The proposed improvements are divided into two areas: the Field Camp area and the Smith House area. The Field Camp area includes the student cabins and the staff duplexes. The student cabin area will include an amphitheater, 12 cabins for 48 students, a cantina, laundry facilities, and a comfort station with toilets and showers. The staff housing area includes 2 duplexes for 4 staff members that include four apartments that include a bedroom, bathroom, small kitchens and

laundry facilities. The Smith House area includes an existing house and a new dining hall/kitchen facility and learning center in the existing garage. In addition, improvements are proposed for the intersection of Swanton Road and Old Schoolhouse Road. The improvements include widening the right hand entry lane and grading the existing slope to the north of the intersection to improve the line of sight distance.

FCE completed this drainage analysis to compare existing and proposed site drainage conditions and to recommend stormwater best management practices for the proposed projects.

EXISTING SITE CONDITIONS

The site is situated on a mostly western facing hillside with gently sloping terrain with slopes generally less than 20%. Drainage on the site is via sheet runoff from east to west. The site is bounded to the south by an unnamed drainage and to the north by Little Creek Little Creek Flows directly into Scott Creek which runs approximately parallel to Swanton Road discharging into the Scott Creek Marsh and ultimately into the Pacific Ocean at Scott Creek Beach. The majority of the site drainage however flows to the southwest into the unnamed drainage. It appears that the unnamed drainage does not flow directly into Scott Creek and rather is directed into naturally low lying areas where it infiltrates into the ground.

Presently, the site consists of an access road, grasslands, oak woodland and redwood groves. The area includes two buildings: the main building is the Al Smith House, which is currently used as temporary residence for visiting instructors or other guests. The garage for the Smith house has been converted to a classroom facility. Stormwater runoff from these buildings is dispersed around the buildings and percolates into the ground or, during periods when the ground is saturated, sheet flows away from the buildings to natural drainage courses down slope of the buildings.

The existing access road is mostly out-sloped to allow runoff to sheet flow into adjacent vegetated areas downslope from the road. Some portions of the road are through cuts with in board channels and drain via culverts to small drainage ways along the road or to vegetated slopes.

Soil Conditions

The USDA Soil Survey has identified the soils in the vicinity of the improvements for the Ranch as the Tierra-Watsonville complex and Bonny Doon Loam. The Tierra-Watsonville soil consists of approximately 50 percent Tierra and similar soils, 30 percent Watsonville and similar soils, and 15 percent of other, minor soil components. Soil Maps area presented in Attachment 1.

Tierra Soils. The Tierra soils consist of moderately well-drained soils derived from sedimentary rock. The vegetation ranges from grasses to oak and fir trees. A typical profile of the Tierra soils has a top-soil and a subsoil. The top soil is primarily sandy loam about 14 inches thick. The subsoil is 52 inches thick and consists of clay, clay loam, and sandy clay. Due to the high clay content, the capacity of the most limiting layer to transmit water is very low (0 to 0.06 in/hr), in the lower soils.

Watsonville Soils. The Watsonville soils consist of somewhat poorly drained soils derived from sedimentary rock. A typical profile of the soils will have two sub-soils under the top soil layer. The top soil is primarily loam about 18 inches thick. The soils from 18 to 39 inches below the topsoil are primarily clay and clayey loam. The lower layer of soil consists of sandy clay loam

and clay loam from 39 to 63 inches below the surface. Due to the high clay content, the capacity of the most limiting layer to transmit water is very low (0 to 0.06 in/hr), in the lower soils.

Bonny Doon Loam. The Bonny Doon Loam soils consist of somewhat excessively drained soils from residuum weathered from mudstone and/or residuum weathered from sandstone and shale. A typical profile of the soils will have 11 inches of loam on 4 inches (from 11 to 15 inches below ground) of weathered bedrock. The capacity of the most limiting layer to transmit water is moderately high to high (0.57 to 1.98 in/hr).

The other minor complexes of soil includes Ben Lomand-Catelli-Sur complex and Santa Lucia shaley clay loam. The capacity of the most limiting layer to transmit water for these soils are high (1.98 to 5.95 in/hr) and moderately high to high (0.57 to 1.98 in/hr) respectively.

Additional site specific percolation testing was completed by FCE to determine the suitability of the soils for wastewater disposal. The percolation tests were performed in accordance with procedures outlined by Santa Cruz County Environmental Health Services Department.

The percolation test results in the Field Camp resulted in different rates in the upper and lower soils indicating the percolation tests were installed in two distinct layers of soil. At the staff cabin area, the upper soils had very slow percolation rates and the lower soils percolated water at a rate of 2 minutes per inch (mpi). At the student cabin area, the upper soils percolated at a rate of 10 mpi and the lower soils percolated quickly at a rate of 1.7 mpi. The results are comparable the soil survey data presented by the USDA and indicate that the permeability of the soil is quite variable and will infiltrate stormwater.

PROPOSED SITE IMPROVEMENTS

The project will include maintaining the existing Al Smith residence as is, and expanding the existing garage/classroom from a 1,180 square foot (sf) building to a 5,051 sf dining hall, commercial kitchen and learning center/classroom area. The expanded dining hall building will include gutters to collect runoff, which will be discharged to rock lined level spreader. The level spreaders will discharge the roof runoff onto the adjacent vegetated slope and allow the runoff to infiltrate to the soils and/or sheet flow downslope to a natural drainage course and ultimately into the unnamed drainage.

A new student housing complex will include 12 new 320 sf student cabins, a 900 sf cantina/laundry facility, a 720 sf comfort station (restroom/shower) facility, and a new 850 sf amphitheater. The drainage improvements will utilize dispersed drainage systems that are designed to slow and percolate runoff into the ground. The student cabins and other buildings are designed with roof gutters and rain chains to direct runoff to small grass lined rock infiltration trenches to infiltrate runoff into the underlying soils. Any potential overflow from the infiltration trenches will flow via sheet flow to adjacent vegetated areas and ultimately into the unnamed drainage.

Two new 940 sf staff duplexes will use roof gutters that will collect and convey runoff to shallow grass lined rock infiltration trenches to infiltrate runoff. Excess runoff will flow via sheet flow to adjacent vegetated areas and ultimately into the unnamed drainage.

Runoff from the new parking areas affiliated with the student and staff housing will be captured in shallow landscaped bioretention swales to treat and infiltrate runoff from these areas.

The proposed intersection improvements at Swanton Road and Old School House Road will include widening the existing entrance into the property and grading the slope to the north of the intersection to improve line of sight distance. New impervious area associated with these improvements is approximately 1,920 sf. Runoff from the improved drive way will be directed via sheetflow to a valley gutter located at the base of the driveway and parallel to Swanton Road. Runoff collected in the valley gutter will be directed towards an existing vegetated channel that runs from the intersection to the north. Runoff will be conveyed to a large natural depression where the runoff will infiltrate into the soil.

Table 1 summarizes the impervious area associated with all of the new improvements and proposed BMP for each area.

Description of Improvement	Surface	Area (sf)	Proposed Stormwater Mitigation Measure
Learning Center and Dining Hall	Roof	3,816	Slope Infiltration
Learning Center Walkways	Concrete	1,733	Sheet runoff
New Student Cabins (12 @ 320 sf)	Roof	3,840	Infiltration Trench
Cantina	Roof	900	Bioretention
Comfort Station	Roof	720	Bioretention
Amphitheater	Concrete	850	Sheet runoff
Student Parking	AC	1,300	Bioretention
Staff Duplexes (2 @ 940 sf)	Roof	1,880	Infiltration Trench
Staff Parking	AC	4,850	Bioretention
Intersection Improvements	AC	1,920	Infiltration

REGULATIONS

The drainage improvements have been designed to comply with the County of Santa Cruz Design Criteria, Part 3 Stormwater Management and section H – On-Site Retention of Stormwater Runoff. The runoff from all new impervious areas will be retained on site, resulting in no increase to the amount of runoff leaving the site. Stormwater infiltration trenches and bioretention swales are designed in accordance with the Design Criteria's guidelines to mitigate for the increase in impervious area. In addition infiltration trenches and bioretention swales will be used to treat stormwater runoff from parking areas that may have adverse impacts to stormwater quality. The intent of the drainage plan is to mimic the natural hydrology of the site and to keep stormwater runoff from causing any erosion to downstream areas. The following section presents the drainage calculations used to size the different facilities.

DRAINAGE CALCULATIONS

Stormwater runoff generated from the addition of impervious areas on the site will be retained and infiltrated into the native soils with infiltration trenches, bioretention swales, or level spreaders. Stormwater runoff in excess of the capacity of the infiltration basins and bioretention swales will sheetflow over existing vegetation and terminate in natural drainage channels throughout the site. The site has been broken into four distinct areas for stormwater analysis, the

Learning Center, Student Housing, Staff Housing, and Intersection. A detailed description of the stormwater system for each area is presented below. The layout and details of the proposed improvements are shown in the accompanied engineering design plans. Complete drainage calculations are presented in Attachment-2.

Learning Center/Dining Hall

Roof runoff from the Learning Center/Dining Hall will be captured in gutters and conveyed via downspouts to a level spreader/diffused manifold that will discharge stormwater evenly on a horizontal plane and allow runoff to sheet flow over adjacent vegetation to infiltrate in to the ground. Excess runoff from this area will drain through a heavily wooded area and ultimately into the natural drainage channel located downslope of the student cabins.

FCE calculated the required length of perforated pipe utilizing the Runoff Retention by Slope Infiltration Method, as presented in the County of Santa Cruz Design Criteria (June 2006).

Table 2. Summarized Results of Runoff Retention by Slope Infiltration Method

Site Description	New Impervious Area (ft ²)	Calculated Length of Pipe (ft)
Learning Center/Dining Hall	3,816	50

The results indicate that a 50 foot long level spreaders are required to mitigate stormwater runoff from the Learning Center/Dining Hall building.

Student Area

Roof runoff from the student cabins will be captured in gutters and conveyed via rain chains or downspouts to a shallow grass lined channel that will direct runoff to a grass lined rock filled infiltration basins. Roof runoff from the Laundry/Cantina and the Comfort Station will be captured in gutters and conveyed via downspouts and directed to a bioretention swale. Stormwater runoff from the new student parking area will be collected at the low point in a catch basin conveyed via underground pipes to a bioretention swale. Finally stormwater runoff from the new amphitheater will sheet flow over a vegetated buffer and ultimately into the unnamed drainage where it will infiltrate into the native soils.

Staff Housing Area

Roof runoff from the staff duplexes will be captured in gutters and conveyed via rain chains or downspouts to grass lined rock filled infiltration trenches. Stormwater runoff from the new staff parking areas will flow through cut curbs to a vegetated channel that will convey runoff to a small bioretention swale.

FCE calculated the required size of each of the cobble and rock infiltration trenches and bioretention swales utilizing the Runoff Retention by Storage Percolation Method, as presented in the County of Santa Cruz Design Criteria (June 2006). Table 2 presents the volume of storage required and provided at each site to retain the 2-year design storm, as required by the SCCDC. A copy of the complete calculations is presented in Attachment 2.

Table 2. Summarized Results of Runoff Retention by Storage Percolation Method

Site Description	New Impervious Area (ft ²)	Calculated Storage Volume (ft ³)	Storage Volume Used (ft ³)
Student Area:			
Student Cabins	320	16.3	21
Laundry/Cantina	720	40.4	
Comfort Station	900	50.6	
Combined System for Laundry/Cantina, Comfort Station		91	100
Student Parking	1,290	79.8	80
Staff Area:			
Staff Cabins	936	53.9	54
Staff Parking	4,991	351.7	360

Individual cobble/rock lined trenches and bioretention swales are proposed for each of the student and staff cabin, student and staff parking areas. Based on the location and layout of the laundry/cantina, comfort station and amphitheater, runoff from these buildings and area will be discharged into one cobble and rock lined infiltration trench.

Intersection Area

Runoff from the intersection will be directed into an existing drainage ditch located adjacent to Swanton Road. The drainage ditch conveys stormwater runoff towards an existing natural depression where stormwater infiltrates into the native soils. The additional runoff from the intersection improvements is approximately 0.12 cfs and is not likely to negatively impact the existing drainage system.

CONCLUSIONS

1. There is sufficient area available at the ranch to retain runoff using dispersed and localized infiltration storm water best management practices (BMPs).
2. All runoff generated from the proposed impervious areas on the site will be retained on-site through the use of slope infiltration (level spreaders), cobble and rock infiltration trenches and bioretention swale.
3. Additional stormwater from the improvements at the intersection of Schoolhouse Gulch Road and Swanton Road are minimal and are not likely to impact the existing drainage facilities.
4. Excess runoff from the storm water BMPs will be slowed down substantially and will not result in erosion or hydromodifications to the natural drainage channels on the property

Thank you for the opportunity to assist you with this project. If you have any questions or require additional information, please contact me at (831) 426-9054.

Sincerely,

A handwritten signature in black ink, appearing to read "Robyn Cooper". The signature is fluid and cursive, with a long horizontal stroke at the end.

ROBYN COOPER, M.S., P.E.
Senior Associate Engineer

Attachments

WILDLIFE REPORT
FOR THE SWANTON PACIFIC FIELD CAMP



*An assessment of wildlife impacts and proposed mitigations for a proposed educational development
at CalPoly's Swanton Pacific Ranch, Santa Cruz County.*

Prepared for
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June 14, 2013

WILDLIFE REPORT FOR THE SWANTON PACIFIC FIELD CAMP

1.0 INTRODUCTION

This report presents an analysis of wildlife impacts of a proposed development (Swanton Pacific Field Camp) and modifications of an existing educational center on Swanton Pacific Ranch. California Polytechnic State University proposes to build up to twelve field cabins and remodel an educational facility on its Swanton Pacific Ranch property near the Al Smith House in northern Santa Cruz County. The proposed development includes three building areas (Areas 1, 2, and 3, as shown in Figure 1).

This wildlife report summarizes the relevant information pertaining to potential and existing sensitive zoological resources on or near the Smith Cabins site, and offers a biological assessment regarding the potential for biologically significant impacts to wildlife from the construction and operation of the proposed field cabins and associated facilities. Proposed impact avoidance measures are suggested where warranted. The results of a separate botanical survey and botanical resource assessment can be found in the Smith Field Cabins Botanic Report (G. Hayes, 2013).

2.0 METHODS

Wildlife resources of concern on the site were identified during federal, state and county agency consultations, and during reviews of Santa Cruz County sensitive species lists and during searches of the California Natural Diversity Database (CNDDDB) Rarefind 2012 records for all sensitive biological resources within a 5-mile radius of the site. A review was also conducted of recently completed wildlife reports completed as part of a timber management plan that was conducted for areas within and adjacent to the proposed project site (Swanton Pacific Non-industrial Timber Management Plan 2007).

The literature review, general surveys and some of the focused wildlife surveys were conducted by consulting biologist Dan Grout, who has 30 years of experience as a professional wildlife biologist conducting field research and assessing wildlife impacts. Dan Grout has served as Senior Ecologist with California State Parks and with the U.S. Fish and Wildlife Service, and has served as adjunct faculty with CSU Monterey Bay's Watershed Institute. Mr. Grout has over 15 years of experience living and conducting wildlife research in the Swanton region of Santa Cruz County, and is very familiar with the wildlife resources of Swanton Pacific Ranch property, having conducted many wildlife surveys on the Ranch and surrounding lands in recent years.

2.1 Agency Consultations

On February 18th, 2011 Swanton Pacific Ranch Director Brian Dieterick and Resource Manager Steve Auten initiated an introductory meeting on site with biologist Dan Grout to review the original location of the proposed field camp near the Staub House. On March 15th, an informal on-site pre-consultation meeting was held with Jake Martin of the U.S. Fish and Wildlife Service (USFWS) regarding the location of the proposed project site and its potential for impacts to California red-legged frogs (*Rana draytonii*), a federally threatened species that is known to breed

in a small stock pond near the Staub House site. At this time the proposed project site was moved away from the Staub House area and into the currently proposed areas near the Al Smith House location (Figure 1) to reduce the chance of any possible impacts to California red-legged frogs.

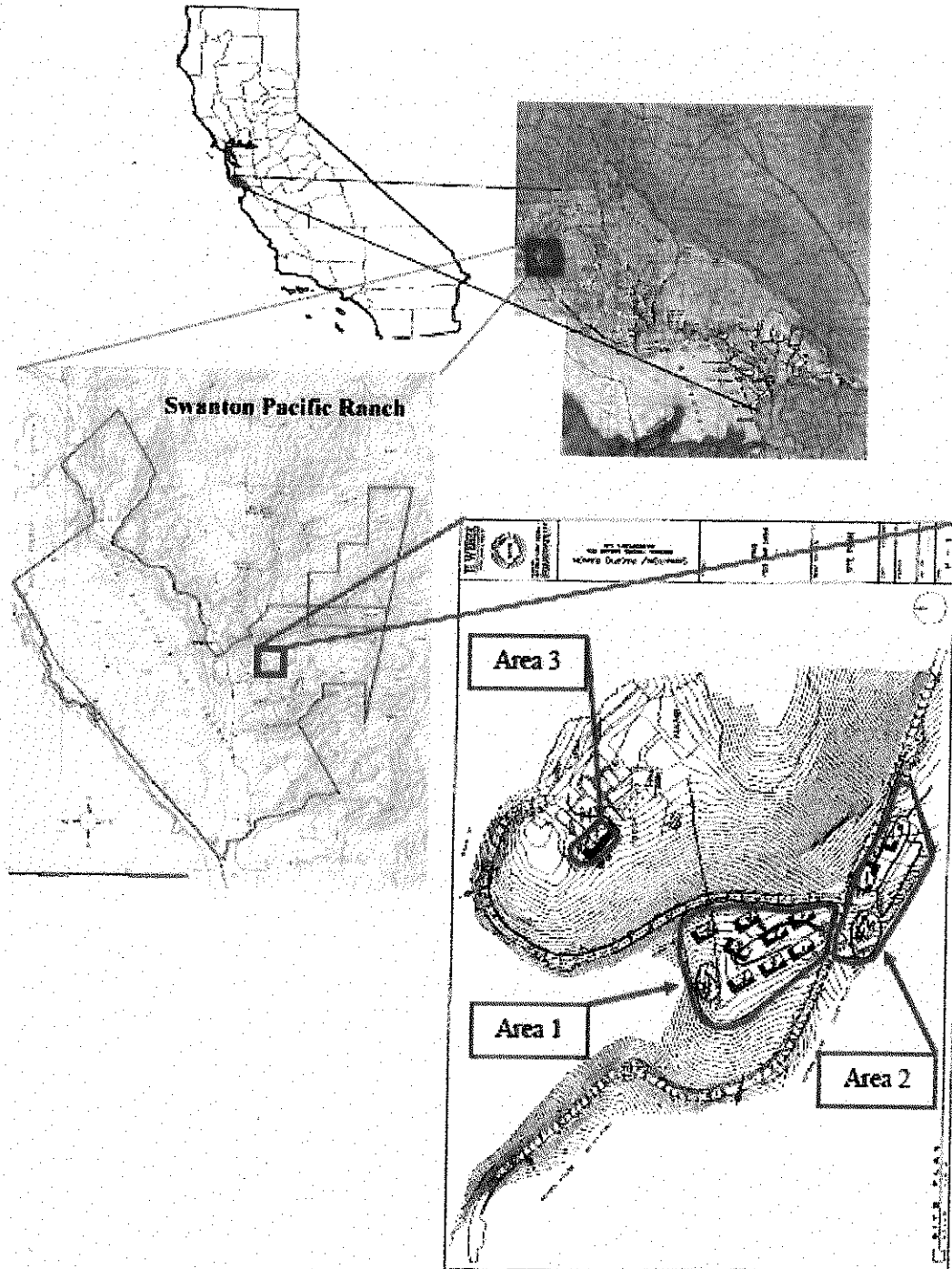


Figure 1. Location of Swanton Field Camp Project Site (from Hayes, 2013)

A second site visit and meeting was held on site on August 30, 2011 with Santa Cruz County Planning Department representatives Robin Bolster and Matt Johnston, and with Bill Davilla of Ecosystems West. Discussions were held to review potential measures to help avoid impacts to any wildlife species or resources of concern. There was concurrence that the current proposed Smith House site for the field camp was preferable, as the new site was over 1000 feet from the Staub Pond, thereby reducing the chance of impacts to any sensitive wetland resources there.

Representatives of the Santa Cruz County Planning Department and other regulatory agencies with permitting oversight responsibilities for the proposed educational development were consulted with during the fall 2011 throughout 2012. These site visits and meetings were conducted to ensure that the proposed student field housing could be designed, located and configured to ensure that any potential biological impacts of the campus development could be avoided, as well as to be in conformance with the inherent environmental educational mission of CalPoly's Swanton Pacific Ranch.

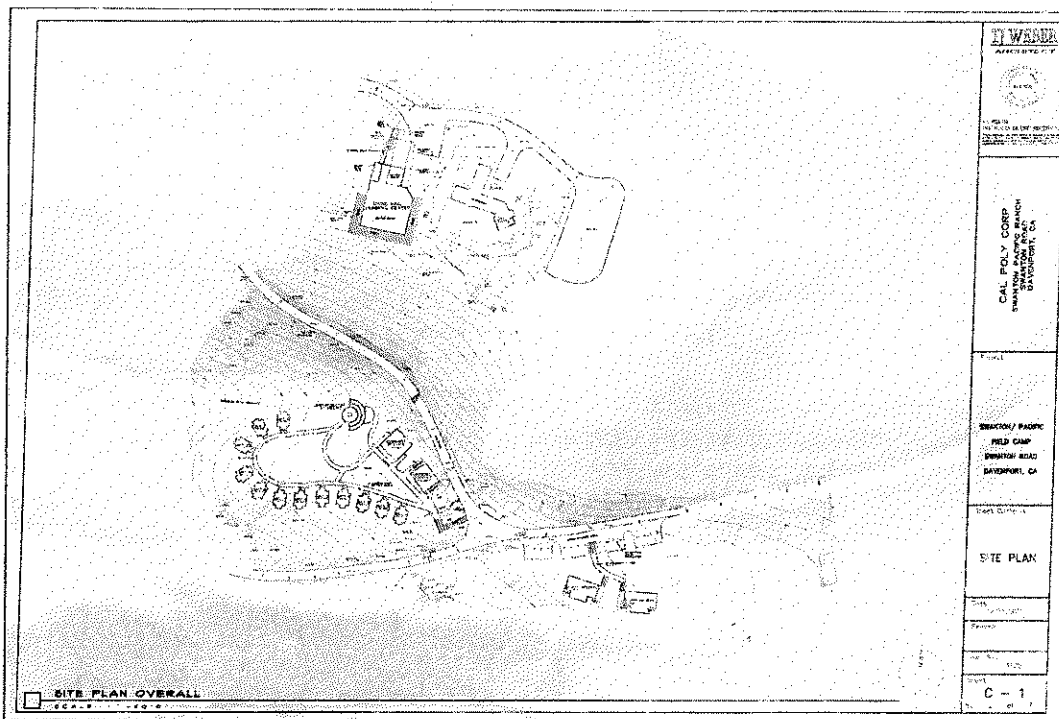


Figure 2. Proposed Project Site Development

2.2 Wildlife Surveys

Wildlife surveys were conducted and immediately surrounding the project site (Figure 2) between February 18 and September 17, 2011 by Dan Grout, a professional wildlife biologist with expertise in wildlife of the Swanton area. General wildlife surveys were conducted by traversing the site during focused sensitive species surveys by assessing wildlife habitats present, photographing areas, and assessing the site's potential for any sensitive species or habitats that may occur in the area. Special attention and additional visits were conducted for those species and resources that were identified as being potentially present in the area based on CNDDDB, County

and personal records. Focused surveys were conducted for nesting raptors and for the one listed species known to occur in the immediate area: the California red-legged frog. Prior focused survey reports of the area were also reviewed for marbled murrelets and other selected species of concern.

2.2.1 Birds

During the site assessments and wildlife surveys that occurred between February and September 2011, searches were conducted for any sensitive or listed bird species. The area was assessed for any suitable foraging or nesting habitat, or detectable bird nests on site protected by the provisions of the Migratory Bird Treaty Act. Auditory and visual observations on foot were aided by binoculars.

Raptors

Reconnaissance level raptor surveys were conducted between March 15 and August 15, 2011 during the time of year considered by California Department of Fish and Wildlife as the critical breeding period. Surveys covered suitable raptor habitat and involved looking for nests, breeding behavior, whitewash, pellets, feathers, plucking posts, and other sign of raptor nesting.

Marbled Murrelets

Protocol-level surveys for Marbled murrelets were also conducted in the areas surrounding the project site in 2009, 2010 and 2011 (Swanton Pacific Ranch NTMP). Standard CDFW Marbled murrelet survey protocol guidelines (CDFG 2003) were used during those focused surveys.

2.2.2 Mammals

Surveys of the disturbed grasslands on the project site included an assessment of the site's potential as habitat for any sensitive mammal species known to occur in the region. Special attention was given to searching for any den sites or burrows characteristic of the American badger, a species known to occur in the more remote grasslands in the Swanton area.

Bats

Bats species present in the area were determined from an acoustic bat monitoring survey conducted on CalPoly's Swanton Pacific Ranch in June 2011. Bat biologist Joe Szewczak conducted acoustic bat surveys on the nights of June 2nd, 3rd and 4th in the area surrounding Staub Pond. The following detector/recorders were used to identify bat species through the use acoustic monitoring techniques: Heterodyne Recorders, Peterson Recorders, and Wildlife Acoustics Recorders, which utilize full spectrum data as required by USFWS for species identification. A list of local bat species present on the site was developed utilizing this and other data.

2.2.3 Reptiles and Amphibians

The site was assessed for its potential to harbor any sensitive or listed reptiles or amphibians known to occur in habitats that occur on site. Focused surveys were also conducted for the one listed species known to occur in the area, the federally threatened California red-legged frog.

California Red-legged Frogs

Extensive recent data exists from red-legged frog surveys conducted by John Bulger involving frog capture, telemetry and tracking studies around Staub Pond and other sites (Bulger 1999, Bulger et al 1999; Bulger et al 2003).

A more recent site assessment for California red-legged frog (CRLF) habitat was first conducted on the proposed project site on August 12, 2011 by Dan Grout. The site assessment and subsequent surveys were conducted by Dan Grout, who has conducted CRLF surveys in every watershed in Santa Cruz County throughout central California during the past 12 years. He has maintained his training and field certification to conduct red-legged frog surveys through workshops, most recently in 2009 at the CRLF Workshop at the Elkhorn Slough Coastal Training Program led by colleagues Galen Rathbun and Norm Scott. The site assessment was conducted using the CRLF Habitat Site Assessment Data Sheet (Appendix 3).

The habitat assessment revealed that no suitable California red-legged frog breeding habitat occurs on the site due to the absence of any aquatic or wetland features. However, because a known California red-legged frog breeding pond occurs at Lower Staub pond approximately 1,000 feet east of the project site, a series of day and night red-legged frog surveys were conducted on the project site during the non-breeding season to assist in confirming that the site is not regularly used as an upland refugia by any foraging, resting or migrating red-legged frogs.

Red-legged frog surveys were conducted on the project site on August 12, 21, 30, and Sept. 4, 10, and 17 of 2011. Six day and six night surveys were conducted during this period, following the revised USFWS guidance on site assessments and non-breeding season field surveys for California red-legged frogs (USFWS 2005). These protocol-level surveys were considered helpful in assessing whether the project might have any likelihood of causing impacts to any red-legged frogs that breed in the larger area.

Binoculars were used during on-foot surveys to scan for frogs on the ground, and were done during warm sunny windless days. Night surveys were conducted at least one hour after sunset and were conducted using a high-powered Wheat Cap Lamp and binoculars to scan for eye-shine. Surveys on the project site were primarily aimed at detecting juvenile frogs, which are active both day and night during the fall period.

Information on California red-legged frog presence, habitat use and dispersal patterns were also drawn from prior radio-telemetry investigations of adult California red-legged frogs in the area (Bulger, 1998; Bulger et al. 1999).

3.0 ENVIRONMENTAL SETTING

Swanton Pacific Ranch is located near the coast in the Santa Cruz Mountains on the Central Coast of California, north of Monterey Bay. The proposed project sites near the Smith House (Figures 1, 2 and 3) have experienced significant levels of prior disturbance. The proposed cabin complex in Area 1 and adjacent Area 2 has been previously used as staging areas for forestry operations and have largely been cleared of most trees and vegetation, and are now disturbed grasslands. The area adjacent to the extant building in Area 3 has also had extensive grading, planting, and landscape maintenance. Grasslands are the dominant vegetation type, with a scattering of *Ceanothus* and coast live oaks. (Site photographs are shown in Figures 4, 5 and 6.)

The proposed Al Smith field cabin site is primarily situated in the footprint of a site previously cleared and disturbed several times during the last twenty years. In 1980, the Swanton Pacific Field Camp site was cleared and planted with non-native Monterey Pines from New Zealand as part of CFIP (California Forest Improvement Program). In 1993, the same site was pre-commercially thinned and cleared of brush. In 2006, the site was commercially thinned including significant brush removal. In 2008, the Non-industrial Timber Management Plan (NTMP) for Swanton Pacific Ranch, a State approved CEQA compliant document, specified that all of the non-native Monterey Pines stands would ultimately be removed from this site. In 2011, a less than 3-acre conversion exemption was submitted with Cal Fire and the site was cleared.



Figure 3. Aerial view of the project area (2010)



Figure 4. Smith Cabins Site (Area 1)



Figure 5. Parking Area (Area 2)

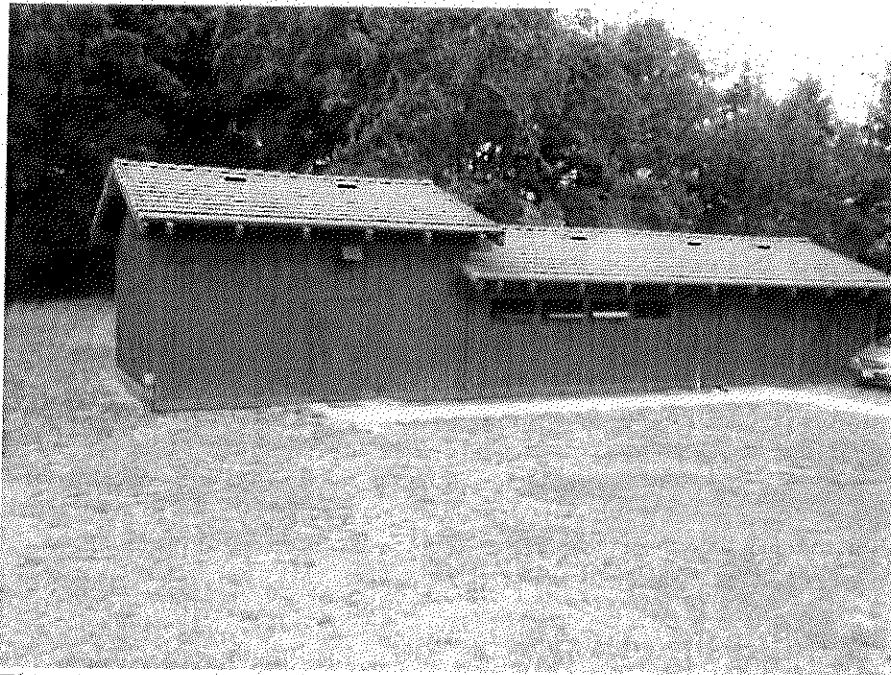


Figure 6. Smith Educational Center (Area 3)

As a result, the site consists primarily of bare soil and disturbance-tolerant species such as poison oak, blackberry and other scrub elements. A few mature Douglas fir trees, some young Monterey pines (*Pinus radiata*) harvest, Coast live oaks (*Quercus parvula*) also occur on the periphery of the site, in addition to some remnant poison oak (*Toxicodendron diversilobum*), coyote brush (*Baccharis pilularis*), blueblossom (*Ceanothus*) and blackberry (*Rubus ursinus*).

The proposed parking area and the Al Smith classroom extension site exhibit weedy grasses common to disturbed areas and a few Coast live oaks. A botanical report of a survey conducted by Jim West and Grey Hayes (Hayes, 2013) provides more botanical detail of the project site and area, but the amount and quality of wildlife habitat on the site is limited to disturbed forest and disturbed grassland, with no wetland, riparian or other potentially rare or sensitive wildlife habitat elements. A 2010 aerial photograph of the project site area is shown in Figure 3 below.

4.0 SENSITIVE WILDLIFE SPECIES

While several sensitive wildlife species are known to occur in the Swanton area (Appendix 1), no species of concern occur were detected within the disturbed sites proposed for development. The small project site does not harbor any habitat that is essential to any listed or sensitive wildlife species, nor are any sensitive species likely to occur within the small confines of the disturbed project site.

While no listed or sensitive species were found to occur on the proposed project site, some sensitive species may occur in the general vicinity. The California Department of Fish and Wildlife, USFWS, and Santa Cruz County General Plan lists several sensitive, endangered or threatened animal species that are known to occur in the surrounding region. Wildlife habitat

associations from the California Wildlife Habitat Relationships (Version 8.0) were reviewed in addition to local knowledge and reports of each species occurrence in the region. Several additional species of wildlife that commonly occur within the Swanton Ranch area are listed in Appendix 2.

The following narrative outlines those sensitive or protected species known to occur in the region that had any potential to exist, and includes information regarding their status, habitat and distribution, with information on local status based on recent surveys, existing reports, and presence of any habitat on site.

4.1 BIRDS

While several species of common passerine birds are known to forage on the site, no sensitive species were seen, nor are any expected to occur on the small and heavily disturbed site. No raptor nests were found in any of the few remaining trees on the site. Focused surveys have been conducted in the surrounding areas in recent years for listed species of the region such as the marbled murrelet, with no detections, as described below.

Marbled Murrelet (*Brachyramphus marmoratus*)

The marbled murrelet is listed as endangered under CESA and as federally threatened in Washington, Oregon, and California. Marbled murrelets inhabit near-shore marine waters where they feed on small fish and invertebrates, but during the breeding season adults fly inland to nest in mature conifer forests within 50 miles of the ocean. The southernmost breeding population of marbled murrelets in North America occurs in association with the Santa Cruz Mountains. This is also the smallest and most isolated population, separated from the northern California murrelet population by a distance of 300 miles. The size of the Santa Cruz Mountains murrelet population is estimated to be approximately 600 adults (McShane 2004).

In California, nesting occurs from late March to mid September. The female lays a single egg on a large limb or other structure that forms a platform in the nest tree. No nest is constructed, although moss, lichen, duff, or litter often covers the platform. Structures greater than 6 inches wide are large enough to support an egg and an adult murrelet, but in general platforms tend to be considerably wider. Nest platforms include large primary or secondary branches, mistletoe infections, damaged or deformed limbs, witches' broom, and occasionally disused raptor or squirrel nests.

Tree species utilized for nesting in the Santa Cruz Mountains include redwood and Douglas-fir. Although murrelets typically nest in late-seral forest stands, the species has also been documented nesting in residual mature trees that have been left uncut in stands that have a history of harvesting. In consequence, any timber stand that contains redwood or Douglas-fir trees with apparent nesting platforms is considered to be "potentially suitable nesting habitat" for murrelets.

No murrelet nesting habitat is present on the project site due to the absence of any trees of sufficient size and dimensions. Potentially suitable nesting sites do occur at two locations half a mile from the project area, but these habitat areas have been harvested at least once previously, and murrelet habitat elements are present within these stands as widely scattered individual trees. Both potentially suitable murrelet habitat areas were recently surveyed in accordance with protocol standards developed by the Pacific Seabird Group and California Department of Fish and Game and found not to be occupied, with no murrelet detections (Halbert 2009, 2010, 2012).

The nearest timber stand known to be occupied by murrelets is located over one mile north of the project in T9S, R4W, Section 36. While murrelets have been observed flying over the Big Creek drainage, there have been no observations indicative of site occupancy within one mile of the project site.

The two potential areas in the region considered to have even marginal potential for marbled murrelets are the Lower Little Creek Stand to the west and the General Smith Stand to the north, both well off-site. Even though the entire Little Creek watershed was clear-cut ~100 years ago, about 15 mature redwoods and Douglas-firs remain within that area, growing at widely separated locations, and approximately 25 residual old-growth trees occur in the General Smith Stand. The presence of potentially suitable nesting structures on some of these larger trees was sufficient to trigger the requirement for protocol-level surveys for occupancy by marbled murrelets (Pacific Seabird Group 2003; CDFG 2001, 2003).

These and nearby stands were surveyed for murrelets several times from 1999 to 2003 using established survey protocols with no breeding activity detected for the area (Bulger, J.B. 2000a, 2000b, 2001, 2002, 2003a, 2003b). These two areas were surveyed for murrelets again in 2010 and 2011 by Portia Halbert with no detections (Halbert 2009, 2011, 2012).

Six protocols level surveys have been conducted in the Lower Little Creek stand during six of the past 12 years, and no murrelets have ever been detected during these surveys (Bulger 2003 and Halbert 2009, 2010). The recent survey of the more distant General Smith Stand (~1 mile away) in 2010 and 2011 revealed no murrelets either (Halbert, 2012). The Lockheed fire that burned the area in August 2009 also greatly changed the habitat quality and characteristics of the region for many species, including murrelets. Based on all of the focused surveys and habitat assessments, the Smith field cabins project area and its immediate environs can be classified as probable absence for marbled murrelets.

Double-crested Cormorant (*Phalacrocorax auritus*)

Double-crested cormorants are a CDFW Species of Special Concern (rookery sites only). The species inhabits near shore coastal waters, lakes, and rivers, and nests colonially on sea-cliffs or in trees. Cormorants occasionally forage in the lower reaches of Scotts Creek but no rookery sites are known within the Scotts Creek watershed.

Great Blue Heron and Great Egret (*Ardea herodias* and *A. alba*)

Great blue heron and great egret rookeries are listed as Sensitive by CDF. These species nest colonially (occasionally solitarily), usually in live or dead deciduous trees within or adjacent to marshes, swamps, lakes or larger rivers. Both species build large platform-type stick nests. Foraging habitat consists of the full range of wetland and open aquatic habitats. Both species feed principally on fish and other vertebrates, although they will also hunt mice and frogs in wet meadows or grasslands after rains. Whereas both species are liable to forage in suitable habitat within Swanton Pacific Ranch habitat, no nesting sites have been found in the area, and none occur on the project site.

California Black Rail (*Laterallus jamaicensis coturniculus*)

The California black rail is listed as threatened under CESA. It has a highly localized distribution, and occurs principally in brackish marshes. Black rails are reported to have been extirpated from Santa Cruz County, although there is one NDDDB record from the Waddell Creek lagoon in the mid-1990s. No appropriate habitat is present within or immediately adjacent to areas proposed for development.

California Clapper Rail (*Rallus longirostris obsoletus*)

The California clapper rail is listed as endangered under ESA and CESA. It occurs in brackish, coastal wetlands from San Francisco Bay southward. The species has been extirpated from Santa Cruz County. No appropriate habitat is present within or immediately adjacent to the project area.

Black Swift (*Cypseloides niger*)

The black swift is a CDFW Species of Special Concern (nesting only). The black swift has a highly localized breeding distribution in California due to its specialized nesting requirements. Nests have been found only on steep coastal bluffs and behind or adjacent to waterfalls on cliffs. There are several NDDB records of black swifts nesting on coastal bluffs from Point Año Nuevo south to near Santa Cruz. There is no suitable nesting habitat within the project area.

Vaux's Swift (*Chaetura vauxi*)

The Vaux's swift is a CDFW Species of Special Concern (nesting only). The species generally occurs in association with conifer forests that have at least some mature characteristics. Vaux's swifts nest and roost in hollow snags or in senescing live trees with heartwood decay. Nest and roost trees are usually more than 20 inches in diameter and frequently have broken tops. Pileated woodpeckers excavate most of the cavities used for nesting. The species feeds aerially on small insects, often over water, but also over grasslands and forested areas. It roosts communally in hollow trees or chimneys. Vaux's swifts are likely present in the Swanton Pacific Ranch area but are not expected to use the site for nesting. Foraging activities on the site will not likely be negatively affected by the proposed project.

Red-breasted Sapsucker (*Sphyrapicus ruber*)

The red-breasted sapsucker is a federal Species of Concern (nesting only). It is a cavity nester that potentially occurs in most forest and woodland habitats. The species is rare in Santa Cruz County during the breeding season, occurring more commonly during fall and winter. Suitable nesting and foraging habitat may be present in the project area, but it is not likely to nest on the project site.

Olive-sided Flycatcher (*Contopus cooperi*)

The olive-sided flycatcher is a federal Species of Concern. It occurs primarily in coniferous forests, frequently perching atop tall trees or snags from which it hawks insects. It prefers forests with more open canopies, and often occurs in association with openings or edges. Nests are built in trees. Olive-sided flycatchers occur as a breeding species in the Scotts Creek watershed and are absent (migrates) in winter. Suitable nesting and foraging habitat is present in the Swanton area, and it may forage on or near the site.

Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike is a CDFW Species of Special Concern (nesting only). This species resides in a variety of open grassland and scrub habitats where it hunts insects and small vertebrates. It does not inhabit forests. Nests are built in shrubs or small trees. Loggerhead shrikes are known to occur within the Swanton area in appropriate habitat during the fall and winter months, and could potentially forage on the site.

California horned lark (*Eremophila alpestris actia*)

The California horned lark is a CDFW Species of Special Concern. Horned larks occur in open habitats, favoring areas with sparse vegetation and exposed soil for foraging. The species nests on the ground. Suitable habitat for this species may be present in agricultural fields adjacent to the project area.

Purple Martin (*Progne subis*)

The purple martin is a CDFW Species of Special Concern (nesting only). It is a rare and localized breeder in a variety of open forest types in California; it may no longer nest in Santa Cruz County. Tall, old snags with woodpecker holes are required for nesting. Martins often forage over water. The species is not likely present in the Swanton area.

Bank Swallow (*Riparia riparia*)

The bank swallow is listed as Threatened under CESA. Bank swallows nest colonially in sandy, vertical bluffs and riverbanks. They excavate their own nest burrows. The upper Sacramento River supports most of the remaining populations of this species, but isolated colonies are found elsewhere. No nesting sites are known from Santa Cruz County, although an active colony exists at Point Año Nuevo, approximately 3 miles northwest of the project area.

California Thrasher (*Toxostoma redivivum*)

The California thrasher is a federal Species of Concern. It occurs chiefly in dry brush and chaparral habitats, and is uncommon in the Scotts Creek watershed. Habitats utilized by this species do not occur on the project site.

Yellow Warbler (*Dendroica petechia brewsteri*)

The yellow warbler is a CDFW Species of Special Concern (nesting only). Yellow warblers are found primarily in riparian habitats dominated by deciduous trees such as alders, willows, maples, sycamores, and cottonwoods. The species has been recorded from Scotts Creek. Suitable nesting and foraging habitat for yellow warblers does not occur on the site but does occur along Scotts Creek and the lower portions of Mill Creek and Little Creek where broadleaf riparian habitat potentially occupied by this species occurs.

Saltmarsh Common Yellowthroat (*Geothlypis trichas sinuosa*)

The saltmarsh common yellowthroat is a CDFW Species of Special Concern (nesting only). There is a CNDDDB record for the mouth of Scotts Creek from 1988. Yellowthroats inhabit brackish and freshwater marshes, and moist riparian habitats. Suitable breeding habitat may occur in the general region where ponds occur with dense emergent vegetation and in the marsh at the mouth of Scotts Creek. Suitable habitat does not occur on the project site.

Yellow-breasted Chat (*Icteria virens*)

The yellow-breasted chat is a CDFW Species of Special Concern (nesting only). Chats inhabit riparian shrub thickets comprised of willow, dogwood, and similar species. The species is quite rare in Santa Cruz County and may not occur in the Scotts Creek watershed. Potentially suitable habitat for this species is present along portions of the Scotts Creek riparian corridor, but none are present on the project site.

Lark Sparrow (*Chondestes grammacus*)

The lark sparrow is a federal Species of Concern. The species resides in grassland dominated habitats where it nests on the ground or in a small shrub. This is an uncommon, localized breeding species in Santa Cruz County. Suitable habitat is present on Swanton Pacific Ranch, but the disturbed nature of the grasslands on site makes it unlikely to support this species.

Bell's Sage Sparrow (*Amphispiza belli belli*)

The Bell's sage sparrow is a CDFW Species of Special Concern. Bells' sage sparrow occurs in chaparral and coastal sage scrub habitat, often in association with chamise. It is a rare and localized breeder in Santa Cruz County where only two breeding localities are known.

Potentially suitable nesting habitat for this species may be present adjacent to the project site, but are not likely to nest on the project site.

Tricolored Blackbird (*Agelaius tricolor*)

The tricolored blackbird is a CDFW Species of Special Concern (nesting colony). The species nests colonially in emergent aquatic vegetation or (in the Central Valley) in dense thickets of Himalayan blackberry. It forages in large flocks in grasslands and agricultural fields. A tricolored blackbird colony does inhabit the Laguna de las Trancas pond along Last Chance Road several miles northwest of the project area, but it is unlikely that these birds regularly forage on the grasslands within the project area, and no suitable nesting habitat occurs on the project site.

Osprey (*Pandion haliaetus*)

The osprey is a CDFW Species of Special Concern (nesting only) and a CDF Sensitive Species. It is a bird of large rivers, lakes, and sea coasts where it preys almost exclusively on fish. Ospreys nest on rock pinnacles and in the tops of snags, live trees, or similar artificial structures near water. Nests are large, conspicuous, and often easily located. Throughout the osprey's range, when available, snags surrounded by water are preferred as nest sites. Nests usually are built in very close proximity to water, but may occasionally be found up to a mile from water. Ospreys do not nest in the project area.

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle is listed as Threatened under ESA and Endangered under CESA. It is also a CDF Sensitive Species. Bald eagles do not nest in the Santa Cruz Mountains and are rare visitors outside the nesting season.

White-tailed Kite (*Elanus leucurus*)

The white-tailed kite is a federal Species of Concern and a CDFW Fully Protected Species. White-tailed kites occur in a variety of unforested habitats, including orchards, marshes, grassland, farmland, and sparse woodlots. They nest in deciduous or broadleaved trees near open foraging areas. The diet consists of small mammals, insects, reptiles, and amphibians. The species is occasionally observed foraging over the region's grasslands, but no nest sites are known within the project area.

Northern Harrier (*Circus cyaneus*)

The northern harrier is a CDFW Species of Special Concern (nesting only). The species nests on the ground among shrubs, grasses or forbs, principally within or adjacent to emergent wetlands or wet meadows, less often in grasslands and agricultural fields away from water. Tall grasses and forbs are also utilized for roosting cover. Harriers are known to nest in the vicinity of the Scotts Creek estuary. Suitable nesting habitat potentially is also available on the Swanton Pacific Ranch, but none likely nest in the vicinity of the project site.

Sharp-shinned Hawk (*Accipiter striatus*)

The sharp-shinned hawk is a CDFW Species of Special Concern (nesting only). This species occurs year-round in the Scotts Creek watershed and is known to nest there. Sharp-shinned hawks typically nests in relatively dense stands of second growth conifers, building a new nest each year. The species forages in a range of forested and lightly wooded habitats. Small birds comprise the bulk of the diet. Although no nest sites are currently known from the project area, potentially suitable nesting habitat is present nearby, and the species may forage on the site. Raptor nest surveys of the site conducted in 2011 confirmed that no raptor nests occur on the project site.

Cooper's Hawk (*Accipiter cooperii*)

The Cooper's hawk is a CDFW Species of Special Concern (nesting only). It potentially occurs in the Scotts Creek watershed year-round, but is more common as a migrant and wintering bird. Cooper's hawks tend to occur in more open forests than do sharp-shinned hawks, and nesting is most often associated with broadleaf woodlands or mixed conifer/broadleaf forests. Dense surrounding cover is preferred in the vicinity of the nest site. Nests typically are built in broadleaf trees. Cooper's hawks show a greater tendency to reuse previous nests than do sharp-shinned hawks. The diet is composed chiefly of small birds, but small mammals, reptiles, and amphibians are also taken. Potentially suitable Cooper's hawk nesting habitat and foraging habitat may be present within the project area, but no raptor nests were found to occur on the project site.

Ferruginous Hawk (*Buteo regalis*)

The ferruginous hawk is a CDFW Species of Special Concern (wintering). The species occurs in grasslands and arid shrub habitats, where it forages on small mammals. It does not breed in Santa Cruz County and is a rare winter visitor. It is not likely to occur on the project site.

Golden Eagle (*Aquila chrysaetos*)

The golden eagle is a CDFW Species of Special Concern and a CDF Sensitive Species. Golden eagles require wide-open country for foraging, and prey predominantly on jackrabbits and ground squirrels. Nests typically are built on cliffs throughout the range of this species, although in the oak/grass savannas of the inner California coast ranges most nests are built in trees, principally oaks, cottonwoods, and sycamores. This species is not known to nest within the immediate project area, although individuals occasionally are seen in the vicinity of the project site outside the breeding season. No suitable nesting habitat occurs on or immediately adjacent to the project site. Suitable grassland foraging habitat is present on and adjacent to the project site, however, an individual golden eagle was detected by Dan Grout foraging on the surrounding grasslands north of the project site above the Staub House in March 2011.

Merlin (*Falco columbarius*)

The merlin is a CDFW Species of Special Concern (wintering). It does not breed in California. Merlins hunt small birds in open habitats such as grasslands and seashores. The species occur occasionally foraging near the project site during the winter months.

American Peregrine Falcon (*Falco peregrinus anatum*)

The American peregrine falcon is listed as Endangered under CESA and is a CDF Sensitive Species. Peregrine falcons occur in a variety of habitats, but require open areas for foraging. Food consists almost exclusively of birds that are caught on the wing. While tree nesting has been recorded for this species, nesting usually occurs on ledges and cavities in sheer rock formations. Peregrine falcons are not known to nest near the project area, although they could forage on or near the site from known nest sites in Waddell Creek.

Burrowing Owl (*Athene cunicularia*)

The burrowing owl is a CDFW Species of Special Concern (nesting and wintering in Santa Cruz County). It occurs in grassland and desert habitats, where it uses ground squirrel burrows for nesting and roosting. The species has been nearly extirpated as a breeder in Santa Cruz County, and is a rare, localized winter resident. Burrowing owls formerly occurred in the area, but have not been observed on the Ranch for several decades.

Long-eared Owl (*Asio otus*)

The long-eared owl is a CDFW Species of Special Concern (nesting only). In California long-eared owls typically inhabit dense tree or shrub thickets within or adjacent to open habitat areas, which are favored for hunting. The species occurs less commonly in conifer forests or mixed conifer/broadleaf forests. Rodents comprise the bulk of the diet. Long-eared owls use abandoned nests of corvids, hawks, and squirrels for nesting. Nests tend to have dense surrounding cover and are located either in a tree or in a thicket of tall shrubs, often found near water. This is a very secretive and highly nocturnal species. It is non-migratory at this latitude. Nesting has not been documented within or near the project area, but suitable habitat may be present near by. No owl nests were detected on the property.

Short-eared Owl (*Asio flammeus*)

The short-eared owl is a CDFW Species of Special Concern. It does not nest in Santa Cruz County and is a rare visitor at other seasons. Habitats utilized for foraging include emergent wetlands, wet meadows, and less frequently grasslands.

Red-shouldered Hawk (*Buteo lineatus*)

The red-shouldered hawk most frequently occurs in association with streams and riparian woodlands, but may nest in any forest type except very dense second-growth. Stick nests are constructed in either broadleaf or coniferous trees, generally quite high up and against the bole. Unlike most other buteos, red-shouldered hawks forage both in wooded and open areas. Red-shouldered hawks are known to nest within the project area, particularly along watercourses. No raptor nests were detected during the raptor nest surveys.

Red-tailed Hawk (*Buteo jamaicensis*)

This very common and widespread hawk occurs throughout North America. It requires open areas for foraging, where it preys chiefly on small mammals. Red-tailed hawks build large stick nests either on cliffs or in trees. Nests rarely are built in the forest interior because this species is not adept at flying through forest cover and also tends to select nesting sites that allow a commanding view of the landscape. Thus, suitable nest trees usually are prominent specimens that are situated in the open, on ridgetops, or at the forest edge. Red-tailed hawks are known to nest in the vicinity of the project area, but no nests were detected during the raptor surveys of the site.

American Kestrel (*Falco sparverius*)

The American kestrel is a common, widespread species that inhabits a variety of open habitats, often with scattered trees. It is not generally a forest-dwelling bird. Kestrels nest predominantly in cavities in snags. Holes in cliff faces and clay banks are also used as nest sites. The diet consists of insects and small vertebrates. Kestrels are known to nest in the vicinity of the project area, but no nests were detected during the raptor surveys.

Barn Owl (*Tyto alba*)

Barn owls occur in association with a variety of open and semi-open habitat types. They generally avoid forested areas. The species most frequently nests in human structures (barns, silos, abandoned houses, etc), but also uses cavities in cliffs, clay banks, and large snags. No owl nests were detected on the project site, but they likely nest in the surrounding area.

Great Horned Owl (*Bubo virginianus*)

This is a common widespread species, found in virtually all habitat types in North America, including conifer forests. Great horned owls nest in trees and on cliffs. In trees it uses abandoned

stick nests of other raptors, corvids, squirrels and woodrats. Great horned owls are known to nest within the project area, although no nest sites are known to occur on the project site.

Western Screech Owl (*Otus kennicottii*), Northern Pygmy Owl (*Glaucidium gnoma*), and Northern Saw Whet Owl (*Aegolius acadicus*):

These three species of small owls inhabit forested areas and nest in woodpecker holes and natural cavities in snags. Nests typically are difficult to find. Any of these three species may nest in the general area, but no trees on the project site are known to harbor cavities suitable for these species. In fact, very few trees remain on the project site at all, but individuals of these species may forage in the vicinity of project site at times.

4.2 MAMMALS

San-Francisco Dusky-footed Woodrat (*Neotoma fuscipes annectens*)

The San Francisco dusky-footed woodrat is a CDFW Species of Special Concern. Dusky-footed woodrats occur within and adjacent to the project area and are common and widespread throughout forested and chaparral habitats of the Santa Cruz Mountains. Woodrat houses (lodges or nests) made of sticks are usually built at the base of a shrub or tree. Individual houses may be occupied by successive generations for decades. The species feeds principally on woody plants, acorns, and grasses. No woodrat nests were present on the site during the wildlife surveys.

Ringtail (*Bassariscus astutus*)

The ringtail is a CDFW Fully Protected Species. Ringtails are highly nocturnal and occur in forest and shrub habitats. Refuge and nesting sites include snags, hollow trees and logs, caves, burrows, and abandoned woodrat nests. The species is primarily carnivorous. Ringtail distribution and abundance in the Santa Cruz Mountains is poorly known, and they are highly difficult to detect when present. Suitable habitat may be present within the surrounding area, but none are known to occur on or near the project site.

Monterey Ornate Shrew (*Sorex ornatus salaries*)

The Monterey Ornate Shrew is considered a Species of Special Concern by the state of California. Little is known about the habits of the Monterey ornate shrew, but they are probably similar to those of other small, long-tailed shrews. Ornate shrews typically are found: in brackish water marshes; along streams; in brushy areas of valleys and foothills; and in forests. They especially favor low, dense vegetation that forms a cover for worms and insects. No Monterey Ornate Shrews are known to occupy the vicinity of the project area, and suitable habitat is present within the disturbed grasslands on the project site.

American Badger (*Taxidea taxus*)

Historically, the badger (*Taxidea taxus*) was known to occur throughout the state of California except for the humid forested region in the extreme northwestern corner (Larsen, 1987; Grinnell 1937). Badgers recently were included on the Department of Fish and Game's list of Mammalian Species of Special Concern, since it appears that there has been a substantial reduction in range and abundance in several areas where it was formerly common (Williams 1986, Diamond *pers comm*). Badgers cannot readily survive in urbanized areas, but they seem to continue to exist in open areas.

Badgers tend to occur at very low densities even when present, but they are more prevalent in grasslands with few roads and higher densities of their primary prey: California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*), as these are the two

largest and most common fossorial rodents in the San Francisco Bay region (Lay 2008).

In California, badgers occupy a diversity of habitats, the principle requirements including sufficient food, friable soils, and relatively open, uncultivated ground. Grasslands, savannas, and mountain meadows near timberline are preferred. Threats to badgers include agricultural and urban developments, as well as rodent poisoning. Badgers prey primarily on burrowing rodents such as gophers and make their homes in larger burrows as well.

American badger populations may now be at risk due to a combination of habitat loss, habitat fragmentation, rodent poisoning, and predator control (Williams 1986). Many mammalian carnivores like badgers are threatened in fragmented landscapes because of their relatively large home ranges and low population densities (Noss et al. 1996; Woodroffe and Ginsberg 1998). Conversion of natural habitat to human uses, such as urban development or agriculture, reduces the amount of intact and available natural habitat and fragments remaining landscapes (Saunders et al. 1991). The edges of fragments adjacent to modified landscapes can be significantly impacted, often leading carnivores to avoid occupying these areas (Riley 2006). The low connectivity that often exists between suitable habitat fragments may endanger individuals that move between fragments or isolate low-density patchy populations that rely on dispersal events to maintain a viable size and genetic diversity.

The large acreages of grasslands scattered throughout the Santa Cruz and Monterey Bay region provided badgers with substantial areas of suitable habitat (Lay 2008). Habitat loss and increased habitat fragmentation in the San Francisco Bay bioregion however has left many of these grassland habitats increasingly isolated and adjacent to growing suburban sprawl.

A combination of ecological and anthropogenic factors may restrict the distribution and population density of badgers more than other similar-sized carnivores in California. Badgers can use space extensively and may exhibit habitat associations at a correspondingly large spatial scale. Badgers are strongly associated with treeless habitats and may selectively use such habitats based on factors such as grazing history and plant species composition. Badgers may also occupy forests, especially where treeless areas are limited or patchy, but open habitats are clearly preferred (Lindzey 1982). The friability of soil is another important factor, since badgers must constantly dig to capture fossorial rodents and excavate underground dens for resting. Ideal soils for a badger have moderate permeability (well drained but remaining moist) and low shear strength and cohesion (low clay content).

Badgers appear to be more sensitive than other carnivores to both habitat fragmentation and edge effects, perhaps due to their patchy distribution, and sensitivity to human land use. The inability of badgers to successfully occupy edge habitat may have contributed to their local extirpations in the regional habitat fragments by reducing usable fragment size and increasing isolation. Badgers are sensitive to the presence of humans and may generally avoid edge habitats.

Using badger burrow surveys at or near sites where badgers were historically present, Lay (2008) compared their current and past distribution to determine where any changes had occurred. From November 2002 through March 2003, Lay surveyed 30 sites, each of which was at or near a historical site, and contained a minimum of 2 km of grassland habitat and 10 km of other natural habitats such as chaparral, oak woodland, and mixed evergreen communities. Badger burrows were documented on Swanton Pacific Ranch property during these surveys at relatively high densities (Lay 2008).

Badger sightings in the area have been very sparse for many years, but sightings in the larger rangelands of Swanton Pacific Ranch give reason to suspect that badgers are still present and remain in the area. The project area may be infrequently visited by badgers, but it is not likely a high use area because of poor soil quality, low prey availability, and its isolation from large contiguous acreages of grasslands elsewhere in the region. No distinctive badger burrows or dens were detected during wildlife surveys of the site. The small isolated fragment of disturbed grassland on the project site is not likely often used by badgers, but they do likely forage in the larger grasslands and rangelands elsewhere on the Ranch.

Bat Species

Six bat species that are either CDFW or USFWS Species of Concern potentially occur in association with coniferous forest habitats of the area. These include the Pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), Long-eared myotis (*Myotis evotis*), Fringed myotis (*M. thysanodes*), Long-legged myotis (*M. volans*), and Yuma myotis (*M. yumaensis*). Of principal concern with regard to bat conservation is the potential loss of roost trees and nursery sites. These include basal hollows of fire-scarred trees and cavities or other hollows in snags.

Bat species distribution and abundance within the Scotts Creek watershed is not well known, but the following species are known to forage over or near the project site based on bioacoustic recordings and bat surveys conducted near the Staub Pond in June 2011: Big Brown Bat (*Eptesicus fuscus*), Western Red Bat (*Lasiurus blossevillii*), Hoary Bat (*Lasiurus cinereus*), Little Brown Bat (*Myotis lucifugu*), Fringed Bat (*Myotis thysanodes*), Freetailed Bat (*Tadarida brasiliensis*), Yuma Myotis (*Myotis yumanensis*), Long-eared Myotis (*Myotis evotis*). Townsend's Big-eared Bats (*Corynorhinus townsendii*) and California Myotis (*Myotis californicus*) were also detected from the meadow between the Ranch and Scotts Creek, but they were not detected on the proposed Smith Cabin site.

The lack of mature trees on the project site makes it unlikely the site is being used as breeding or maternity roosts by any of the bat species detected foraging nearby. None of the extant mature trees on the site exhibit the characteristics typical of bat roost sites, but the results of the recent surveys of bats recorded near the project site reveals those species that use the general area for foraging during the summer months. Western Red Bats have no maternity roosts, as they carry young on their backs, but they are foliage roosters, and so they may roost on the few large trees on the site, although none were detected directly on the site during the survey period.

4.3 AMPHIBIANS AND REPTILES

California Tiger Salamander (*Ambystoma californiense*)

The California tiger salamander is a federally threatened species and a CDFW Species of Special Concern. This salamander breeds primarily in vernal (seasonal) pools and small, fishless ponds in grassland habitats. Adults are fossorial for most of the year, inhabiting burrows of ground squirrels and pocket gophers and emerge in winter of wetter years to breed (mostly in a single breeding attempt). The aquatic larvae complete metamorphosis in 10 weeks and juvenile salamanders migrate to subterranean refugia where they remain until they reach sexual maturity. The species does not occur in the vicinity of the project, although potentially suitable habitat is present in the County of Santa Cruz. Coastal populations have been documented from the vicinity of Watsonville in Santa Cruz County southward to Santa Barbara County. Most existing populations are likely isolated from one another. These salamanders migrate 0.5 miles or more; however, dispersal is limited by physical barriers such as roads, railways, pipelines, and canals.

The habitat is fragmented from any known population and it is unlikely that the species is present on the project site.

Santa Cruz Black Salamander (*Aneides flavipunctatus*)

The black salamander is thought to be scarce in the Santa Cruz Mountains and has no official listing status. It is a lungless salamander that lays its eggs in moist habitats on land in summer. They are most often found under rocks and logs in relatively moist habitats (riparian woodlands, mixed evergreen and conifer forests). The xeric grassy habitat and the lack of woody debris make the species unlikely to occur on the site.

Western Spadefoot (*Spea hammondi*)

The western spadefoot is a CDFW Species of Special Concern. Spadefoot toads breed in vernal pools and quiet sections of streams. In the Coast Ranges, their preferred habitat is grassland or areas of very open vegetation. Larva of this species were reported by Norm Scott to have been recently found at a pond on Swanton Pacific Ranch in a pond at Siberia Ridge west of Scott's Creek, but no potentially suitable habitat for this species is present within the project site.

Foothill Yellow-legged Frog (*Rana boylei*)

The foothill yellow-legged frog is a CDFW Species of Special Concern. This species inhabits rocky streams and is highly aquatic, seldom venturing more than a few meters from the stream channel. Low-gradient stream reaches are preferred for breeding. This species has not been recorded in the Scotts Creek watershed. On the western slope of the Santa Cruz Mountains, foothill yellow-legged frogs have been reported only from Soquel Creek, approximately 15 miles east of the area.

Western Pond Turtle (*Clemys marmorata*)

The western pond turtle is a CDFW Species of Special Concern. Western pond turtles occur in a variety of permanent and intermittent aquatic habitats, but most frequently inhabit lowland streams, rivers, and sloughs. In streams they avoid fast-moving and shallow water, and tend to be concentrated in pools, backwater areas, and estuaries. Occupied habitats often contain some aquatic vegetation as well as good basking sites. Pond turtles are usually absent from heavily shaded streams. Nests may be excavated more than 0.25 mile from water, and are generally located in exposed (unshaded) upland locations. The nesting season extends from April through August. The nearest CNDDB records are from Waddell Creek, northwest of the project area. Suitable pond turtle habitat is not present on the site, and the species has not been recorded anywhere in the Scotts Creek watershed.

Coast Horned Lizard (*Phrynosoma coronatum frontale*)

The coast horned lizard is a CDFW Species of Special Concern. The species generally occurs in habitats with exposed sand substrates or unconsolidated soils that support scrub vegetation. It forages on ants. Coast horned lizards are not known to occur in the Scotts Creek watershed, and suitable habitat is probably lacking within the project area.

California Legless lizard (*Anniella pulchra*)

The California legless lizard is a CDFW Species of Special Concern. The silvery and black forms of the California legless lizard were formerly considered separate subspecies. Both forms occur primarily in coastal sand dunes, although the silvery legless lizard is also found at inland sites in association with sandy soils through which it can burrow. Legless lizards are fossorial and feed on small invertebrates. No suitable habitat is present within the project area.

San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*)

The San Francisco garter snake is listed as an endangered species under both State and federal law. It occurs in the vicinity of ponds and marshes where it preys chiefly upon frogs, salamanders, and small fish. San Francisco garter snakes often bask in open areas near shelter where they can take refuge if disturbed. Dense vegetation (aquatic, riparian, or scrub) and rodent burrows provide escape cover for this species. Regular use of upland habitats adjacent to occupied wetlands has been documented but is not yet well described. Coastal populations in southern San Mateo County seem to prefer upland habitats that are transitional between pure grassland and pure scrub. There are no historical records of San Francisco garter snake occurrence in the Scotts Creek watershed or in any coastal watershed south of Waddell Creek, in northern Santa Cruz County.

Rubber Boa (*Charina bottae*)

The rubber boa snake is listed as threatened under the California ESA. Food consists primarily of small mammals and lizards. Found in montane forests habitats including red fir, ponderosa pine, hardwood, hardwood-conifer, Douglas-fir, redwood, mixed conifer and riparian. Also found in montane chaparral and wet meadow habitat. Considered an extremely secretive snake seeking cover in rotting logs, pieces of bark, boards, rocks, and other surface debris. The boa burrows through loose soil or decaying vegetation. Usually found in the vicinity of streams or wet meadows or within or under surface objects with good moisture-relating properties such as rotting logs. The snake's activity is crepuscular and nocturnal. While this species may occur in the surrounding area, the past disturbances to the grasslands on the site and the lack of woody debris makes for little available habitat on the project site.

California Red-Legged Frog (*Rana aurora draytonii*)

The California red-legged frog is a federally threatened species and a CDFW Species of Special Concern. Breeding habitats include natural and artificial ponds and reservoirs, deepwater marshes, and freshwater coastal lagoons. Virtually all ponds and reservoirs in the Scotts Creek area can be occupied at times by red-legged frogs, and many can support breeding.

Focused red-legged frog site assessment conducted in 2011 revealed that no California red-legged frog breeding habitat occurs on the project site. Red-legged frogs often need moist leaf litter, shade and moist soil for upland refugia habitat. They usually need a matrix of sunny warm open water for breeding, and cool shady vegetation or riparian habitat for metamorphosis and adult stages. These habitat types do not occur on or immediately adjacent to the project site.

However, because an important and well documented red-legged frog breeding pond does occur ~1,000 feet east of the project site (Staub Pond), an extended set of surveys were conducted on the site to assist in confirming that the proposed project would not be likely to cause impacts to red-legged frogs known to move through the greater area. The negative results of the day and night surveys on the project site revealed no visual or auditory detections of red-legged frogs on the project site, although they were still present in Staub Pond.

The presence of the large population of red-legged frogs at near-by Staub Pond warrants a more extended discussion of red-legged frog biology and their status on the site, as provided in the following pages.

Background on California Red-legged Frogs in the Region

Natural History and Legal Status

The California red-legged frog (*Rana draytonii*) is a federally threatened species (USFWS 1996) and a state species of special concern (Jennings & Hayes 1994). California red-legged frogs formerly occurred inland west of the Cascade/Sierra Nevada crest from Shasta County southward to Baja California, and along the coast from Marin County south (Jennings and Hayes 1994).

The species has been extirpated from 70% of its former range and is now most abundant in coastal watersheds from San Mateo to Santa Barbara Counties (USFWS 1996). Causes of local population declines and of widespread extirpation include primarily wetland habitat conversion, landscape fragmentation, and the introduction of exotic predators, most notably bullfrogs (*Rana catesbeiana*) and various predatory fishes (Jennings et al. 1992; USFWS 2002).

A Recovery Plan for the California Red-legged Frog was released September 12, 2002. Critical Habitat designation was established by the USFWS for the California red-legged frog in 2006 and revised in 2008 (USFWS 2006, 2008), and again on March 17, 2010 (Federal Register 75: 12815). Critical habitat includes (1) all aquatic habitats having a minimum pool depth of 20 inches and which can maintain water during the entire tadpole rearing season; (2) upland areas within 300 feet of suitable aquatic habitat, as defined above; and (3) upland dispersal habitat that is barrier-free and at least 300 feet wide and that connects two or more suitable breeding locations.

Breeding Biology

Red-legged frog spawning occurs from January through March. Eggs hatch within two weeks after oviposition, and larvae metamorphose four to seven months after hatching. Adults feed on aquatic and terrestrial invertebrates and small vertebrates. Tadpoles graze on algae.

Although this species is highly dependent on aquatic habitats, it is able to reside in both riparian and upland habitats when precipitation and ambient moisture conditions allow. During the dry summer months, red-legged frogs rarely are found more than 10 feet from water. With the onset of winter rains (October/November), most red-legged frogs move into terrestrial habitats adjacent to their aquatic home site, where they reside nearly continuously at distances of up to 300 feet from water until breeding activities commence (Bulger et al 2003). Some adults reside at breeding sites the year around, while others disperse to and from breeding sites, residing at streams or other permanent aquatic habitats during the summer months. California red-legged frogs have been documented migrating overland between aquatic sites that are separated by distances as great as two miles. These overland movements occur at night, usually during or following rains. Streams in the Santa Cruz Mountains are not used for breeding, presumably because spawning and early larval development occurs coincident with the timing of peak flows.

California red-legged frogs are mobile and, during different life history stages or different seasons of the year, may occupy a variety of aquatic and upland habitats. Deep, still water that persists late into summer is required for breeding by red-legged frogs (Hayes and Jennings 1988). Breeding habitats include natural and artificial ponds and reservoirs, deepwater marshes, and freshwater coastal lagoons. Streams in the Santa Cruz Mountains generally are not used for breeding, presumably because spawning and early larval development occur coincident with the timing of peak flows in these streams.

Scotts Creek and some of its tributaries are also occupied by red-legged frogs. In these streams, red-legged frogs are almost exclusively associated with deep (>2 feet) pools. Red-legged frog presence has been documented in Scotts Creek from the estuary upstream continuously for at least 5 miles. A large proportion of the frogs inhabiting the streams are juveniles that disperse to the creek after metamorphosing at breeding ponds. Whereas most juveniles are likely to be year-round residents of the creek and adjacent riparian habitats, adult red-legged frogs use the streams principally as summer habitat, and then move upslope to breeding ponds for the winter. No breeding has been documented on any of the local streams.

California red-legged frogs occupy fairly distinct habitat, combining both aquatic and riparian components. Adults need dense, shrubby or emergent riparian vegetation closely associated with deep still (or very slow moving) water that is greater than 2 feet deep. The breeding season begins in December when males begin calling to attract females. Spawning occurs from January through March, depending on rainfall timing and water temperature (Hayes and Jennings 1986). Floating egg masses containing up to 6000 eggs each are attached to vegetation near the water's surface (Jennings et al. 1992). Eggs hatch within two weeks after fertilization and oviposition (Jennings 1988), and larvae metamorphose four to seven months after hatching (Jennings and Hayes 1990). Males are sexually mature at two years age, females at three to four years (Jennings and Hayes 1990). Adults feed on aquatic and terrestrial invertebrates and small vertebrates. Tadpoles graze on algae.

Habitat Use and Dispersal

The California red-legged frog is principally an aquatic species that is able to utilize terrestrial habitats when precipitation and ambient moisture conditions allow. Except when moving between aquatic habitats, most individuals are found within 50-60 meters of water at all times of the year. During the summer months, when rainfall is absent or infrequent, red-legged frogs rarely occur more than 5 meters from water, although they have rarely been found up to 100-300 feet away from water on adjacent dense riparian vegetation.

With the onset of winter rains (~November), most red-legged frogs move into terrestrial habitats adjacent to their aquatic home site, where they reside nearly continuously for 1 to 3 months until breeding activities commence in ~December for males, and ~January for females. For the remainder of the winter wet-season, red-legged frogs are again closely tied to water, rarely venturing more than 5-10 meters from the water's edge even during intervals of copious rainfall.

A high percentage of the adult population (>75%) resides at breeding sites the year around, while a relatively small percentage (<25%) disperses to and from breeding sites, residing at streams or other permanent wetland sites during the summer months. Occupation of upland habitats at distances of >100 meters from an aquatic site is almost exclusively by frogs that are dispersing from one aquatic site to another. Overland dispersal to and from breeding sites is known to occur at any time from late October through May. California red-legged frogs aestivate in small mammal burrows and moist leaf litter during the summer or dry weather.

Individual California red-legged frogs have been documented moving overland for distances as far as 3 kilometers over the course of 5-8 weeks during this season. Movements between aquatic sites tend to follow more or less straight lines. Thus, individual frogs potentially occur in any upland habitat type during the winter months, but in extremely low densities. The habits of juveniles are not as well known.

Frog Occurrence On-site

While migrating red-legged frogs could potentially occur in almost any upland habitat in the region while moving to or from breeding sites during the breeding season, it is not expected that California red-legged frogs would regularly occur on the project site, and the project is not likely to affect the persistence of the local Staub Pond population.

Frog Occurrence Off-site

No breeding sites for red-legged frogs occur within 300 feet of the proposed project site, but the well documented Staub Pond population of breeding California red-legged frogs does occur ~1000 feet east of the project site (Figure 7). The Staub pond population (with estimates of 70-100 frogs) and movements as tracked by pit-tags and radio-transmitters has been thoroughly researched and described in prior studies (Bulger 1999; Bulger *et al.* 1999, 2003).

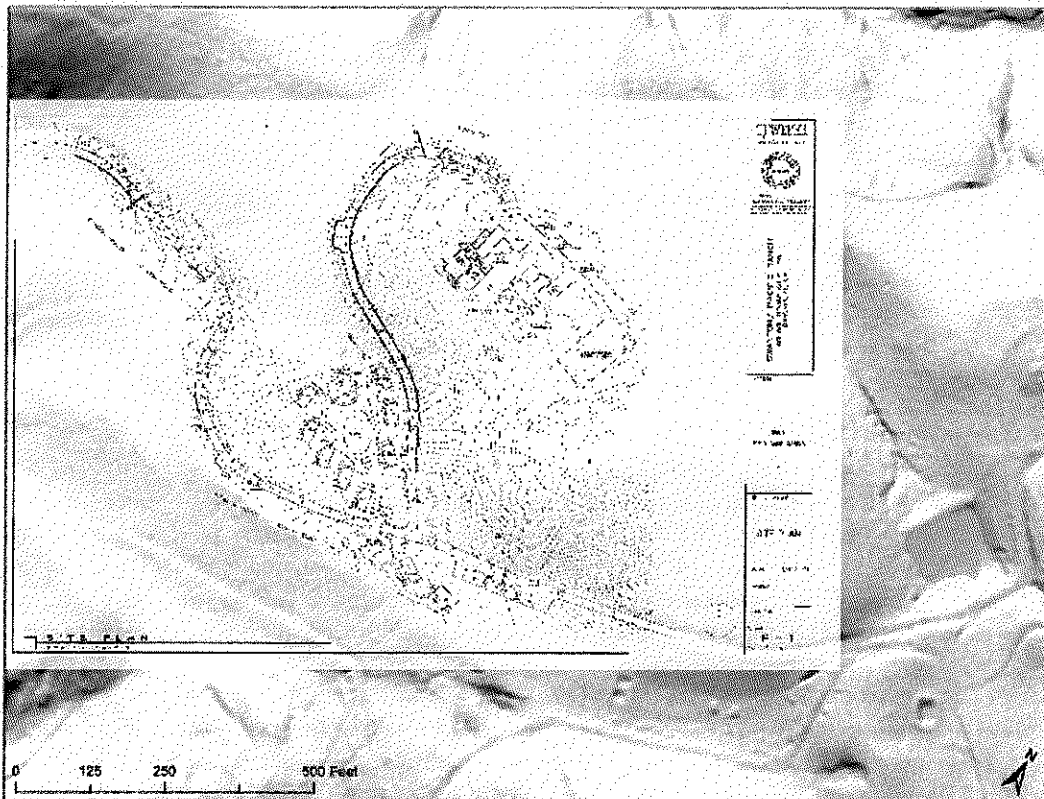


Figure 7. Proposed Project Site in Relation to Lower Staub Pond (~1,000ft to the east)

After each of the 2011 frog surveys on the proposed project site, a brief visit was also made to Lower Staub pond to document that California red-legged frogs were in fact still visually or auditorially detectable in suitable habitat during the fall survey period. The positive survey results at the Staub pond site was done to calibrate the on-site surveys and to lend support to the assumption that the lack of frog detections on the project site during the survey period was reflective of their absence, rather than being present but undetected. No bullfrogs were found at

the Staub pond and introduced fish also appear to still be absent. No revised estimate of the Staub pond population was conducted during these calibration visits.

The Staub pond east of the proposed project site was intensively studied ten years ago as part of a investigation of California red-legged frog movements and habitat use in northern Santa Cruz County (Bulger et al. 1999). As a consequence, an unusual amount of information exists from which to evaluate the likelihood of any negative impacts resulting from the proposed project. For this reason, the pertinent results of Bulger's 1997-8 red-legged frog research results at Staub Pond are provided below:

"The 3-kilometer area surrounding the (Staub) project site contains many attributes that are favorable to the persistence of a robust meta-population of California red-legged frogs:

***Multiple and well-dispersed breeding sites;
Relatively unrestricted dispersal habitat and opportunities;
Abundant summer habitat in the form of permanent ponds, streams, and other wetlands; and an apparent absence of exotic predators.***

Virtually all stock ponds and reservoirs within 3 kilometers of the Staub pond area are occupied by red-legged frogs and most support breeding. Scott Creek and Little Creek are also known to be occupied by red-legged frogs, although frogs occupying Scott Creek are principally juveniles that disperse to the creek from breeding ponds on the terrace to the west. No breeding has been documented within the creeks and it is thought to be unlikely. No breeding habitat is known within a 3-kilometer radius to the north and east of Lower Staub Pond.

From December 1996 through May 1998, over 115 frogs were fitted with encoded PIT-tags (transponders) for individual identification and fitting a smaller sample of frogs (n = 27) with radio transmitters to gather behavioral data.

Aquatic habitats that occupied by red-legged frogs include the two stock ponds (Lower and Upper Staub ponds), the shallow ravine that connects the two ponds, and the outflow from Lower Staub pond. Descriptions follow:

- Lower Staub pond holds water the year around, and is approximately 0.1 hectares in surface area and 3-4 meters deep when filled to capacity. California red-legged frogs breed at this site and occupy it during all months of the year. Late summer water depth was >2 meters in both years of study.*
- Upper Staub pond is seasonal, about 0.08 hectares in surface area. This pond formerly held water for most of the year, until sometime (~1990-95 when the bottom apparently cracked. The pond dried during early June in 1997, and late April in 1998. Upper Staub pond attracts frogs (± 20) during the winter for as long as it holds water, but successful reproduction is precluded by the pond's failure to retain water for a sufficient duration to support larval development.*
- The drainage between the two ponds holds at least some water year around that originates from overflow and leaks in two water tanks that are situated next to Upper Staub pond. The tanks are gravity fed from Little Creek. Small numbers of frogs have been recorded in this ravine during all months except August-October.*
- The outflow from Lower Staub pond runs during the winter and remains moist well into the summer, probably from subsurface seepage from the pond. Frogs*

may use the upper 40-50 meters of this swale, which supports willow scrub and dense tangles of blackberries, at any time of year.

Relationship of Lower Staub Pond to Other Aquatic Sites (from Bulger 1998)

Data on red-legged frog movements:

Because of its proximity to the proposed campus site and future activities there, the primary focus of the 1998 assessment was on Lower Staub pond.

Relative abundance conclusively indicates that Lower Staub pond is the primary source and site of residence for what appears to be a relatively closed population of frogs inhabiting the two Staub ponds and Little Creek. Successful breeding occurs only at Lower Staub, and while summer habitat in the form of permanent water is available at both Lower Staub and Little Creek, Lower Staub appears to support the bulk of the population at this time of year.

During the winter months, red-legged frogs move routinely between the two Staub ponds and in much smaller numbers between the ponds and Little Creek.

Staub Pond Summary Data follow:

Two additional occupied sites are within one kilometer of Lower Staub pond:

(1) a stock pond on Winter Creek that supported 11 frogs in 1997 and at least 7 frogs in 1998, and (2) Scott Creek, which supports the species at favorable pools in several locations. There was no indication from either PIT-tag or radio telemetry of any connection between either of those two sites and the Staub ponds. Moreover, dispersal of radio-tagged frogs from Winter Creek was southward to an agricultural reservoir, and from Scott Creek was westward to stock ponds.

Local Population Size

Red-legged frogs were captured and marked at the Staub ponds and Little Creek during 1997 (December 1996-October 1997) and 1998 (November 1997-May 1998). In all, 57 individuals were captured in 1997, and 58 individuals were captured in 1998. Roughly 80% of these were positively known to reside for at least part of the year at Lower Staub pond, further establishing the importance of this pond to the local population. Iterative recapture rates in either year indicated that at least half of the population was marked, so a reasonable estimate of the total population size in the Staub ponds/Little Creek system during each year of study was likely in the range 70-100 individuals, excluding young of the year. A point estimate of the population size at Lower Staub pond alone ...using a simple Petersen estimate (with Bailey correction, Caughley 1977) gives an estimated population size and standard error of 53 ± 15 frogs (38-68).

Forty-six individuals were captured at Lower Staub pond during each of the two years. The total number of adult frogs present at all breeding sites within 3km of the site is liable to be on the order of 1000 or more individuals, however.

Terrestrial Habitat Use at Lower Staub Pond

An evaluation of terrestrial habitat use in the vicinity of Lower Staub pond was done, incorporating data from radio-tagged frogs and from opportunistic captures of frogs not fitted with radios. No red-legged frogs were ever observed on any portion of the Staub project site that was scheduled for development.

Of 17 individuals that carried radios for more than a month, 9 frogs made a total of 15 excursions onto land at distances of >10 m from the pond. Fourteen of those culminated at distances of <60m from the pond (median = 35 m), one at 130 m.

Capture locations represented 25 frogs found in 13 nighttime capture sessions from November through mid-January, the season when most frogs are residing in terrestrial habitats. Capture sessions averaged 1.8 hours each (1.0-2.5 hours). On each session, the area searched for frogs included:

- grassland and upper pasture on the WSW side of Staub pond;
- grass/scrub bench and lower grassy slopes to the S and SE of the pond;
- shrubby vegetation adjacent to road on the S, E & NE side of the pond;
- the grassland to the North of the pond.

Almost without exception, the distribution of frog captures and radio-tracking locations (shown in Figure 3 of Bulger et al. 1999) corresponds with the distribution of dense scrub vegetation in the vicinity of the pond. Such vegetation is generally lacking from the area to the WSW of the pond.”

(For a full description of the Staub Pond area and red-legged frog movement maps, see Bulger et al. 1999)

4.4 INSECTS

Monarch Butterfly (*Danaus plexippus*)

Monarch butterflies migrate in groups to winter ranges south of the freeze line. They require dense tree cover for overwintering and are intolerant to frost. Breeding habitat is greatly dependent upon the presence of milkweeds (*Asclepiad*) flora. Winter roost sites are located along the coast in wind-protected groves of eucalyptus, Monterey pine, and cypress with nectar and water sources nearby. Autumnal sites are located 1.9 and 2.8 miles south of the project area near Davenport. The cluster trees in these locations, as identified on CNDDDB maps, are Monterey cypress (*Cupressus macrocarpa*) and blue gum eucalyptus (*Eucalyptus globulus*). There are no confirmed roosts near the project site, nor is the mostly treeless project site suitable for a roost.

4.5 FISH

Coho Salmon (*Oncorhynchus kisutch*)

Central California Coast ESU Coho salmon are listed as federally and state endangered. In the greater Scotts Creek watershed, approximately 14.1 miles of stream are accessible to salmonids. The limits to anadromy are natural barriers. The size of the Coho spawning run in the Scotts Creek system varies from year to year, but is never more than a few hundred fish. Statistically reliable population estimates are not available for this population (Scotts Creek Watershed Assessment, 2003). Coho salmon numbers in the Scotts Creek system are augmented by releases from the Kingfisher Flat native anadromous fish genetic conservation and recovery hatching and rearing facility located on Big Creek. This facility is operated by the Monterey Bay Salmon and Trout Project (www.mbstp.org).

A small remnant run of Coho salmon occupy the Scotts Creek main stem, and the lower reaches of Mill Creek, Big Creek, Little Creek, and Queseria Creek, which are tributary to Scotts Creek. Coho salmon use the Scotts Creek tributaries up to natural migration barriers. Salmonids are particularly likely to use the tributaries as refugia during winter storm events. The Scotts Creek area contains designated critical habitat for Central California Coast ESU Coho salmon. Critical habitat includes all naturally accessible stream channels to the ordinary high water mark.

Coho spawning usually occurs during December and January in the Scotts Creek watershed, and the embryos hatch after 2-3 months of incubation in the stream gravels. Hatchlings remain in the gravel until their yolk sacs have absorbed, typically within 10 weeks of hatching. The emerging fry form schools and inhabit shallow water at the stream margins or elsewhere. As they mature, the parr establish territories in pools, requiring deeper water in low gradient stream sections (<3%) as they grow larger. Optimal rearing habitat is considered to consist of heavily shaded, deep (>1 m) pools with some overhead cover. At between 14-18 months of age, the parr undergo smoltification in preparation for outmigration and life at sea. Outmigration occurs during late spring and early summer.

The proposed project site has no wetland or drainage features, and it is over 2,000 feet from Scott's Creek, or any habitat used by Coho salmon.

Steelhead (*Oncorhynchus mykiss*)

Central California Coast ESU steelhead are listed as federally threatened and are a State Species of Special Concern. Steelhead spawning runs comprise up to a few hundred adult fish annually in Scotts Creek, and the population appears to be comparatively stable and at or near carrying capacity for this system (Scotts Creek Watershed Assessment, 2003).

Steelhead occupy the main stem of Little Creek to a natural rock fall that is considered a likely natural barrier to migration. Upstream of this fish barrier, a resident population of rainbow trout can be found. Areas of the Scott's Creek watershed contain both designated (65 FR 7764) and proposed (70 FR 52488) critical habitat for the Central California Coast steelhead ESU. Critical habitat within the Ranch area includes all naturally accessible stream channels to the ordinary high water mark.

In the Scotts Creek system, the bulk of the upstream steelhead migration and spawning occurs from January through March or April. Time to hatching is about 30 days. The fry generally emerge from the gravel 4 to 6 weeks after hatching and move to shallow water where there is suitable cover at the stream margins. As parr grow, feeding stations are established, most frequently in riffles or deeper runs, and occasionally in pools. Estuaries at the mouths of coastal streams are particularly important rearing areas for larger juveniles. Steelhead remain in their natal stream for 1 to 7 years prior to migrating out to sea.

The proposed project site has no wetland or drainage features, and thus has no steelhead habitat. The project site is over 2,000 feet from Scott's Creek, or any habitat used by steelhead. The vast majority of the project is not even in the Little Creek watershed.

5.0 POTENTIAL WILDLIFE IMPACTS

The project as proposed is not likely to have a direct substantial adverse effect on any listed wildlife species or any animal species considered sensitive by Santa Cruz County, the California Department of Fish and Wildlife, or the U.S. Fish and Wildlife Service. While construction activities and operation of the camp has a slight potential for incidental take of a few individuals of the federally listed California red-legged frog, these potential for take and any habitat modification can be avoided with the implementation of the avoidance measures proposed as part of the project and described in Section 6 (*Impact Avoidance Measures*).

Any temporary direct or indirect impacts to other wildlife resources that might occur during construction or operation of the Swanton Pacific Field Camp can likely be avoided by implementing the avoidance measures outlined suggested in Section 6. A discussion of the potential for wildlife resource impacts of the region is summarized below.

5.1 Impacts to Birds

Surveys of the site revealed no active passerine or raptor nests. Very few trees suitable for raptor nests remaining on the project site, and the felling of additional trees for the project development is not anticipated. The loss a few acres of foraging habitat for a few common passerines and raptors is not considered a significant impact.

Since the closest Marbled murrelet breeding area is over a mile from the site, no direct impacts are expected to this listed species. Indirect impacts to murrelets could only occur if the project resulted in attracting and enhancing the region's corvid (crow, raven and jay) population, which are known to prey on murrelet eggs and chicks. Unsecured food and trash resources from the camp staff and students could result in the supplemental feeding of this predatory guild of birds. No significant direct or indirect impacts to murrelets, raptors and other nesting birds are expected as result of the project if the bird impact avoidance measures in Section 6 are followed.

5.2 Impacts to Mammals and Wildlife Movements

The project site is not essential to any sensitive or listed mammalian species, and no significant impacts to mammals are expected to occur due to the project. A survey of the site revealed few mature trees and none suitable for bat roosting, and bat foraging activities in the region would not likely be significantly affected by the project.

While badgers are known to occur in the larger grasslands in the greater Swanton Pacific Ranch area, none have been documented foraging or denning on the disturbed, isolated and poor quality grassland habitat fragment on the project site. Indirect effects to badgers could occur if rodenticides were ever used to control small mammal populations on or near the Swanton Pacific Field Camp buildings. The proposed project should also not interfere with any wildlife movements of wider-ranging species, such as Mountain lions (*Felis concolor*), as the site has a very small footprint, and does not occur within an established wildlife corridor of this or any sensitive resident mammal species.

5.3 Impacts to Amphibians

California Red-legged Frogs

Previous studies of the federally threatened California red-legged frogs that breed at Staub Pond 1000 feet east of the site (Figure 7) revealed a population of at least 53 adults, with estimates of as many as 70-100 breeding frogs (Bulger *et al.* 1999). Recent surveys of the proposed project site revealed no red-legged frogs on the site, and no suitable habitat for red-legged frogs, and no wetland features. The revised cabin site and relocation of the proposed project to ~1,000 feet away from Staub Pond greatly reduces the likelihood of direct impacts to California red-legged frogs that breed there. All proposed structures are to be built in upland areas that are disturbed and predominantly open grassland, a vegetation type little used by foraging frogs. As a consequence, there is virtually no short-term or long-term loss of frog habitat associated with this project.

While the project site itself has no wetland resources and no frog breeding habitat, direct and indirect impacts to frogs could still potentially occur to transient frogs that may be on the roads

and staging areas during construction of the facility. The proximity of the project site and its access roads to the large breeding red-legged frog population is such that few transient red-legged frogs that might be moving to or from Staub Pond during breeding and dispersal seasons could be killed during construction by equipment and trucks unless avoidance measures are implemented.

California red-legged frogs tracked at the Staub pond were very rarely found in open grassland more than a few meters from dense cover unless dispersing between aquatic habitats. (Bulger *et al.* 1999). Their movements and habitat use of the area have been so intensively studied during the past 15 years that an unusual amount of background information exists from which to develop informed impact assessments and avoidance measures for this species.

The chances of the project causing indirect or anthropogenic isolation of the local population or to have impacts to the dispersal of the larger meta-population of California red-legged frogs in the Swanton area is highly unlikely, but it is possible if the anthropogenic effects of the Field Camp (food scavenging, lighting) result in an increase in frog predators like raccoons (*Procyon lotor*).

Despite the importance of Lower Staub pond as breeding habitat and as a year-round site of residence for California red-legged frogs, a considerable body of data indicates that the disturbed and grass-dominated areas currently proposed for development ~1000m west of the pond are not used by California red-legged frogs, nor is the site important to the maintenance of the local frog population. There is no evidence that frogs make terrestrial foraging bouts into these areas nor that they are used by frogs dispersing to or from outlying sites. The most important terrestrial habitat in the vicinity of Lower Staub pond includes the shrub-dominated areas within 50-100 meters of the pond on its south, east, and north sides, and the ravine and associated scrub habitat that lies between the two Staub ponds. Most of this area recently burned in the Lockheed fire, but none of these areas will not be affected by the proposed project, as they occur over 1000 feet from the proposed cabin site.

Potential post-construction impacts that could result from the ongoing operation of the project are all related to the increased presence of people in the vicinity of Lower Staub pond. These include:

- A) Intentional or inadvertent interference with frogs in and at the perimeter of the pond could constitute take in the form of harassment or disruption of breeding or foraging activities.
- B) Frogs (particularly newly transformed frogs) could be injured or crushed as a result of increased levels of foot traffic at the perimeter of the pond. Educational signs should be installed at the pond trailhead and along the road approaching the pond to alert staff/students to this resource.
- C) Predation on frogs from untrained pets (dogs and cats) brought to the site, or predation by natural predators that might be attracted to the cabins due to food or trash items left out unsecured.
- D) Increased possibility of bullfrogs or other exotic animals being introduced to the local environment by equipment or personnel.

While significant impacts to frogs are not likely to occur as result of the proposed project, there is chance for the incidental take of a few individual of this species to occur during the construction and operation of the facility. For this reason, California red-legged frog avoidance measures are

suggested in Section 6.3 to enhance the likelihood of avoiding any impacts or take to this listed species during construction and operational phases of the project.

5.4 Impacts to Fish, Riparian Habitat and Water Quality

No riparian or wetlands habitat are likely to be affected by the project. Habitat for Coho salmon and steelhead are not present within the proposed project area, and the project occurs over 2,000 feet from Scott's Creek where they are known to occur. While the salmonids in other regional watersheds are threatened by the dewatering of streams due to water diversions, and from sedimentation due to erosion and road construction, the proposed construction and operation of the field camp is not expected to have any negative impact on the downstream habitat, or the quantity or quality of surface flows, if the existing approved NTMP measures for the area are followed.

The water source for the field camp is an existing well that is over 700 feet deep, and is over 300 feet below the Little Creek drainage. Thus, the project is considered unlikely to impact surface flows or salmonid biology, movement and reproduction in the watershed. No sedimentation of Little Creek is expected, as the project is almost entirely within the Scott's Creek watershed, which is over 2,000 feet away from the project site.

Scott's Creek aquatic resources are not likely to be affected by the project, as the water source for the project is a 700-foot deep well that is over 300 feet below Little Creek. The expected pumping of ~8,000 gallons/day for the project's needs from this well is not expected to measurably reduce the flow of Scott's Creek, based on the low volume and rate of withdrawal, the location and depth of the well. This conclusion is supported by the lack of any noticeable discharge effect from even larger experimental withdrawal studies previously conducted from two Swanton Pacific Ranch irrigation wells in Scott's Creek (Scott's Creek Watershed Assessment 2003 – Appendix 5E. Briggs 1997). Pumping of the two irrigation wells at maximum capacity of 1.3 – 1.6cfs in June 1997 for 24 hours had no measurable effect on Scott Creek downstream water flows.

In summary, the proposed project's water needs are not likely to have any impact on salmonids or Scott's Creek water flows. The assessment of the project's potential for impacts on salmonids and riparian resources was made in consultation with Mathers Rowley (Director of the Monterey Bay Salmon and Trout Project, and Steering Committee Chair of the Scott's Creek Watershed Council's Technical Advisory Committee).

5.5 Air Quality & Noise Impacts

Any impacts to noise and air quality would likely be minimal, temporary and cumulatively insignificant. Minor temporary noise impacts could occur during daylight hours due to an increase in trucks and heavy machinery operations during the construction phase of project, but these impacts are considered to be temporary and insignificant.

6.0 IMPACT AVOIDANCE MEASURES

Any temporary direct or indirect impacts to wildlife resources that might occur during construction and operation of the Swanton Pacific Field Camp can likely be avoided by implementing the impact avoidance measures suggested below.

6.1 Bird Impact Avoidance Measures

- Impacts to any birds nesting in any of the few remaining trees on the site as could be avoided by conducting construction operations during the fall and winter, outside of the nesting period. Alternatively, a nest site (clearance) survey could be conducted in the spring/summer months just prior to planned construction to identify, mark and avoid any active bird nest trees in the few remaining trees left on the site. This would avoid the destruction or disturbance of any active bird nests during construction operations.
- Indirect impacts to birds nesting nearby can be minimized through the use of directional (downward-facing) outdoor lighting and low wattage so as to minimize light pollution.
- Indirect impacts to marbled murrelets could be avoided by securing the human food and food waste related to the project. While no direct impacts are likely to occur to Marbled murrelets (as none are known to nest within one mile from the project site) some species like corvids (crows, ravens and jays) are known to prey on murrelet eggs and chicks, and human habitations can result in the supplemental feeding of these scavenging and predatory species, and the resultant increase murrelet predation rates. Food, food storage, food waste, recycling and food/trash disposal methods during construction and operation of the facility should be controlled, covered and secured so that the site does not attract predators or result in the supplemental feeding of any corvids, scavengers or other predatory wildlife species. Impacts to birds are likely to be avoided if these avoidance measures are followed.

6.2 Mammal Impact Avoidance Measures

- While mammals are not likely to be directly impacted by the development of the project site, the use of any rodenticides during the operation of the Swanton Field Camp could result in indirect impacts and poisoning of badgers and other carnivores (mountain lions, bobcats, coyotes, raptors) that may forage in surrounding area. Because of this potential for secondary poisoning, the use of such rodenticides should be prohibited in the Field Camp area.
- While the proposed project is not likely to interfere with any wildlife movements of wide-ranging mammal species, the Field Camp should attempt to diminish its effect on such nighttime wildlife movements and behaviors by using limited, dim and downward-pointing outdoor lighting.
- Impacts to any solitary bats that may decide to roost on the site could be avoided by either removing any potential roost trees during the period when no maternity roosts are likely present (September 15 – January) or installing exclusionary devices on the trees to prevent roosting prior to felling selected trees.

6.3 Amphibian and Reptile Impact Avoidance Measures

While California red-legged frogs do not regularly occur on the project site itself, the proximity of the project site to a large population of threatened California red-legged frogs warrants the inclusion of some measures to avoid any impacts or take to this species as a result of the construction and operation of the proposed facility. The currently proposed "Smith Cabin Site" will likely avoid most direct impacts to California red-legged frogs, but because the proposed project site is approximately 1,000 feet west of Staub Pond where frogs are known to occur, there could be construction-related and operational impacts and take of frogs unless avoidance measures are implemented.

California Red-legged Frog Avoidance Measures

Previous studies (Bulger et al. 1999) of the Staub Pond population 1000 feet east of the site revealed sufficient information on their movements and habitat use that an unusual amount of background information exists from which to develop and implement informed measures to avoid any negative impacts to frogs as a result of the proposed project.

First, however, it would be helpful to review the existing red-legged frog avoidance measures already required of Swanton Pacific Ranch by CDF in the Non-industrial Timber Management Plan (2007). The management of Swanton Pacific Ranch by Cal Poly has sought to nurture the population of California red-legged frogs and Cal Poly has approximately 19 ponds and reservoirs with confirmed red-legged frog presence. Several ponds and creeks on the Ranch have been restored and partially fenced to protect them from cattle damage. Two spring development projects to create enhanced red-legged frog habitat have also been completed on the Swanton Pacific Ranch with a USFWS matching fund grant.

Existing Red-Legged Frog Avoidance Measures (Swanton Pacific Ranch NTMP 2007):

The guidelines outlined below are taken from existing California red-legged frog avoidance measures put in place as part of the Swanton Pacific Ranch Timber Management Plan (2007) to provide protection for this species in a watershed where they are known to be present. *To avoid incidental take of this species, operations shall proceed in accordance with the take avoidance measures outlined in the existing NTMP guidelines developed by the U.S. Fish and Wildlife Service, Ventura Office, and summarized in part below:*

1. *All road, trail, and landing construction shall occur prior to the start of the wet season (*see below for the definition of the wet season). All earth-moving activities shall occur prior to the onset of the wet season.*
2. *Operations (construction) activities will occur during daylight hours only.*
3. *Trees shall be felled away from any ponds or other wet areas with saturated ground in most cases.*
4. *Prior to operations commencing, all staff, construction crew and delivery personal will be trained by a qualified biologist in a biological resources education program for workers.*
5. *The educational program will include a description of the California red-legged frog and its habitat, and the guidelines that must be followed by all harvest personnel to avoid take*

of the species during the operational period. The certified red-legged frog biologist will be responsible for ensuring that crew members comply with the guidelines. Educational programs will be conducted for new personnel before they join activities. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.

6. *Before activities begin each day, for operations occurring in the late fall or winter, a biological monitor will inspect roads, vehicles and equipment to look for California red-legged frogs. If a red-legged frog is found, the red-legged frog will not be relocated or captured, all activities that could result in take will cease and the USFWS will be consulted to ensure that appropriate actions are taken in order for project activities to continue.*
7. *All refueling, maintenance, and staging of equipment and vehicles will occur at least 50 feet from areas where a spill would drain directly toward aquatic habitat. The site manager will insure that all heavy vehicles and equipment are inspected for fuel leaks, oil leaks, and other fluid leaks before and during their operation, to ensure that aquatic and upland habitats are not contaminated. Prior to the onset of work, the site manager will ensure that a plan is in place for prompt and effective response to accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.*
8. *During project activities, all food and trash that may attract predators will be put in sealed containers, removed from the work site, and disposed of regularly. Following project activities, all trash and construction debris will be removed from work areas.*

Proposed Red-legged Frog Avoidance Measures for the Field Camp Project

The red-legged frog avoidance measures suggested for the Swanton Pacific Field Camp educational facility project are grouped into types: Construction Phase, and Operational.

Construction Phase Avoidance Measures for Red-legged Frogs:

Data on dispersal routes and patterns of terrestrial habitat use at Staub Pond indicate that significant construction-related impacts to the local red-legged frog population are unlikely but possible. The incidental take of any individual frogs that might be possible during construction could be readily avoided with the implementation of the following measures:

- Minimize the area over which wet-season construction activities occur.
- Attempt to conduct most ground-disturbing activities to the dry months of the year when red-legged frogs (RLF) are unlikely to inhabit or move across upland sites.
- Require construction monitoring for red-legged frogs just prior to and during all the construction and delivery of equipment/supply activities to ensure no take of this species could occur during construction. The designated RLF Monitor will be notified by the Swanton Pacific Ranch Resource Manager in a timely manner regarding the upcoming schedule for all construction activities. The RLF Monitor will be present during and prior to all construction activities, to conduct clearance surveys of roads and staging areas and construction zones, guide delivery trucks entering the site, and to give environmental

training to all construction workers and associated vehicles and personnel those entering the site.

- The RLF monitoring and red-legged frog training should be conducted by an independent professional biologist certified as having experience conducting red-legged frog monitoring. Training of staff and construction crews will include red-legged frog identification, habits, occurrence in the area, legal status, how to operate and drive vehicles in the area, and what to do and who to contact should a frog be seen or detected in or near the construction zone. Laminated pocket cards regarding RLF avoidance procedures, field identification and reporting procedures will be handed out by SP staff to all those anticipated making more than one visit to the site for construction purposes.
- The SP Resource Manager will be responsible for ensuring that a RLF Avoidance and Monitoring Plan is implemented whereby the designated RLF Monitor will be present each day throughout the delivery/construction period or available by phone to assess what level of monitoring the proposed day's/weeks' construction activities will require.
- Any project-related trucks that need to use the upper Staub Road or drive past the Staub Pond or any staging areas within 300 feet of the pond will require that the designated RLF Monitor be notified and present to conduct a clearance survey and ensure that those areas are clear of any red-legged frogs immediately prior them being used.
- The independent experienced RLF Monitor could delegate some minor or ongoing RLF construction monitoring duties to specifically identified and trained Ranch staff or student, at the discretion of the independent monitor. The decision by the independent RLF Monitor will take into consideration the time of year, type of work being done that day/week, proximity to Staub Pond and adjacent road, and the training and experience level of the staff/student monitor.
- Reduce to the maximum extent possible activities and practices that could result in sediments reaching Lower Staub pond due to truck traffic on the road past the pond.
- Require all trucks and construction equipment to be cleaned with a pressure-hose prior to being driven onto the site to reduce the chance of introduction of invasive species or seeds/eggs to the site.
- The staging areas for construction materials, equipment and trucks from contracted personnel should be clearly delineated on aerial photographic maps and roped off on the ground to ensure the footprint of the project is minimized.
- Construction equipment and related trucks should be limited to moving and staging within the project site, which should be marked with norplex fencing. Should a staging area or trucks turn around area be needed in the Staub House area, norplex fencing should be erected prior to construction activity by a certified Red-legged frog biologist, with regular monitoring of the road and construction area if construction occurs during frog breeding or dispersal periods.

Operational Phase Avoidance Measures for Red-legged Frogs:

- Vehicles using the Field Camp Cabins will be parked more than 500 meters from Staub pond, thus reducing the probability of road-killed frogs to nearly zero.
- With the exception of emergency vehicles and handicapped access, travel off-road on the campus is limited to foot traffic on a system of developed footpaths.
- Placement of signboards at two locations near the pond identifying this area as habitat for a threatened species and giving a brief description of red-legged frog natural history and habitat use.
- Prohibition of any activities within the pond and within 10 meters of the pond except those related to research, livestock management, forest management (as directed by the State approved NTMP) and designated trail use of the existing trail by the Staub pond. These uses will be limited to only those CalPoly staff/contractors that have received training in red-legged frog identification, biology, and impact avoidance measures by a certified RLF biologist.
- Require all students and staff residing at the field camp to watch a powerpoint, video or printed presentation on red-legged frogs, prepared by a certified specialist. The material should cover red-legged frog identification, biology, and impact avoidance measures during the first two weeks of their attendance at the field camp. All staff and students and visitors should sign a form indicating they have reviewed the educational materials and will comply with the provisions required by the regulatory agencies as conditions of project approval.
- Special precautions will be taken with food and trash storage to avoid attracting predators like raccoons (Trash containers in and or near the cabin sites will be secured).

6.4 Water Quality Impact Avoidance Measures

To avoid any impacts on the quality of water in the Scott's Creek watershed, the soil stabilization measures currently required by the existing Swanton Pacific NTMP should be adhered to during the construction of the proposed educational facility, including:

1. Limiting the use of heavy equipment as discussed under Item #26 of the NTMP.
2. Treatment of roads near watercourses as discussed under Item #27 of the NTMP.
3. Soil stabilization as discussed under Item #18 of the NTMP.
4. Winter operating restrictions as discussed under Item #23 of the NTMP.

7.0 SUMMARY

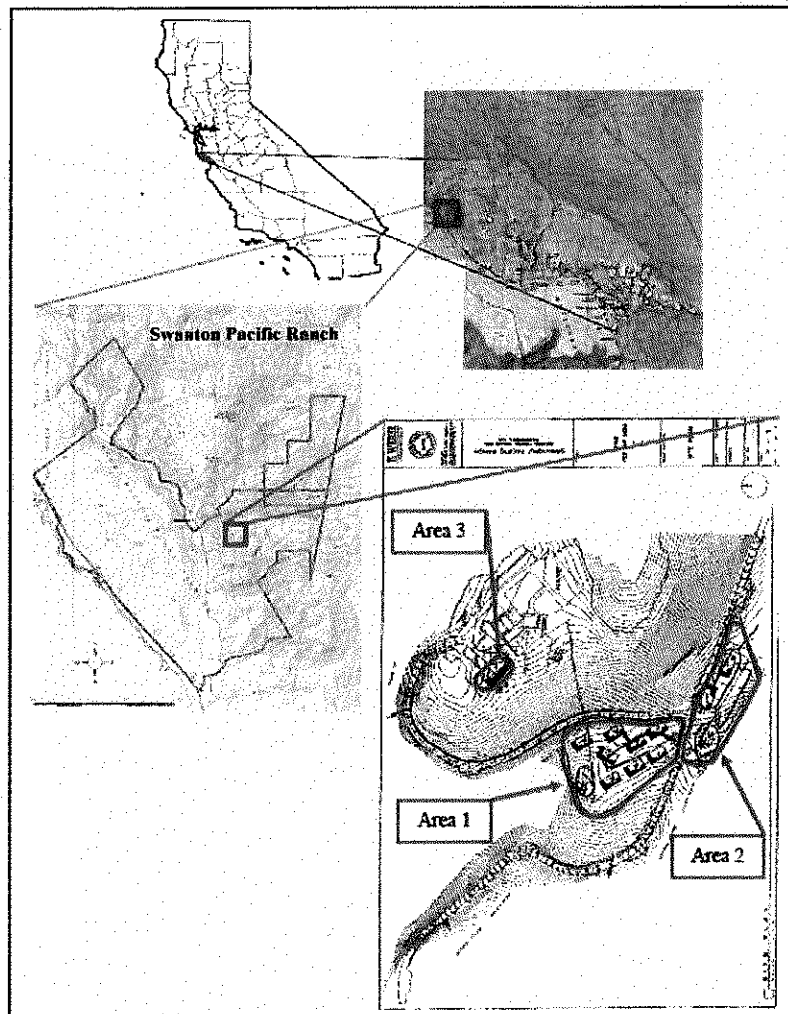
On the strength of the information summarized above and with the careful implementation of the proposed avoidance measures suggested, it is my opinion that the proposed project will not result in impacts to any listed wildlife species, nor that of any other sensitive or protected wildlife resources. No wildlife impacts that could be considered significant under CEQA are likely to occur as a result of the construction and operation of the project with the successful implementation of the avoidance measures outlined above.

Botanical Report

1.0 Introduction

This report presents analysis of biological impacts of a proposed development (“Smith Field Cabins”) on the Swanton Pacific Ranch. The proposed development site is along the School House Gulch Road, near and adjacent to the Al Smith House, on Swanton Pacific Ranch, northern Santa Cruz County. The proposed project entails an expansion of an existing building, housing facilities, parking, and access roads. There are 3 proposed building areas: buildings to the north (sometimes referenced in this report as Area #1) and south (Area #2) of the School House Gulch Road, and an expansion of current facilities adjacent to the Al Smith House (Area #3) (Figure 1). The intention of this analysis is to describe the baseline of botanical resources at these sites, identify impacts to sensitive botanical resources, and, if there are any such impacts, propose avoidance or mitigation measures.

Figure 1: Site location



2.0 Methods

Grey Hayes surveyed the site in July, 2011, accompanied and assisted by local botanical expert Jim West. Mr. West is the recognized expert in the taxonomy and distribution of botanical resources within the Scotts Creek watershed. In conjunction with field surveys, Dr. Hayes also consulted the California Natural Diversity Database (CNDDDB) "RareFind" 2012 to create a list of all sensitive biological resources within a 5-mile radius of the site. Dr. Hayes also reviewed biological review work recently completed as part of a timber harvest plan that included areas adjacent to the proposed project site (Swanton Pacific NTMP, 2007).

Prior to visiting the site, Dr. Hayes compiled a list of species with potential to occur at the site from the CNDDDB search along with Santa Cruz County's Special Plants List. Dr. Hayes and Mr. West traversed the site, photographed areas, mapped vegetation communities, and created a list of extant species. Dr. Hayes collected plant community composition and structure data using methods outlined for rapid vegetation assessment (California Native Plant Society and California Department of Fish and Game 2009). This methodology includes visually assessing the dominant species cover at the site and recording these species, their cover, and associated variables on datasheets. The datasheets were submitted to CDFG's vegetation classification team. Vegetation association results were compared with the inventory of associations kept by CDFG to determine vegetation rarity.

As it was an abnormally wet spring in 2011, plants were readily identifiable at this survey time. The survey included both of us visually surveying the site to create a floristic inventory of all plant species. Plants identified by the CNDDDB search and other literature review were considered potential resources to be found at the site, and special attention was afforded these resources during the survey and analysis.

3.0 Environmental Setting

The Swanton Pacific Ranch is located on the immediate coast in the center of the Santa Cruz Mountains in an area biogeographically referenced as California's "Central Coast," adjacent to the northernmost extent of the Monterey Bay. This area is especially remarkable for its biological diversity and endemism. The site has strong maritime influence, including summer fog and temperatures moderated by proximity to the sea.

The proposed project sites are in varying degrees of recovery from varying levels of prior disturbance. The area adjacent to an extant building is the most altered from its natural state as it has had extensive grading, planting, and landscape maintenance. The proposed cabin complex was previously used as a staging area for forestry operations; it has been cleared of vegetation in the interim since the survey. The southernmost proposed development area similarly has had soil grading activities, mechanical clearance of vegetation, and ongoing disturbances with vehicles.

The proposed project sites contain a mix of habitat types and moderate levels of plant species diversity (Figure 1 and Appendix B). Baseline habitat data are presented in Appendix A. The first data sheet is the blueblossom-coast live oak site (Area 1); the second is the Italian rye-slender oat site (Area 2); the third is the coast live oak polygon near the existing buildings (Area 3).

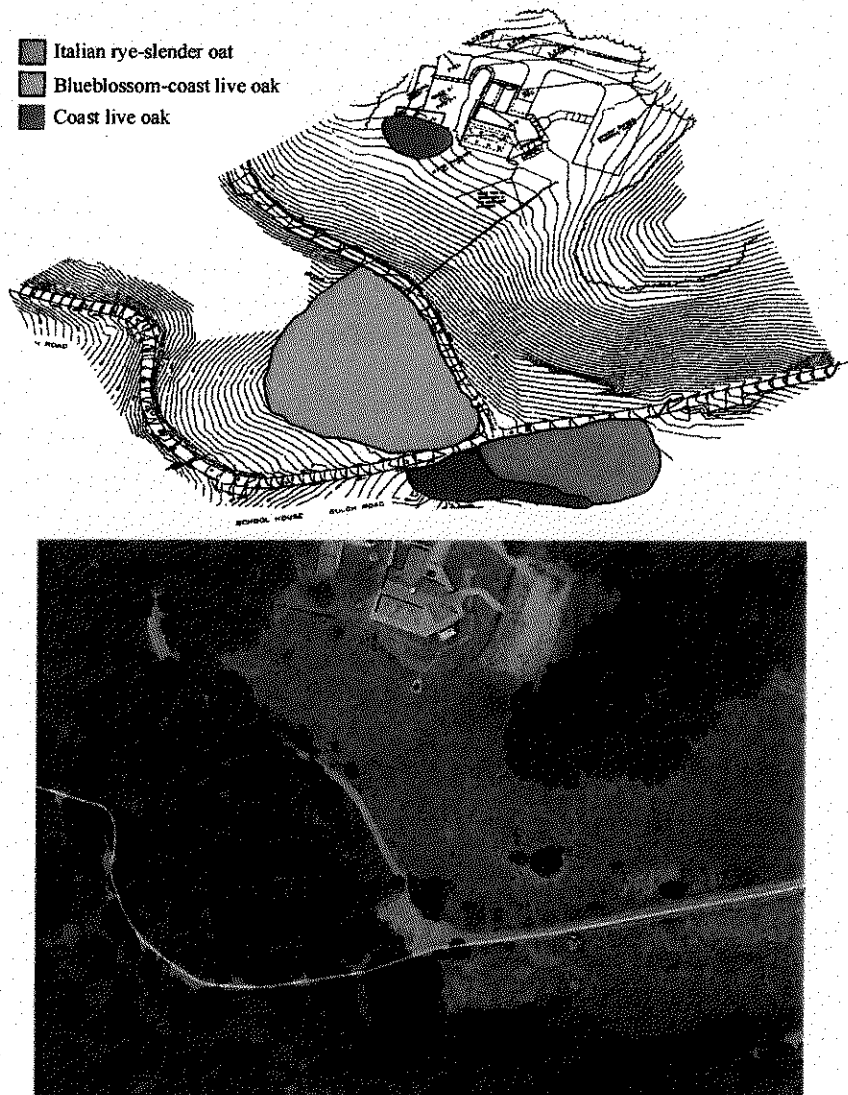


Figure 1: Plant community types at the proposed project site (top). Aerial view of site at time of survey (June 2011 via Google Earth image capture).

3.1 Coast live oak (*Quercus agrifolia*) ("Area 3" as well as southern polygon, Figure 1)

The area proposed for development and adjacent to the current building is largely a minimally managed landscape including a young coast live oak with an understory and surrounding exotic grassland dominated by various non-native annual weeds (Figure 2). The southern area of coast live oak is more intact woodland, with an understory of mixed perennial herbs and nonnative grasses.

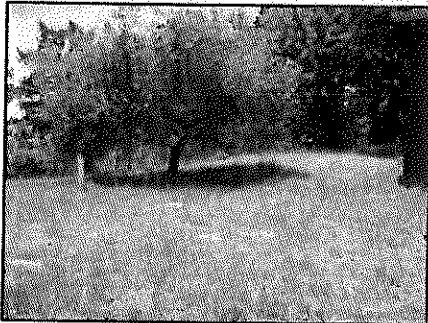


Figure 2: Area adjacent to existing structure - vegetation dominated by coast live oak and exotic grasses.

3.2 Blueblossom (*Ceanothus thrysiflorus*) - coast live oak woodland ("Area 1")

Much of the site to the north of the intersection of School House Gulch Road and Road "8" had been previously intensively disturbed as evidenced by a prevalence of cut slash and young perennial species. The plant community was dominated by blue blossom and coast live oak, with an

understory of poison oak (*Toxicodendron diversilobum*) and blackberry (*Rubus ursinus*) (Figure 3).

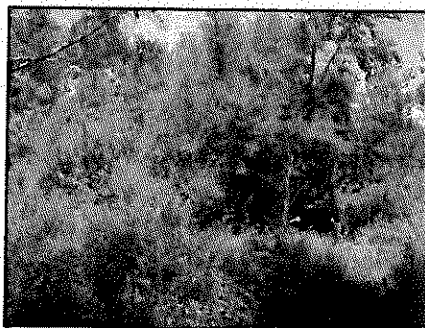


Figure 3: Area 1 vegetation dominated by blue blossom and coast live oak

3.3 Italian rye (*Lolium multiflorum*) - Slender oat grassland ("Area 2")

The area south of the intersection of School House Gulch Road and Road "8" had a high level of previous disturbance as evidenced by a large proportion of bare soil, introduced material, and ruderal species. This site was dominated by weedy grasses: Italian ryegrass & bearded oatgrass (Figure 4).



Figure 4: Area 2 vegetation dominated by exotic grasses.

4.0 Sensitive Habitats

The California Department of Fish and Wildlife lists habitats of concern as does the County of Santa Cruz's 1994 General Plan. Dr. Hayes reviewed these lists and referenced the CNDDDB to determine which sensitive habitats should receive attention (Table 1). Vegetation types S1-S3 are considered sensitive by the California Department of Fish and Wildlife. None of the habitat types at the proposed project location are considered sensitive.

Table 1: List of potential sensitive vegetation types within proposed project area. Vegetation types S1-S3 are considered sensitive by the California Department of Fish and Wildlife.

Community name	Status
Bald hills prairie	G2. S2.1
Coastal brackish marsh	G2 S2.1
Coastal terrace prairie	G2 S2.2
Knobcone pine forest	G4 S4
Maritime coast range ponderosa pine forest	G1 S1.1
Monterey pine forest	G1 S1.1
<i>Native riparian forests, including:</i>	
Central coast live oak riparian forest	G3 S3.2
Central coast arroyo willow riparian forest	G2 S2.1
Central coast riparian scrub	G3 S3.2
Red alder riparian forest	G3 S3.2
Northern coastal salt marsh	G3 S3.2
North central coast drainage Sacramento Sucker/Roach river	G? S?
North central coast Short-Run Coho Stream	G? S?
Northern interior cypress forest (Santa Cruz Cypress woodland)	G1
Northern maritime chaparral	G1 S1.1
<i>Old growth and primary forests of all types including:</i>	
Mature and old-growth Coastal Redwood stands ¹	E
Alluvial redwood forest	G2 S2.2
Upland redwood forest	G4 S2.3
Shreve oak forest	-not listed-
Upland Douglas fir forest	G4 S3.1

5.0 Sensitive Plant Taxa

Dr. Hayes referenced the CNDDDB and Santa Cruz County's List of Special Plants to determine which sensitive plant taxa have been documented from the project region. He compiled all CNDDDB documented and County potential species in one list to inform the potential for species to exist at the site and, hence, survey methodology (Table 2).

¹ Here defined as trees with large diameter branches and other canopy structure characteristics that support epiphytes, marbled murrelet, and other unusual and rare phenomena. Also considered will be "goose pen" trees: those with large hollowed out trunks that support a number of special species values.

Table 2: A list of sensitive plant species known from the region surrounding Swanton Pacific Ranch in habitats similar to those found in the survey area. Listing status is Federal (F) or State (S), Endangered (E) or Species of Concern (C). California Native Plant Society (CNPS)² listing status also included if included in List 1B.³

Species name	Habitat	Habitat Present?	Status
Arcuate bush-mallow (<i>Malacothamnus arcuatus</i>)	Chaparral	N	CNPS 1B.2
Ben Lomond buckwheat (<i>Eriogonum nudum</i> var. <i>decurrens</i>)	Inland sandhills	N	CNPS 1B.1
Ben Lomond spineflower (<i>Chorizanthe pungens</i> var. <i>hartwegiana</i>)	Inland sandhills; thin grassland soils	N	FE
Bent-flowered fiddleneck (<i>Amsinckia lunaris</i>)	Grassland, woodland	Y	CNPS 1B.2
Blasdale's bent grass (<i>Agrostis blasdalei</i>)	Moist bluff areas, cliffs	N	CNPS 1B.2
Bonny Doon manzanita (<i>Arctostaphylos silvicola</i>)	Inland sandhills	N	CNPS 1B.2
Butano Ridge cypress (<i>Hesperocyparis</i> <i>abramsiana</i> var. <i>butanoensis</i>)	Maritime chaparral	N	FE; SE
California bottlebrush grass (<i>Elymus californicus</i>)	Various forests and riparian areas- wet areas	Y	County
Choris' popcornflower (<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>)	Wet meadows	Y	CNPS 1B.2

² California Native Plant Society (CNPS). 2001. California Native Plant Society's inventory of rare and endangered plants of California. CNPS special publication #1. 6th edition. 388 pp.

³ CNPS List 1B includes threat ranks: 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat); 0.2-Fairly threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat); 0.3-Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Species name	Habitat	Habitat Present?	Status
Coast rock cress (<i>Arabis blepharophylla</i>)	Rocky outcrops, coastal scrub	N	County
Coastal marsh milk-vetch (<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>)	Coastal scrub	N	CNPS 1B.2
Deceiving sedge (<i>Carex saliniformis</i>)	Coastal Prairie, northern coastal scrub, wetland-riparian	Y	CNPS 1B.2
Dudley's lousewort (<i>Pedicularis dudleyi</i>)	Redwood/Douglas fir forest	N	SR
Elmer's fescue (<i>Festuca elmeri</i>)	Various woodland	Y	-not listed-
Franciscan thistle (<i>Cirsium andrewsii</i>)	Mixed evergreen forest, northern coastal scrub, wetland-riparian	Y	CNPS 1B.2
Hoffmann's sannicle (<i>Sanicula hoffmannii</i>)	Cismontane woodlands, coastal scrub, and broadleaf upland forest	Y	County
Indian Valley bush-mallow (<i>Malacothamnus aboriginum</i>)	Chaparral	N	CNPS 1B.2
Kellman's bristle moss (<i>Orthotrichum kellmanii</i>)	Sandstone outcrops	N	CNPS 1B.2
Kellogg's Horkelia (<i>Horkelia cuneata sericea</i>)	Sandy, dry grasslands	N	CNPS 1B.1
Kings Mountain Manzanita (<i>Arctostaphylos regismontana</i>)	Chaparral, mixed evergreen forest, north coastal coniferous forest	Y	CNPS 1B.2
Loma Prieta hoita (<i>Hoita strobilina</i>)	Chaparral	N	CNPS 1B.1

Species name	Habitat	Habitat Present?	Status
Marsh microseris (<i>Microseris paludosa</i>)	Wet meadows	Y	CNPS 1B.2
Marsh sandwort (<i>Arenaria paludicola</i>)	Wetlands	N	FE; SE
Monterey pine (<i>Pinus radiata</i>)	Live oak forest, Monterey pine forest, mixed evergreen forest	Y	CNPS 1B.1
Mt Diablo cottonweed (<i>Micropus amphibolus</i>)	Rocky outcrops, thin soiled grasslands	N	County
Ohlone Manzanita (<i>Arctostaphylos ohloneana</i>)	Maritime chaparral	N	CNPS 1B.1
Pajaro manzanita (<i>Arctostaphylos pajaroensis</i>)	Maritime chaparral	N	CNPS 1B.1
Pine rose (<i>Rosa pinetorum</i>)	Coniferous forest	N	CNPS 1B.2
Point Reyes horkelia (<i>Horkelia marinensis</i>)	Wet meadow	Y	CNPS 1B.2
Point Reyes meadowfoam (<i>Limnanthes douglasii ssp. sulphurea</i>)	Wet meadow	Y	SE
Redwood lily (<i>Lilium rubescens</i>)	Coniferous forest, broadleaf upland forest, chaparral	Y	County
Robust spineflower (<i>Chorizanthe robusta var. robusta</i>)	Various grassland types	Y	FE
Round-leaved filaree (<i>California macrophylla</i>)	Various grassland types	Y	CNPS 1B.1

Species name	Habitat	Habitat Present?	Status
San Francisco campion (<i>Silene verecunda</i> ssp. <i>verecunda</i>)	Rocky outcroppings associated with coastal prairie/scrub	N	CNPS 1B.2
San Francisco collinsia (<i>Collinsia multicolor</i>)	Northern coastal scrub, closed-cone pine forest	N	CNPS 1B.2
San Francisco popcornflower (<i>Plagiobothrys diffusus</i>)	Wet meadows	Y	SE
Sand-loving wallflower (<i>Erysimum ammophilum</i>)	Coastal dunes	N	CNPS 1B.2
Santa Cruz clover (<i>Trifolium buckwestiorum</i>)	Thin soiled native grasslands	N	CNPS 1B.1
Santa Cruz cypress (<i>Hesperocyparis abramsiana</i> var. <i>abramsiana</i>)	Inland sandhills; sandstone outcrops	N	SE; FE
Santa Cruz Manzanita (<i>Arctostaphylos andersonii</i>)	Various woodlands	Y	CNPS 1B.2
Santa Cruz Microseris (<i>Stebbinsoseris decipiens</i>)	Thin soiled grasslands	N	CNPS 1B.2
Santa Cruz Mountains beardtongue (<i>Penstemon rattanii</i> var. <i>kleei</i>)	High elevation coastal chaparral	N	CNPS 1B.2
Santa Cruz Mountains pussypaws (<i>Calyptridium parryi</i> var. <i>hesseae</i>)	Chaparral	N	CNPS 1B.1
Santa Cruz tarplant (<i>Holocarpha macradenia</i>)	Wet meadows	Y	SE; FT

Species name	Habitat	Habitat Present?	Status
Santa Cruz wallflower (<i>Erysimum teretifolium</i>)	Inland sandhills	N	SE; FE
Schreiber's manzanita (<i>Arctostaphylos glutinosa</i>)	Maritime chaparral	N	CNPS 1B.2
Scotts Valley polygonum (<i>Polygonum hickmanii</i>)	Thin soiled grasslands	N	SE; FE
Scotts Valley spineflower (<i>Chorizanthe robusta</i> var. <i>hartwegii</i>)	Thin soiled grasslands	N	SE
Short-leaved evax (<i>Hesperevax sparsiflora</i> var. <i>brevifolia</i>)	Coastal dunes	N	CNPS 1B.2
Straggly gooseberry (<i>Ribes</i> <i>divaricatum</i> var. <i>pubiflorum</i>)	Moist areas within scrub and woodland habitats with moderate light levels	Y	County
Swamp harebell (<i>Campanula californica</i>)	Wet meadows	Y	CNPS 1B.2
Tear drop moss (<i>Dacryophyllum</i> <i>falcifolium</i>)	Calcareous rock outcrops in redwood forest	N	CNPS 1B.3
White-flowered rein orchid (<i>Piperia candida</i>)	Coniferous forest	N	CNPS 1B.2
White-rayed Pentachaeta (<i>Pentachaeta bellidiflora</i>)	Xeric grasslands	N	SE; FE
Woodland woollythreads (<i>Monolopia gracilens</i>)	Mixed evergreen forest, redwood forest, chaparral	N	CNPS 1B.2
Zayante buckwheat (<i>Eriogonum nudum</i> <i>decurrens</i>)	Inland sandhills	N	County

Species name	Habitat	Habitat Present?	Status
Zayante everlasting (<i>Gnaphalium zayatense</i> (<i>pro sp.</i>))	Inland sandhills	N	County

Dr. Hayes and Mr. West did not find any sensitive plant species during the survey. In some cases, sensitive plant species may be temporarily cryptic, only existing in below ground seedbank, awaiting appropriate germination conditions. The survey areas had extensive enough disturbance and resultant bare soil areas to have presented favorable conditions for germination for any of the potential sensitive species found in the area. Furthermore, local botanical expert Mr. West has surveyed the site for many years and has never encountered these species in this vicinity. Therefore, Dr. Hayes concludes that no sensitive plant species will be impacted by the proposed project.

The following narrative outlines each species that had the potential to exist, including information regarding status, habitat, distribution, and hypotheses for the lack of distribution at the site.

Bent-flowered fiddleneck (*Amsinckia lunaris*)

Bent-flowered fiddleneck is a moderately statured annual wildflower which is not federally or state listed but is listed on CNPS 1B list. It is found in various grassland associations or in open woodlands. The species is conspicuous and flowers into late spring and would have been evident during the survey, but was not detected. During years of prior surveys by Mr. West, he has not found the species previously at this location.

California bottlebrush grass (*Elymus californicus*)

California bottlebrush grass is a tall statured perennial bunchgrass listed by the County of Santa Cruz and on List 4 of the CNPS but has no other federal or state status. Habitat for the species includes riparian and cismontane woodlands, north coast coniferous forest, and broadleafed upland forest. The coast live oak habitat at the survey site looked like marginal habitat for the species. But, this conspicuous species was not located during the survey. During years of prior surveys by Mr. West, he has not found the species previously at this location.

Choris' popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*)

Artist's popcornflower is a short-statured annual spring wildflower which is not federally or state listed but is listed on the CNPS 1B list. It is found in moist areas of coastal scrub, chaparral, and coastal prairie habitats. Potential habitat for the species exists within the survey area, though it was not found during survey. During years of prior surveys by Mr. West, he has not found the species previously at this location.

Deceiving sedge (*Carex saliniformis*)

Deceiving sedge is a perennial sedge has no state or federal listing and is a species on the CNPS 1B list. Habitat for the species includes wet areas in coastal prairie and coastal scrub as well as

in a variety of other wetland and riparian areas. The only documented population in Santa Cruz County was at a long-destroyed bog at Camp Evers in Scotts Valley; this population was 200 miles disjunct from the species' more northerly distribution. Although there is potential habitat for the species in the survey area, the species was not encountered during survey. During years of prior surveys by Mr. West, he has not found the species previously at this location.

Elmer's fescue (*Festuca elmeri*)

Elmer's fescue is a short-lived perennial bunchgrass which lacks any status; it is, however, regionally uncommon and is in decline throughout its range. The species is found in cismontane or coniferous forests in understory areas that receive moderate light levels. Local populations are known only from the Swanton area and the University of California at Santa Cruz (where it may have been recently extirpated). This species is widespread in grasslands on Swanton Pacific Ranch and on roadsides and logging landings in the forested areas of the Swanton Pacific Ranch. However, the species was not located during the survey. During years of prior surveys by Mr. West, he has not found the species previously at this location.

Franciscan thistle (*Cirsium andrewsii*)

Franciscan thistle is a biennial wetland plant, which not federally or state listed but is included on List 1B by CNPS. Habitat for the species includes mixed evergreen forest, coastal scrub (sometimes serpentine), coastal prairie, and coastal bluff scrub. Marginal habitat for this species is present in the area, but the species has never been found in the Scotts Creek watershed and was not located during the survey. During years of prior surveys by Mr. West, he has not found the species previously at this location.

Hoffmann's sannicle (*Sanicula hoffmannii*)

Hoffmann's sannicle is a perennial herb which is listed by the County of Santa Cruz but has no other federal, state, or CNPS status. It is found in cismontane woodlands, coastal scrub, and broadleaf upland forest. The species is only known from the Swanton area within Santa Cruz County, though there are additional populations just north in San Mateo County. There is potential habitat for the species within the survey area, but the species was not found during the survey. During years of prior surveys by Mr. West, he has not found the species previously at this location.

Kings Mountain Manzanita (*Arctostaphylos regismontana*)

Kings Mountain Manzanita is a perennial shrub that has no state or federal listing though it is a species on the CNPS 1B list. Habitat for the species includes a variety of chaparral and woodland habitats. The species is known from more northerly areas and it is widely accepted by experts that the CNDDDB record is a mistaken identification of Santa Cruz Manzanita. Nevertheless, this conspicuous species was not located at the survey site.

Marsh microseris (*Microseris paludosa*)

Marsh microseris is an herbaceous perennial wildflower no state or federal listing; it is, however, listed on the CNPS 1B list. Habitat for the species includes wet meadows. Potential habitat exists for the species at the site, and there are documented locations of the species within 2/3

mile of the survey area. But, the species was not found during the survey; the moister grassland areas of the survey site have been too previously disturbed to support the species. During years of prior surveys by Mr. West, he has not found the species previously at this location.

Monterey pine (*Pinus radiata*)

Monterey pine is coniferous tree species known from 5 native populations; the stand on and near Swanton Pacific Ranch is the northernmost population. The species is not listed federally or by the state, though it receives rarity recognition on CNPS List 1B due to its limited geographic distribution and threats from development and introduced disease. The species was documented within the survey area, but these trees are considered a non-native gene stock, which were planted as a plantation. They present a potential threat to the local gene pool of native Monterey pine and any loss of the species due to the project would be considered of benefit to the local, native population of pines.

Point Reyes horkelia (*Horkelia marinensis*)

Point Reyes horkelia is an herbaceous perennial wildflower with no state or federal listing status though it is a species on the CNPS 1B list. Habitat for the species is in wet meadows. There is potential habitat for the species at the survey site, but this conspicuous species was not documented at the site. Moreover, the species has not been located within the watershed previously; the closest known population is many miles south at the Bonny Doon Ecological Preserve.

Point Reyes meadowfoam (*Limnanthes douglasii* ssp. *sulphurea*)

Point Reyes meadowfoam is an annual wildflower listed as endangered under the CESA. It is found in wet meadows. Potential habitat for the species is found at the survey site, but the species was not documented during the survey. The closest population is in the Butano watershed, more than 10 miles north of the survey site. That population is many miles disjunct from the other known locations, which are north of the Golden Gate. During years of prior surveys by Mr. West, he has not found this very conspicuous species previously at this or other watershed locations.

Redwood lily (*Lilium rubescens*)

Redwood lily is an herbaceous geophyte perennial listed by the County of Santa Cruz but has no other federal, state, or CNPS status. Habitat for the species includes lower and upper montane coniferous forest, broadleaf upland forest, chaparral, and north coast coniferous forest. The species was once reported to occur in Santa Cruz County, which, if accurate, would represent a range extension from the southern range limit, Sonoma County. The species has not been documented in recent history. Potential habitat for the species exists within the survey area, though this conspicuous species was not found during survey. During years of prior surveys by Mr. West, he has not found the species previously at this location.

Robust spineflower (*Chorizanthe robusta* var. *robusta*)

Robust spineflower is an annual wildflower listed by the federal government as endangered. It is generally found in dry, sandy grasslands, though sometimes it has been documented in moister, grassy areas, as well (e.g., near Buena Vista, southern Santa Cruz County). The closest known population of the species is off of Smith Grade, a few miles north of the City of Santa Cruz –a approximately 5 miles from the survey site. The habitat at the survey site is very marginally potential habitat for the species. And, the species would have been in full bloom at the time of the survey, but the species was not documented. During years of prior surveys by Mr. West, he has not found this very conspicuous species previously at this or other watershed locations.

Round-leaved filaree (*California macrophylla*)

Round-leaved filaree is an annual wildflower with no state or federal listing status though it is a species on the CNPS 1B list. The species is found in various grassland habitats where there is some amelioration of competition. Potential habitat for the species is found at the survey site, but the species was not documented. The species conspicuously differs from related species and persists well into the spring making it likely that, if it were at the site, Dr. Hayes would have detected it. During years of prior surveys by Mr. West, he has not found this very conspicuous species previously at this or other watershed locations.

San Francisco Popcorn-Flower (*Plagiobothrys diffuses*)

San Francisco popcorn-flower is not federally listed but is listed as endangered under the CESA and is on the CNPS 1B list. Habitat for this species is moist areas of coastal prairie and valley and foothill grassland. One occurrence is recorded on NDDB maps 5 miles southeast of the survey area; it is also found on private property adjacent to the Swanton Pacific Ranch to the northwest. Suitable habitat is within the survey area, but the species was not located during surveys. During years of prior surveys by Mr. West, he has not found the species previously at this location.

Santa Cruz Clover (*Trifolium buckwestiorum*)

Santa Cruz clover has no state or federal listing and is a species on the CNPS 1B list. This species is an annual herb, known from about 12 very small occurrences. Habitat is thin soiled grasslands where competition is ameliorated by low nutrient and water availability. There is one known population 2/3 of a mile southeast of the survey area, on thin soiled grassland ridgeline. Habitat for this species does not exist in the survey area, and the species was not located during surveys. During years of prior surveys by Mr. West, he has not found the species previously at this location.

Santa Cruz tarplant (*Holocarpha macradenia*)

Santa Cruz tarplant is a late-flowering annual wildflower that is listed as threatened by the federal government and endangered under CESA. The species is known from a few remaining populations in mid to southern Santa Cruz County, northern Monterey County and in introduced populations in the east San Francisco Bay. Santa Cruz tarplant thrives in wet meadows where management helps to ameliorate competition. The closest known population is in the Arana

Gulch watershed on the east side of the City of Santa Cruz. Although suitable habitat exists in the survey area and throughout the north coast of Santa Cruz County, the species has never been seen in those locations and was not located during the survey.

Straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*)

Straggly gooseberry is a perennial woody shrub which listed by the County of Santa Cruz but has no other federal, state, or CNPS status. It is found in moist areas within scrub and woodland habitats with moderate light levels. The species is known from the Swanton area and has been noted to have variant forms deserving further scientific study. Although there is potential habitat for the species in the survey area, the species was not encountered during survey. During years of prior surveys by Mr. West, he has not found the species previously at this location.

Swamp harebell (*Campanula californica*)

Swamp harebell is an annual wildflower with no state or federal listing status though it is a species on the CNPS 1B list. The species is found in a number of locations, mainly in wet areas. The species was documented at the now destroyed Camp Evers wetland complex in Scotts Valley and anecdotally noted from wet areas along Glenwood Drive in Scotts Valley. Otherwise the species is known from Marin County northward. Very marginal potential habitat is at the survey site, but the species was not located. Moreover, during years of prior surveys by Mr. West, he has not found this very conspicuous species previously at this or other watershed locations.

6.0 Plant species inventory

Dr. Hayes and Mr. West recorded one-hundred and one plant species in total: 48 exotic species; 53 native species (for the list of species, see Appendix B). The site contains two species potentially of interest: Monterey pine (*Pinus radiata*) and Shreve oak (*Quercus parvula* var. *shrevii*). The Monterey pine are non-native, planted as a plantation and presenting a potential threat to the local gene pool of native Monterey pine (Rogers 2002); the loss of these trees will benefit the local pines. The site also contains individual Shreve oaks, which, when dominating natural stands, may be considered somewhat sensitive due to the limited range of such associations. But, because individual trees are common throughout central California's Coast Ranges and the species has no listing status, such single trees so are not considered sensitive.

7.0 Potential Impacts and Mitigation Measures

As described above, there will be no significant direct impacts to botanical resources as a result of the proposed project. The most significant potential impacts are indirect impacts to botanical resources as may be presented by plantings associated with the proposed development and disturbance fostering areas of establishment of new invasive plant populations.

Plantings

As plans are not available for analysis, these guidelines should serve to avoid impacts from plantings associated with the proposed project:

- No planting of CalIPC (California Invasive Plant Council (CalIPC) 2011) listed species which are recognized threats in the region
- No planting of species in the following genera, as these could hybridize with sensitive species in the vicinity, threatening the integrity of the genepool. If these genera are desired, local collections could be used in the landscape.
 - *Arctostaphylos*
 - *Ceanothus*
 - *Quercus*
 - *Pinus*

Invasive species

Plant species prioritized for the region as cited by CalIPC will be controlled in areas disturbed and adjacent to disturbance associated with the project.

Citations

California Invasive Plant Council (CalIPC). 2011. Exotic Pest Plants of Greatest Ecological Concern in California. Sacramento, CA: California Invasive Plant Council. See web page:

California Native Plant Society & California Department of Fish and Game. 2009. Protocol for combined vegetation rapid assessment and relevé sampling field form. Sacramento, CA. Unpublished Report. 18 pp.

Rogers DL. 2002. In situ genetic conservation of Monterey pine (*Pinus radiata* D. Don): Information and recommendations. Davis, CA: Division of Agriculture and Natural Resources, University of California. Report no 26.

State of California Department of Forestry and Fire Protection. 2007. Swanton Pacific Ranch NTMP. Sacramento, CA. Unpublished Forestry Plan.



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

Cal Poly Technical Institute
125 Swanton Road
Davenport, CA 95017

January 29, 2014

Application No: REV 121078

Introduction:

We have received and reviewed the completed Botanical and Wildlife Reports for the Swanton Pacific Smith Field Camp project prepared by Grey Hayes (February 11, 2013) and Dan Grout of Grout Biological Consulting (June 14, 2013). These specific surveys were conducted in the portion of the Swanton Pacific property, currently in the ownership and management of California Polytechnic State University Foundation, located along School House Gulch Road adjacent to the existing Al Smith House. The proposed project is to expand the existing Al Smith House building along with additional housing facilities, parking, and access roads. There are three distinct development sites in this location. Development Areas 1 and 2, as referred to in the above reports, will support newly constructed field cabins and adjacent parking. Area 3, will entail remodeling and a small addition to the currently existing Al Smith House educational facility.

Discussion:

The Wildlife Report by Grout Biological Consulting identifies potential indirect impacts to red legged frogs based upon the proximity of a breeding pond approximately 1,000 feet away from the project site. Substantial avoidance measures have been identified and are in place for timber work related to the Non-industrial Timber Management Plan (2007). The report recommends further measures, summarized below, that shall be made conditions of approval in order to ensure no significant impacts to red legged frogs occur.

1. Minimize wet-season disturbance area.
2. Time work for the dry season as much as possible.
3. Pre and during construction monitoring by an independent USFWS approved biologist.
4. Worker training.
5. Monitor present for any disturbance in the vicinity of Staub Pond.
6. Implementation of a red-legged frog Avoidance and Monitoring Plan.
7. Sediment Control.
8. Invasive species control.
9. Clearly delineated staging areas.
10. No off-road travel.
11. Education for all students and staff on red-legged frogs.

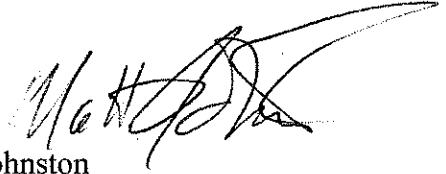
The Botanical Report by D. Hayes determines that there are no special status species in the project area, and recommends measures to avoid the spread of invasive species.

Conclusion:

The report was reviewed by the County Planning Department and has been accepted, provided the recommendations of the of the two reports are incorporated into the proposed project.

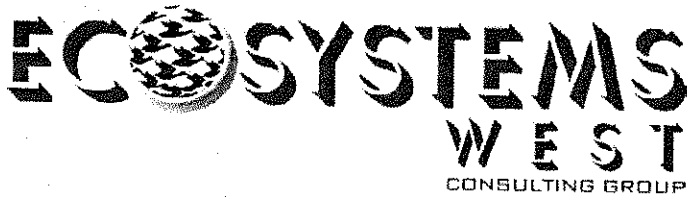
Please call me at 831-454-3201 if you have any questions about this letter.

Sincerely,



Matthew Johnston
Environmental Planning

CC: Robin Bolster-Grant



January 17, 2013

Matt Johnston
Planning Department
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Re: Biological Review of the Biotic Reports Prepared for the Swanton Pacific Smith Field Camp Project. Application No REV 121078.

Dear Matt:

This letter summarizes my review of the Botanical and Wildlife Reports prepared for the Swanton Pacific Smith Field Camp project. The botanical report entitled "Smith Field Cabins Botanical Report" dated February 11, 2013, was prepared by Grey Hayes, PhD. The wildlife report entitled "Wildlife Report for the Swanton Pacific Field Camp" was prepared by Dan Grout of Grout Biological Consulting. These specific surveys were conducted in the portion of the Swanton Pacific property, currently in the ownership and management of California Polytechnic State University Foundation, located along School House Gulch Road adjacent to the existing Al Smith House. The proposed project is to expand the existing Al Smith House building along with additional housing facilities, parking, and access roads. There are three distinct development sites in this location. Development Areas 1 and 2, as referred to in the above reports, will support newly constructed field cabins and adjacent parking. Area 3, will entail remodeling and a small addition to the currently existing Al Smith House educational facility. All three areas have experienced significant land use impacts prior to these biotic surveys. The proposed field cabins sites (Areas 1 and 2), have been previously used for logging operations and had been cleared of trees and shrubs with minor grading, particularly in Area 2. Area 3 is an open, landscaped area surrounding the Al Smith House, with a mowed annual grassland dominated habitat supporting scattered stands of coast live oak.

The proposed development areas were visited by Bill Davilla of EcoSystems West along with Matt Johnston and Robin Bolster of the County of Santa Cruz Planning Department on August 30, 2011 for a field overview with Swanton Pacific Ranch planning staff and Dr. Grey Hayes and Dan Grout. At that time we reviewed the proposed site plans and footprints. Based on this earlier field visit, it was not deemed necessary to conduct a subsequent visit to the property during the review of the two biotic reports.

In general summary, both reports found that no sensitive plant or wildlife resources will be directly affected during the course of development and build-out of the project areas. No sensitive habitat exists within the development footprint. All surveys were conducted during the appropriate phenologic periods for identification of breeding occurrences or flowering period, although the botanical field surveys were conducted in July 2011 which for annual grassland habitats would be typically late for spring flowering annuals. Two things mitigate this late surveys credibility. The first is that in 2011 the north coast experience a very wet spring and early summer precipitation events, maintaining annual plant communities longer into the summer months and second, botanical surveys were assisted by Swanton Ranch resident, Jim West, a recognized expert of the flora of the Swanton and Scotts Creek watershed region, who as conducted floristic surveys of the entire Swanton Pacific Ranch for many years.

Both reports followed appropriate methodology prescribed for biological surveys and reporting, including data base and literature review, properly timed field surveys, and habitat and population analysis. Therefore, this reviewer concurs with their findings that there will be no direct impacts to special-status species or habitats from the proposed developments. The wildlife report prepared by Mr. Grout, is especially comprehensive with background review of potential special-status wildlife species and focused field surveys. This is particularly true of the assessment for badger and California red-legged frog which is known to breed in Lower Staub pond only 1000 feet from the proposed development footprint. Although, no attractive hydric habitat occurs within or directly adjacent to the proposed Field Camp, Mr. Grout proposes several BMP measures to minimize the potential for "incidental take" of frogs moving through the project area, not only during construction but during operation as well. It is my recommendation, that his proposed avoidance measures be followed as specified. Mitigation measures proposed by Dr. Grey should be implemented for landscape planting selections and invasive species management.

It is my opinion that this development will not result in direct or indirect, short or long-term impacts to the natural habitats or special-status species in the vicinity of the project area. Should you require further clarification of this review, please don't hesitate to contact me.

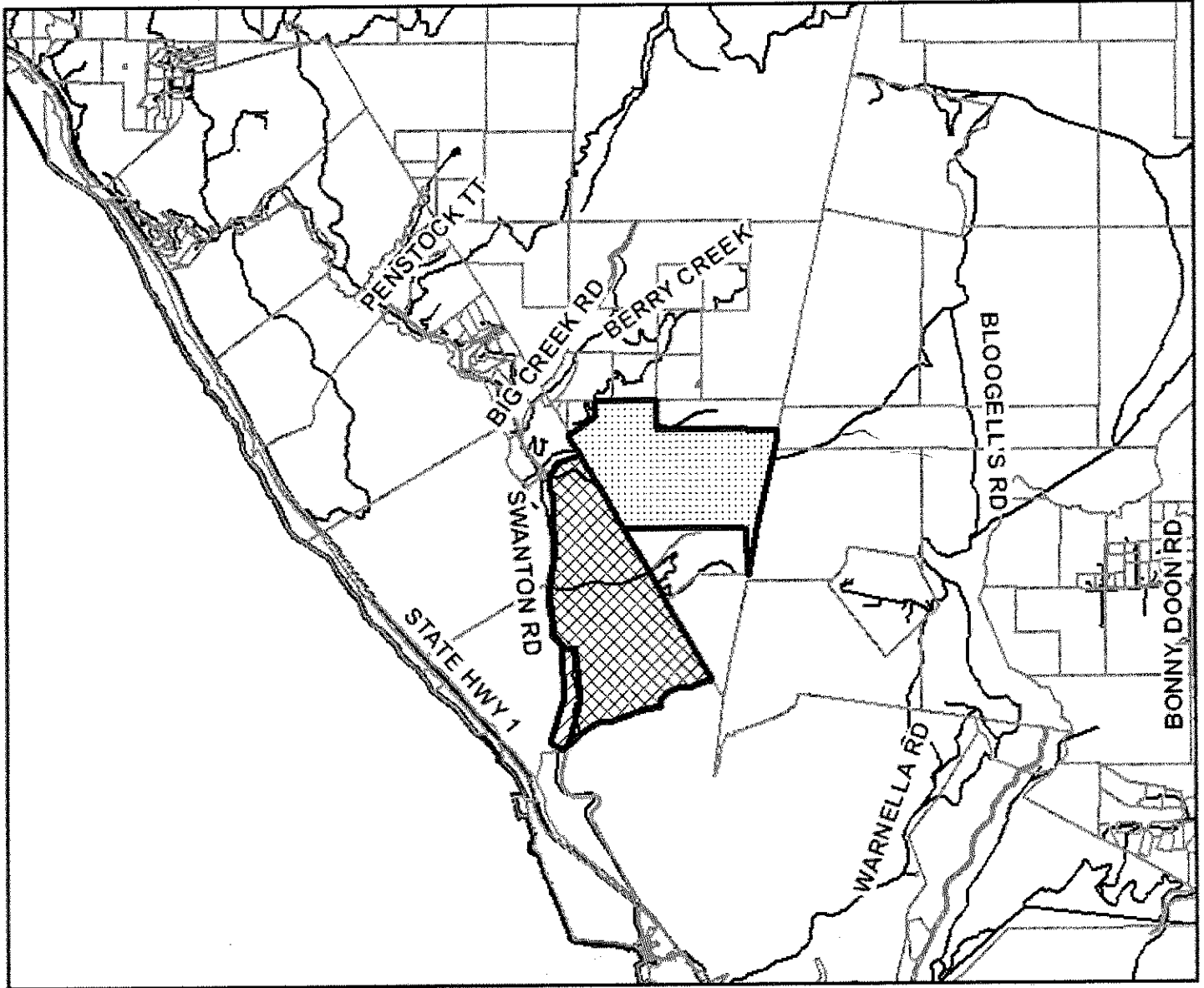
Sincerely,










Bill Davilla
Principal

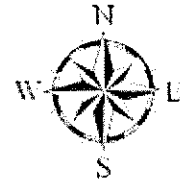


Location Map



LEGEND

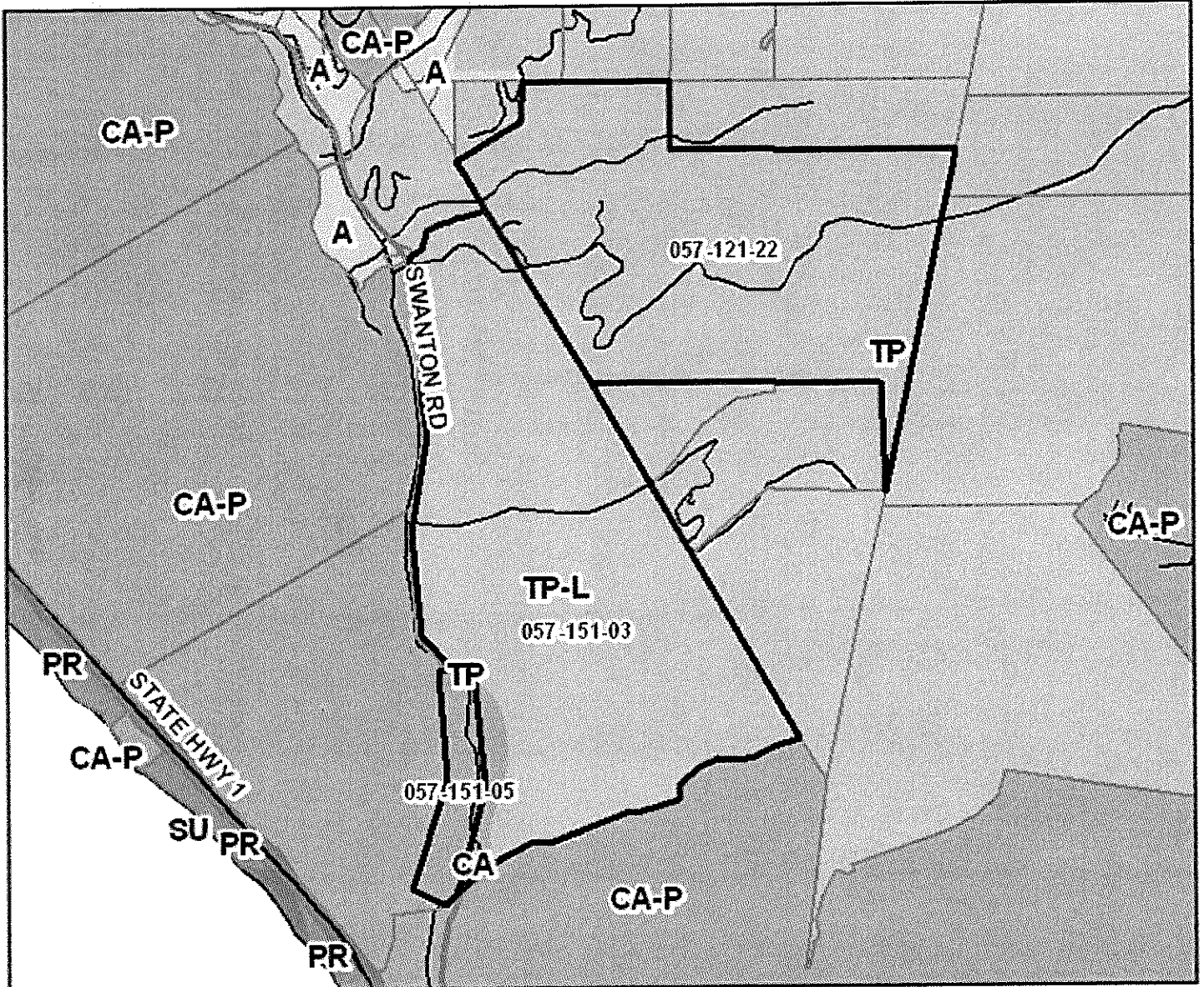
-  APN: 057-151-05
-  APN: 057-151-03
-  APN: 057-121-22
-  Assessors Parcels
-  Streets
-  State Highways
-  County Boundary



Map Created by
County of Santa Cruz
Planning Department
December 2012

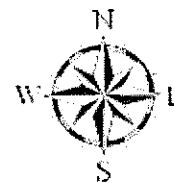


Zoning Map



LEGEND

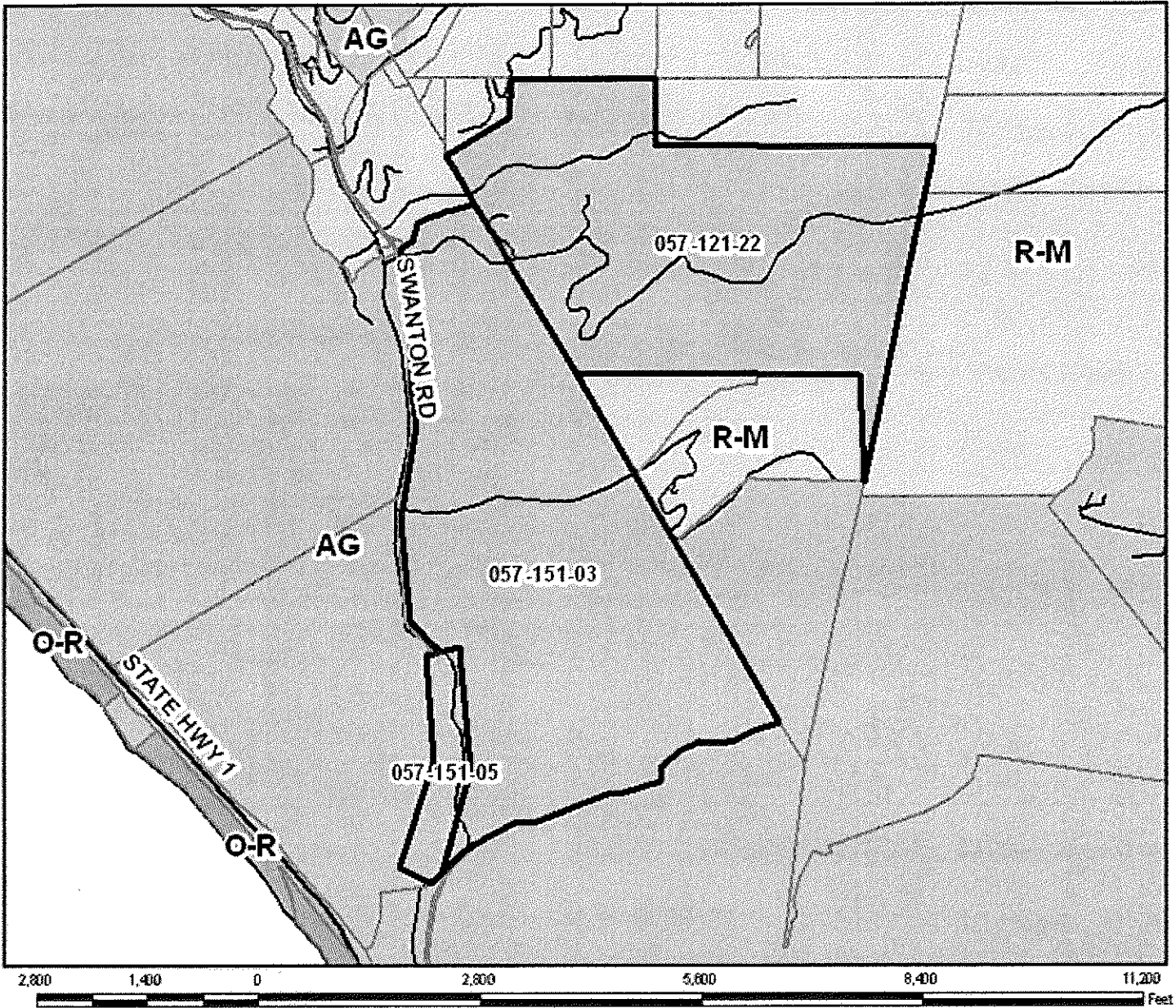
- Water
- Sewer
- Roadway
- Boundary
- County Boundary
- AGRICULTURE
- INDUSTRIAL
- AGRICULTURE - COMMERCIAL
- PARK
- SPECIAL USE



Map Created by
County of Santa Cruz
Planning Department
December 2012



General Plan Designation Map



LEGEND

	APN: 057-151-05
	APN: 057-151-03
	APN: 057-121-22
	Assessor's Parcels
	Street
	State Highways
	County Boundary
	Residential Medium Density
	Agriculture
	Parks and Recreation

Map Created by
 County of Santa Cruz
 Planning Department
 December 2012

Bay Area
Central Coast/Business
Pacific Basin
Valley/Sierra
Internet/E-mail

1027 San Pablo Ave. ◊ Albany, CA 94706 ◊ 510-524-3991 ◊ 510-524-4419 fax
10096 Soquel Dr., Ste. 3 ◊ Aptos, CA 95003 ◊ 408-684-1772 ◊ 408-684-1775 fax
332 Uluniu St. ◊ Kailua, HI 96734 ◊ 808-263-4800 ◊ 808-263-4300 fax
3081 Alhambra Dr., Ste. 208, Cameron Park, CA 95682 ◊ 530-677-9713 ◊ 530-677-9762 fax
www.pacificlegacy.com



February 2, 1999

Mr. Walter Mark
Swanton Pacific Ranch-
California State Polytechnic University
125 Swanton Road
Davenport, California 95017

Re: Archaeological survey of approximately 5 acres for the proposed Cal Poly project at Assessor's Parcel Number 57-12-22, Santa Cruz County, California.

Dear Mr. Mark:

Pacific Legacy, Inc. has conducted an archaeological survey of approximately 5 acres within Assessor's Parcel Number 57-12-22, Santa Cruz County, California. The proposed project consists of constructing 12 small buildings and associated support facilities (i.e., parking lot, roads, utilities) in the southwest portion of the project area. The survey was undertaken to locate, identify, and assess any archaeological or historical resources within the project area.

The approximately 5 acre project area is a rectilinear property with its long axis oriented roughly northeast-southwest along a ridge adjacent to Little Creek canyon. The project area is characterized by a grassy knoll topped by oak and fir in the southwest, a minor drainage and pond in the center of the property, an open, grassy field in the east, a wooded and brushy slope in the south and southeast, and a redwood forest adjacent to Little Creek in the north.

The survey was conducted January 28, 1999 by *Pacific Legacy* archaeologist Christopher Morgan, B.A., who has over nine years experience in California and southwestern archaeology. All exposed soils within the project area were inspected by walking compass-oriented transects at approximately 15 m intervals. Visibility was relatively good in the open grasslands where bare patches, thin grass, and rodent tailings afforded a good view of the soil. Visibility was poor in the redwoods, in the north, and on top of the knoll, in the southwest, due to thick duff accumulation. The wooded slope to the south and southeast afforded fair visibility, with bare soil evident between large shrubs and trees.

In addition to the field survey, background research was conducted at the map room of McHenry Library at the University of California, Santa Cruz. Aerial photographs from 1929 to 1953 were consulted, as were superceded U.S.G.S. 7.5' Davenport and 15' Santa Cruz topographic maps dated from 1912 (a reprint of a 1902 edition) to 1955. Background research sought to identify any historical structures, plantings, or landscape modifications to the project area which might not be visible from the ground.

Survey identified a number of redwood stumps with springboard notches located on the steep slopes in the northern project area. These stumps are characteristic of logging prior to the use of motor-driven saws; the notches were used to place wooden footholds or "spring boards" to aid access to the tree by loggers. Springboard-notched stumps are ubiquitous to the Santa Cruz

Bay Area
Central Coast/Business
Pacific Basin
Valley/Sierra
Internet/E-mail

1027 San Pablo Ave. ◊ Albany, CA 94706 ◊ 510-524-3991 ◊ 510-524-4419 fax
10096 Soquel Dr., Ste. 3 ◊ Aptos, CA 95003 ◊ 408-684-1772 ◊ 408-684-1775 fax
332 Uluniu St. ◊ Kailua, HI 96734 ◊ 808-263-4800 ◊ 808-263-4300 fax
3081 Alhambra Dr., Ste. 208, Cameron Park, CA 95682 ◊ 530-677-9713 ◊ 530-677-9762 fax
www.pacificlegacy.com



building foundations) are found during construction, work in the area of the find should be halted and a qualified archaeologist contacted immediately to evaluate the nature and significance of the find. In the event that human remains or suspected human remains are found during construction, work must, by law, be halted in the area of the discovery and the County Coroner contacted as prescribed by the State of California Health and Safety Code 7050.5 and Public Resources Code 5097.

If you have any questions, comments, or need further information, please do not hesitate contacting me.

Sincerely,

A handwritten signature in black ink, appearing to read "Thomas L. Jackson".

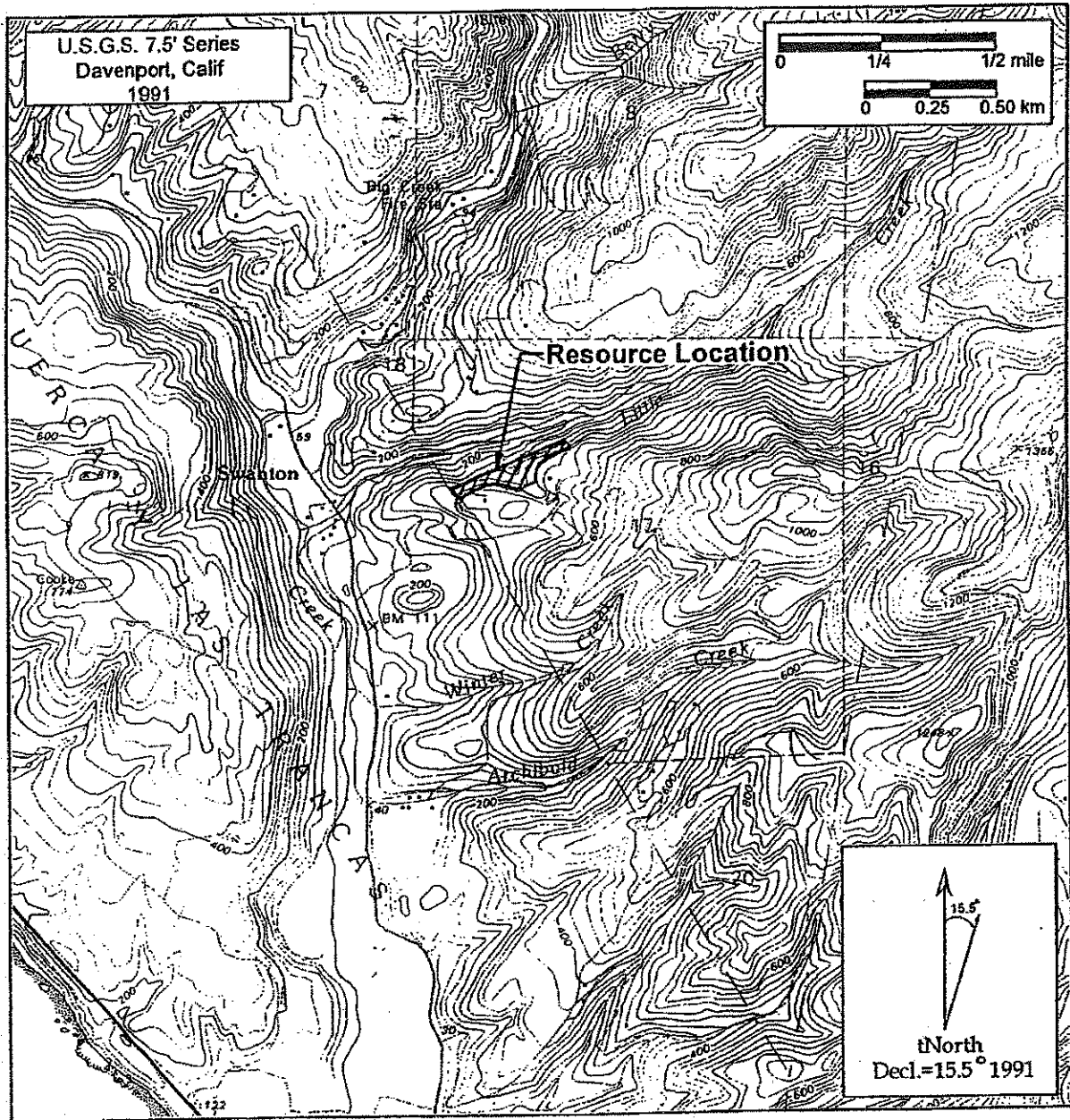
Thomas L. Jackson, Ph.D.
Principal
Central Coast Branch

Enclosure

*Map Name: Davenport, CA. 7.5'

*Scale: 1:24,000

Date of Map: 1991





OFFICE OF THE FIRE MARSHAL

SANTA CRUZ COUNTY FIRE DEPARTMENT / **CAL FIRE**

CAL FIRE

SAN MATEO-SANTA CRUZ UNIT

6059 HIGHWAY 9
P.O. DRAWER F-2
FELTON, CA 95018
Phone (831) 335-6748
Fax # (831) 335-4053

SCOTT JALBERT
FIRE CHIEF

May 29th, 2013

Brian C. Dieterick
Swanton Pacific Ranch
Cal Poly State University
San Luis Obispo, CA 93407

RE: Access road to proposed Swanton Pacific Educational Center and Field Camp. APN 057-121-22 (Correction to letter dated March 25th, 2013.)

Dear Mr. Dieterick,

This is in response to our discussion, with Chief Jalbert, on May 28th, 2013 in which you revealed a typo in our letter dated March 25th, 2013. Below is the excerpted section from the letter with the typo highlighted:

The highlighted section pertains to your project as "Organized Camps" fall under Title 19 and require a twenty (20) foot wide road. In light of additional planned improvements for the new and existing camp structures, i.e. fire sprinklers in all buildings, water storage meeting 2010 Fire Code requirements, and hydrants we are willing to allow the use of the existing 12-18 foot wide all weather surface road, that has existing full-sized turnouts, with the following conditions:

- *Not to exceeded use permit and/or building occupancy limits.*
- *Removal of the existing "Yurts" **and** follow the requirements for "membrane" structures found in the Fire Code, including required permits.*
- *An evacuation plan, as required by the Fire Code.*
- *Annual inspections for the "organized camp."*

The "and" should actually read "or" in the sentence above. The intent is for you to remove the two "Yurts" or bring them up to the current fire code requirements. There are requirements within the 2010 Fire Code regulating tents and membrane structures, along with additional fire code sections that pertain to these structures.

This clarification only affects the two existing "Yurts" within the scope of the letter dated March 25th, 2013.

ATTACHMENT 1



OFFICE OF THE FIRE MARSHAL

SANTA CRUZ COUNTY FIRE DEPARTMENT / **CAL FIRE**

**CAL FIRE
SAN MATEO-SANTA CRUZ UNIT**

6059 HIGHWAY 9
P.O. DRAWER F-2
FELTON, CA 95018
Phone (831) 335-6748
Fax # (831) 335-4053

SCOTT JALBERT
FIRE CHIEF

March 25th, 2013

Brian C. Dietterick
Swanton Pacific Ranch
Cal Poly State University
San Luis Obispo, CA 93407

RE: Access road to proposed Swanton Pacific Educational Center and Field Camp. APN 057-121-22

Dear Mr. Dietterick,

This is in response to your letter (and email) dated February 23, 2013 in which you request a variance to the road width requirements for the fire department access road to the above parcel. Below is the county code section regarding the width requirements for fire department access roads.

2010 SANTA CRUZ COUNTY FIRE CODE

7.92.503.2.1 Section 503.2.1 is amended – Dimensions.

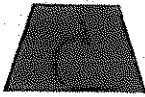
Section 503.2.1 of Chapter 5 of the Fire Code of Santa Cruz County is amended to read as follows:

503.2.1 – Dimensions. Fire Apparatus access roads shall have an unobstructed width of not less than 20 feet (6096 mm) except for approved security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 13 feet 6 inches (4115 mm).

EXCEPTIONS: 1. Outside of the Urban Services Line as established by the County of Santa Cruz, access roads shall be a minimum of 18 feet wide for all access roads or driveways serving more than two habitable structures, and 12 feet for an access road or driveway serving two or fewer habitable structures. Where it is environmentally inadvisable to meet these criteria (due to excessive grading, tree removal or other environmental impacts), a 12-foot wide all-weather surface access road with 12-foot wide by 35-foot long turnouts located approximately every 500 feet may be provided with the approval of the fire code official.

NOTE: Title 19 of the California Administrative Code requires that access roads from every state governed building to a public street shall be all-weather hard-surface (suitable

ATTACHMENT 1.0



Dees & Associates, Inc.
Geotechnical Engineers

501 Mission Street, Suite 8A Santa Cruz, CA 95060

Phone (831) 427-1770 Fax (831) 427-1794

April 29, 2013

Project No. SCR-0563

SWANTON PACIFIC RANCH
Brian Dietterick
900 School House Gulch Road
Davenport, California 95017

Subject: Stability of Proposed Septic Leachfield Locations

Reference: Proposed Field Camp, Staff Cabins and Learning/Dining Center
900 School House Gulch Road
APN 057-121-22
Santa Cruz County, California

Dear Mr. Dietterick:

The proposed leachfield locations are suitable for the site and there is a low potential for landslides to develop below the proposed leachfields.

The slopes below the leachfield for the staff cabins and student housing are gentle and underlain by shallow bedrock. There is a low potential for landslides to develop based on the gentle slope configuration and shallow bedrock below the leachfield.

The leachfield proposed at the educational/dining building is moderately steep to steep and there is a cutslope located 50 feet downslope of the proposed leachfield. In order to determine if the slope is stable below the leachfield, we have performed a stability analysis of the slope. Our analysis is based on an infinite slope analysis using stability charts and the results of our saturated direct shear tests, attached.

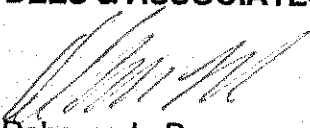
The effective flow depth of the leachfield proposed at the dining hall is 4 feet and the depth of the leachfield is 5 feet. The soils in the vicinity of the leachfield consist of clayey soils that vary from 0.5 to 4 feet in depth across the leachfield area underlain by sandy and gravelly highly fractured mudstone. The percolation rate in the clayey soils is on the order of 7.5 minutes per inch and the percolation rate in the fractured mudstone is on the order of 15 minutes per inch and the in-flow rate is 0.36 gallons per square feet of leachfield area (Fall Creek Engineering). We have assumed seepage parallel to the slope in the top 8 feet for the slope directly downslope of the leachfield area. Our calculations indicate the slope just downslope of the leachfield has a factor of safety of 1.5.

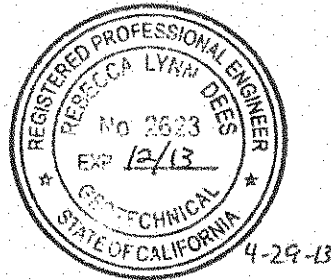
The cutslope along the inboard side of the driveway below the leachfield site is 50 feet downslope of the leachfield area. Based on the percolation rates, inflow rates and distance to the cutslope, it is highly improbable water will daylight on the cutslope.

Our analysis considered failures in the upper soil horizon. Our discussions with Reid Fisher, Senior Geologist at Pacific Geotechnical Engineering indicate there is a low potential for deep seated landslides to develop below the leachfield site due to the shallow depth to mudstone. We understand a letter discussing the stability of the slope below the leachfield will be prepared by Reid Fisher.

Very truly yours,

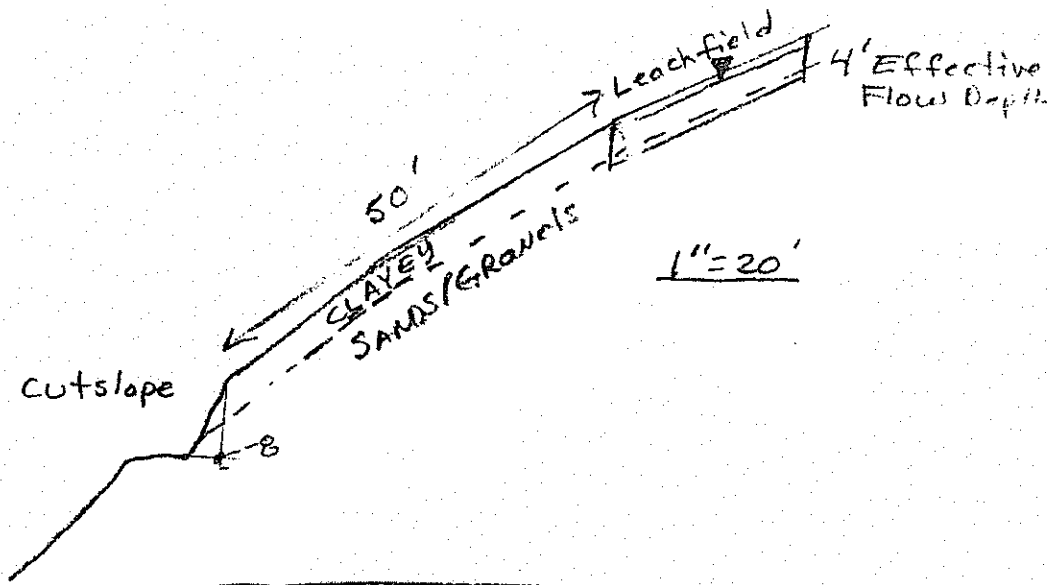
DEES & ASSOCIATES, INC.


Rebecca L. Dees
Geotechnical Engineer
G.E. 2623



Attachments

Copies: 1 to Addressee
 4 to Fall Creek Engineering
 1 to Pacific Geotechnical Engineering; Reid Fisher, CEG



SCR-0565
 Staub Field Camp
 4-24-15 BD
 SCL

0-4' clayey (P-2)
 4-7' Sand/Gravel
 (Highly weathered
 and fractured
 bedrock)

AND
 0-0.5' clayey (P-3)
 0.5'-13' Sand/Gravel
 (Highly weathered
 and fractured
 bedrock)

Assume 8' sliding surface
 for analysis

$$r_u = \frac{u}{\gamma H} \quad u = 8' \times 62.4 \text{ pcf}$$

$$\gamma = 127 \text{ pcf}$$

$$H = 8'$$

$$r_u = \frac{8' \times 62.4}{127 \times 8} = \underline{0.49}$$

for seepage parallel to slope

PERC RATE

$$8 \text{ in/hr} = 7.5 \text{ mpi} @ 2' - 8''$$

$$4 \text{ in/hr} = 15.0 \text{ mpi} @ 4' - 11''$$

Flow Rate

$$0.36 \text{ gpd/ft}^2$$

$$r_u = \frac{x}{T} \frac{\gamma_w}{\gamma} \cos^2 \beta$$

x = Depth to sliding surface = 8' (vertical)

T = Depth of sliding surface to slope
 (Normal to slope surface) = 6.6'

$$r_u = \frac{8}{6.6} \frac{62.4}{127} \cos^2 35$$

B = slope angle = 35° below leachfield

$$r_u = \underline{0.140}$$

$$\text{FACTOR OF SAFETY} = F = A \frac{\tan \phi'}{\tan \beta} + B \frac{c'}{\gamma H}$$

$$F = 0.35 \frac{\tan 35}{\tan 35} + 2.0 \frac{559}{127 \times 8}$$

$$F = \underline{1.45} \text{ ok } \checkmark$$

A & B from chart

$$B = 2.0 \text{ for } r_u = 0.49$$

$$A = 0.35$$

$\phi' = 35^\circ$ (Direct Shear)

$\beta = 35^\circ$

$\gamma = 127$

$H = 8$

$c' = 559 \text{ psf}$



County of Santa Cruz, PLANNING DEPARTMENT

Discretionary Application Comments 121314

APN 057-121-22

Your plans have been sent to several agencies for review. The comments that were received are printed below. Please read each comment, noting who the reviewer is and which of the three categories (Completeness, Policy Considerations/Compliance, and Permit Conditions/Additional Information) the comment is in.

Completeness: A comment in this section indicates that your application is lacking certain information that is necessary for your plans to be reviewed and your project to proceed.

Policy Considerations/Compliance: Comments in this section indicate that there are conflicts or possible conflicts between your project and the County General Plan, County Code, and/or Design Criteria. We recommend that you address these issues with the project planner and the reviewer before investing in revising your plans in any particular direction.

Permit Conditions/Additional Information: These comments are for your information. No action is required at this time. You may contact the project planner or the reviewer for clarification if needed.

Environmental Health Review

Routing No: 1 | Review Date: 01/10/2013

JIM SAFRANEK (JSafranek) : Complete

The proposal is complete for EH. Preliminary septic suitability testing is complete. Prior to BP and septic system application approval by EH, the proposed septic tanks and sewage disposal locations will need to be reviewed and approved by County Environmental Planning.



October 1, 2012

Brian Dietterick, Ranch Director
Swanton Pacific Ranch
125 Swanton Road
Davenport, CA 95017
bdietter@calpoly.edu

Subject: **Site Assessment – Field Camp
Swanton Pacific Ranch
APN: 057-151-03 (Field Camp) and 057-121-22 (Dining Hall/Smith House)**

Dear Brian:

Fall Creek Engineering, Inc. (FCE) is pleased to present to you this site assessment report for the Field Camp (Camp) improvements proposed for the Swanton Pacific Ranch located in Davenport, California. The site assessment summarizes the findings of the soil and groundwater investigation conducted from 2008 through 2012 in support of the design of new wastewater systems for the Camp.

1. Introduction

California Polytechnic State University, San Luis Obispo (Cal Poly) operates the Swanton Pacific Ranch (Ranch) as a hands-on educational facility emphasizing resource conservation applied through sustainable management techniques. Throughout the year, the Ranch offers short courses that extend from 3 to 5 weeks with most of the courses occurring during the summer months. During these courses, the students live in temporary housing at the Field Camp and work throughout the Ranch.

The Ranch is proposing to improve the property by providing student cabins, staff cabins, a central kitchen/dining room facility, a learning center, and an outdoor space for student activities. All improvements will occur on parcel 057-121-22, a 382.4-acre parcel that currently includes the Al Smith house (Smith house) and student and staff housing.

The proposed improvements are divided into two areas: the Field Camp and the Dining Hall. The Field Camp includes the student cabin area and the staff cabin area. The student cabins include an amphitheater, 14 cabins for 48 students, a cantina, laundry facilities, and a central comfort station with toilets and showers. The staff cabins include 2 duplexes for 4 staff members that include restrooms, kitchens, and laundry facilities. The Dining Hall area is near the existing Al Smith House and includes a new dining room, commercial kitchen and learning center in the existing garage.

FCE completed a subsurface investigation in each of the three areas to determine appropriate areas for onsite subsurface disposal. FCE also monitored groundwater levels to ensure the proposed disposal system would meet County and State set back requirements and not impact groundwater quality. The site assessment report summarizes the investigation and monitoring performed onsite.

2. Site Assessment

Topography. The Field Camp is situated on sloping to gently sloping terrain with less than 20% slopes.

Soil Conditions. FCE performed a soil investigation consisting of test pits, soil borings, and percolation tests for the Field Camp and soil borings and percolation tests for the Dining Hall and learning center.

Field Camp. The Ranch installed piezometers in December 2011. A test pit was installed in December 2011 and a total of four percolation tests (two at each site) were conducted on February 10, 2012. The locations of the piezometers, test pits, and percolation tests are shown in Figure 1.

Dining Hall. The Ranch installed piezometers in January 2008 and FCE concurrently logged the soil information. Two percolation tests were performed on March 7, 2012. The locations of the soil borings (piezometers), test pit, and percolation tests are shown in Figure 1.

The USDA Soil Survey has identified the soils in the vicinity of the improvements for the Ranch as the Tierra-Watsonville complex and Bonnydoon Loam. The Tierra-Watsonville soil consists of approximately 50 percent Tierra and similar soils, 30 percent Watsonville and similar soils, and 15 percent of other, minor soil components.

Tierra Soils. The tierra soils consist of moderately well-drained soils on derived from sedimentary rock. The vegetation ranges from grasses to oak and fir trees. A typical profile of the Tierra soils has a top soil and a subsoil. The top soil is primarily sandy loam about 14 inches thick. The subsoil is 52 inches thick and consists of clay, clay loam, and sandy clay.

Watsonville Soils. The watsonville soils consist of somewhat poorly drained soils derived from sedimentary rock. A typical profile of the soils will have two subsoils under the top soil layer. The top soil is primarily loam about 18 inches thick. The soils from 18 to 39 inches below the top soil are primarily clay and clayey loam. The lowest layer of soil consists of sandy clay loam and clay loam from 39 to 63 inches below the surface.

Bonnydoon Loam. The bonnydoon loam soils consist of somewhat excessively drained soils from residuum weathered from mudstone and/or residuum weathered from sandstone and shale. A typical profile of the soils will have 11 inches of loam on 4 inches (from 11 to 15 inches below ground) of weathered bedrock.

Dining Hall Soil Investigation. The soil investigation revealed the soils in the area of the Dining Hall and learning center as bonnydoon loam soils with weathered mudstone and sandstone throughout the soil profile. The top soil is 6" to 12" thick and consists of dark brown loam with fines and organics. The soils encountered during the construction of Piezometer 2 were clayey loams to 4 feet, followed by loose, medium graded gravel to 10 feet. Large rocks were encountered from soils from 10 to 14 foot depths. The soils

encountered when Piezometer 3 was installed were predominantly sands and gravels typical of the bonnydoon loam throughout the profile.

Field Camp Soil Investigation. The soil investigation for the field camp areas (both the student cabins and the staff housing) included two areas that were deemed appropriate for subsurface disposal areas. One area in the vicinity of the proposed student cabins encountered Bonny Doon loam series with 24" to 26" of top soil that is primarily loam with minimal sand and clay. The subsoils had a layer of weathered mudstone that varied from 6' to 10', typical of this soil.

Piezometers. FCE worked with the Ranch to install a total of five piezometers in the vicinity of the improvements. Two piezometers were installed near the proposed Dining Hall in January 2008 and three piezometers were installed in the Field Camp in November 2011. The piezometers were installed using a 10"-diameter auger attached to a backhoe. The piezometers at the Dining Hall were installed in the soil boring locations and were installed to a depth of 14 feet. Soil logs from the borings are included in Attachment A. The piezometers in the Field Camp were installed to a depth of 13 feet. The piezometers were installed to monitor the groundwater levels during the winter period. Figure 1 shows the location of the piezometers.

FCE measured groundwater levels with Santa Cruz Environmental Health staff on March 17, 2010 at the Dining Hall, and on March 27, 2012 at the Field Camp. Both measurements were taken while winter water table testing period was open for their respective years. The observed water elevation monitoring results are summarized in Table 1.

Table 1. Groundwater Monitoring for Dining Hall (2010) and Field Camp (2012)

Piezometer	Total Depth (ft)	Exposed Pipe Length (ft)	Piezometer Depth (ft)	Depth to GW (ft)			
				2/3/2010	3/17/2010	4/9/2010	3/27/2012
Dining Hall							
P-2	15.67	1.67	14.00	dry	dry	dry	-
P-3	15.83	1.83	14.00	dry	dry	dry	-
Field Camp - Staff Housing							
P-100	14.96	1.67	13.29	-	-	-	dry
Field Camp - Student Housing							
P-101	14.83	1.75	13.08	-	-	-	dry
P-102	14.92	1.67	13.25	-	-	-	dry

The results of the groundwater monitoring observations indicate that the groundwater table is deeper than the installed piezometers and the areas are suitable for wastewater disposal if shallow leachfields are used to maintain at least 5 feet of separation.

Percolation Tests. Percolation tests were performed in accordance with procedures outlined by Santa Cruz County Environmental Health Services. The first set of percolation tests attempted at the Dining Hall were too slow and failed. The Ranch installed two additional percolation tests that were successful. Those results are presented in the table below. Two sets of percolation tests were performed in the Field Camp. Each set of tests were performed at two depths, 2 feet and 5 feet. Locations of the percolation tests are shown in Figure 1. The results of the percolation tests are shown in Table 2 and logged data is included in Attachment A.

Table 2. Percolation Testing Results, minutes/inch (mpi)

	Dining Hall/Smith Area		Student Cabin Area		Staff Cabin Area	
Test ID	Smith-1	Smith-2	Student-1	Student-2	Staff-1	Staff-2
Depth	2'-8"	4'-11"	3'-0"	5'6"	2'-10"	5'-0"
Percolation Rate	7.5 mpi	15 mpi	10 mpi	1.7 mpi	>100 mpi	2 mpi

The results of the tests indicate that the soils at the Dining Hall percolated at rates of 1.7 and 15 minutes per inch (mpi) and are well suited for wastewater disposal. The percolation test results in the Field Camp resulted in different infiltration rates in the upper and lower soils. At the staff cabin area, the upper soils did not percolate but the lower soils percolated water at a rate of 2 mpi. At the student cabin area, the upper soils percolated at a rate of 10 mpi, and the lower soils percolated quickly at a rate of 1.7 mpi. The soils at a depth of 5 feet in the Field Camp are suitable for wastewater disposal.

3. Wastewater Flow Projection

Wastewater flow projections were developed for the Camp improvements using unit flows prescribed by Santa Cruz County (Chapter 7.38 Sewage Disposal) and Metcalf & Eddy (2003)¹. The flows at the Dining Hall & Al Smith House were divided into two separate systems. The existing house and existing septic system will not change. The proposed improvements are focused on converting the existing garage into a learning center and Dining Hall. The projected use of the Dining Hall will be to prepare three meals for camp residents – which will include 48 students, 4 staff members, and up to two guests staying in the Al Smith House, or approximately 162 meals per day. Metcalf & Eddy (2002) report a unit flow rate of 7 gallons per day (gpd) per meal served in (2003). FCE used a conservative flow rate of 10 gpd per meal to estimate the flow rate from the Dining Hall for a peak flow rate of 1,620 gpd.

The wastewater for the Field Camp areas was divided into the student cabins and the staff duplexes. The student camp area will provide housing and a central comfort station with restroom and showering facilities, washers and dryers, and a small cantina for students to prepare snacks and meals. FCE estimates the wastewater flow rate from the student area will be similar to a boarding house, approximately 40 gallons per day per

¹ Metcalf & Eddy. 2002. *Wastewater Engineering Treatment and Reuse*. McGraw-Hill. Boston

person (gpcd). At a maximum occupancy of 48 students, the estimated peak flow rate from the student area is 1,920 gallons per day (gpd).

The staff cabins will provide four living units, each with a small kitchen and a washer and dryer. FCE estimates the wastewater flow rate from the staff cabins will be 75 gpcd. At a maximum occupancy of 4 staff members, the estimated flow rate is 300 gpd.

A summary of the flow estimates and the proposed septic tank sizes for each area are presented in Table 3.

Table 3. Projected Daily Wastewater Flow Rate and Proposed Septic Tank Capacity

Location	Occupancy	Unit Flow Rate (gpcd)	Total Flow Rate (gpd)	Proposed Septic Tank (gal)
Smith House - Existing, no changes	2	75	150	1,500 (E)
Dining Hall (52 guests, 3 meals per day)	162	10	1,620	5,000
Student Housing (central comfort stations, washer/dryer, sinks)	48	40	1,920	6,000
Staff Housing (kitchen and washer/dryer)	4	75	300	2,000

4. Disposal Area Requirements

The area required for disposal of wastewater is determined by several factors including the daily flow of wastewater, the character of wastewater, the soil conditions, the wastewater application rate, and the dimensions of the disposal trench. Given the soil conditions encountered on the site and that the wastewater will be treated by primary sedimentation, the soil application rate will be 0.36 gallons per day per square foot (gpd/sf) for the Dining Hall system and 0.43 gpd/sf for the student cabin and staff duplexes. Using these applications rates the minimum application area required to provide 100% disposal capacity is shown in Table 4.

Table 4. Required Disposal Area for Field Camp Improvements

System	Flow Rate (gpd)	Soil Application Rate, SAR (gpd/sf)	Required Disposal Area (sf)
Dining Hall	1,620	0.36	4,500
Student Cabins	1,920	0.43	4,465
Staff Cabins	300	0.43	698

Dining Hall Disposal Area. Based on the results of the percolation tests, the soil conditions encountered, and the results of the groundwater monitoring, the leachfields in the Dining Hall will need 4,500 square feet of disposal area. A trench that is 5 feet deep with an effective depth of 4 feet will maintain greater than 5 feet of separation from

groundwater. Assuming the trenches are 18 inches wide, 485 lineal feet of trench will have the capacity to dispose of the daily flow. The leachfields for the Dining Hall have a total length of 500 feet (5 trenches that are 100 feet long). The area to the southwest of the Smith House will provide enough space for primary leachfields and an expansion area to provide 200% disposal capacity.

Student Cabin Area. The disposal system for the Field Camp student cabins will need 4,465 square feet of disposal area. A trench that is 7 feet deep with an effective depth of 6 feet will maintain more than 5 feet of separation from groundwater. Assuming that the trenches are 18 inches wide, approximately 331 feet of trench would be required to dispose of the daily flow. The student cabin leachfields vary in length from 29 feet to 52 feet to fit the area available for the disposal system. The total length of leachfield trench is 349 feet and therefore has a disposal capacity of 2,025.9 gpd. The area within the student cabins will provide enough area for the primary leachfields and the area to the south of the cabins will provide enough area for the expansion area.

Staff Duplexes. The disposal system for the Field Camp staff cabins will need 698 square feet of disposal area. A trench that is 4 feet deep with an effective depth of 3 feet will maintain more than 5 feet of separation from groundwater. Assuming that the trenches are 18" wide, 90 feet of trench will have the capacity to dispose of the daily flow. The area to the west of the student cabins will provide enough space for the primary leachfields and a 100% expansion area.

Table 5. Leachfield Dimensions and Disposal Capacity for Field Camp Improvements

System	Flow Rate (gpd)	Effective Depth (ft)	Width (ft)	Length (ft)	Number of Trenches	Disposal Area (sf)	Disposal Capacity (gpd)
Dining Hall	1,620	4	1.5	100	5	4750	1,710.0
Student Cabins	1,920	6	1.5	varies	8	4712	2,025.9
Staff Cabins	300	3	1.5	50	2	750	322.5

5. Conclusions

Based on the field work completed, FCE finds the following:

1. Soil conditions and groundwater monitoring in the vicinity of the Field Camp improvements are well suited for a subsurface disposal system for wastewater.
2. The site assessment work indicates there is sufficient area to install both primary and expansion leachfield trenches.

This concludes the site assessment report for the proposed Field Camp expansion. Thank you for the opportunity to assist with this project. If you have any questions or require any additional information, please do not hesitate to contact me at (831) 426-9054.

Sincerely,

PETER HAASE, P.E.
Principal Engineer

ADRIENNE CARTER
Associate Engineer

Attachments

Cc: Dave Roberts, david.roberts@co.santa-cruz.ca.us, Santa Cruz County
Environmental Health Room 312, 701 Ocean Street, Santa Cruz, CA

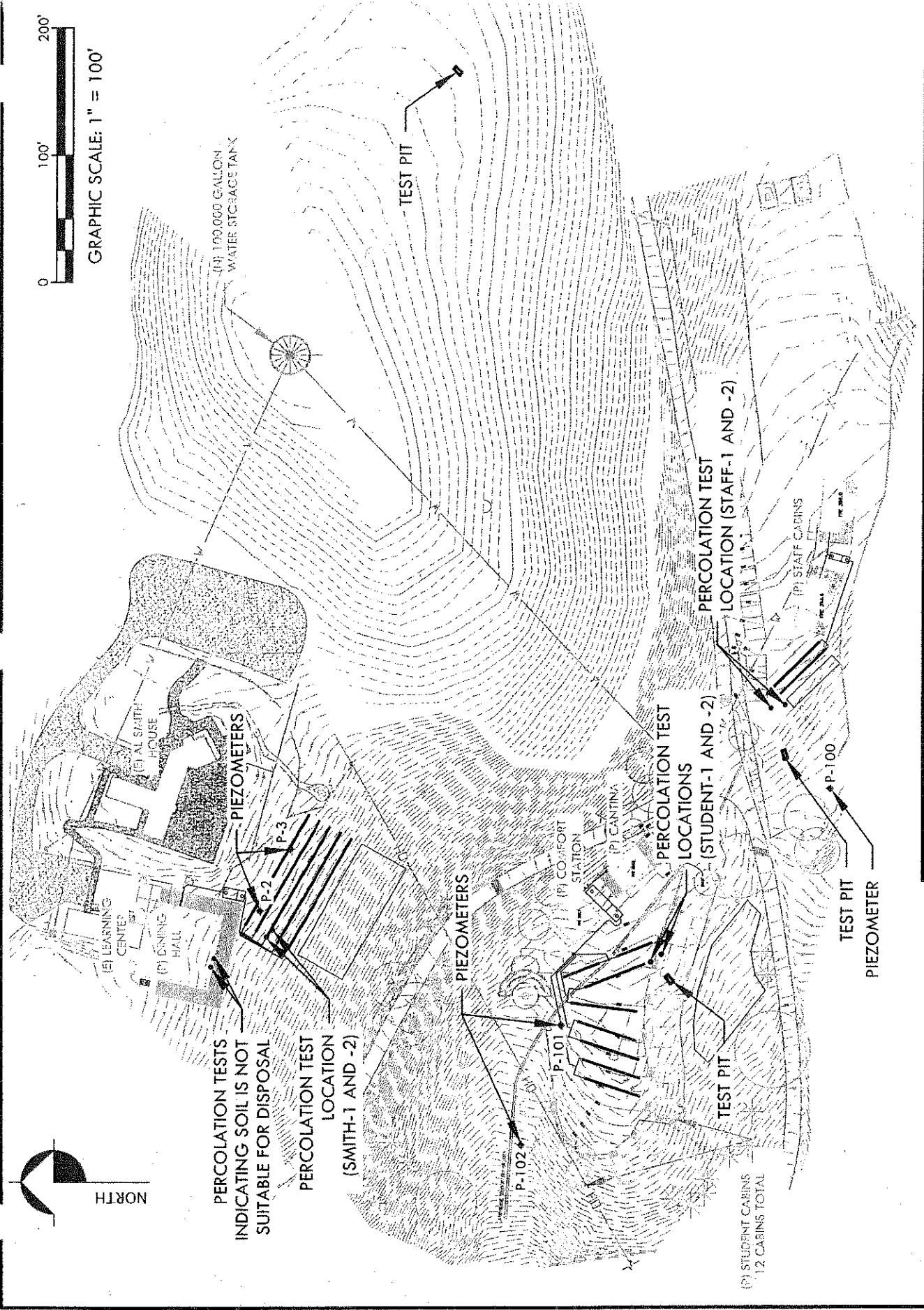


FIGURE 1. SOIL INVESTIGATION FIELD CAMP IMPROVEMENTS SWANTON-PACIFIC RANCH, DAVENPORT, CA

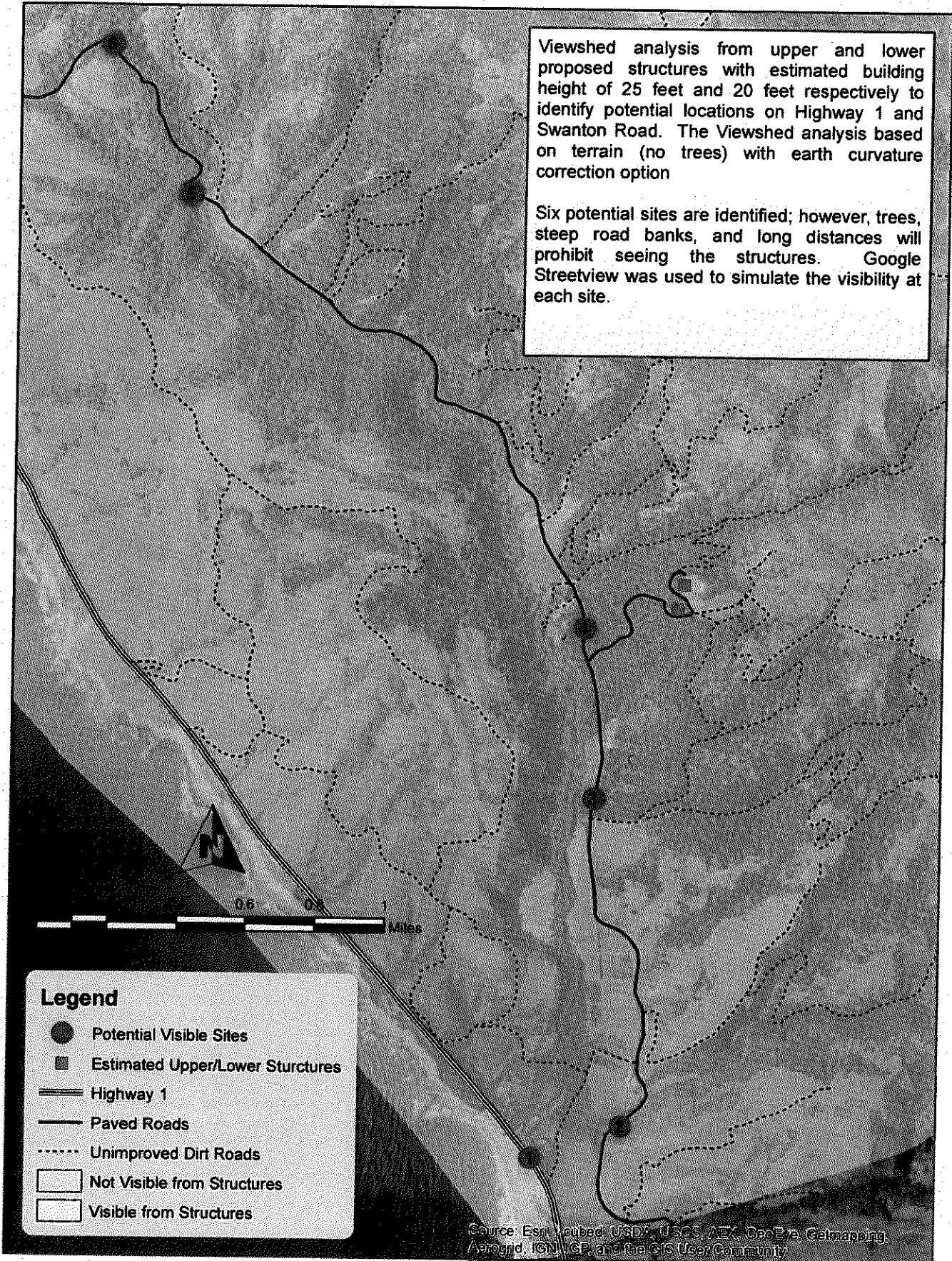
FALL CREEK ENGINEERING, INC. Civil • Environmental • Water Resources Engineering



Potential Visible Sites for Proposed Structures

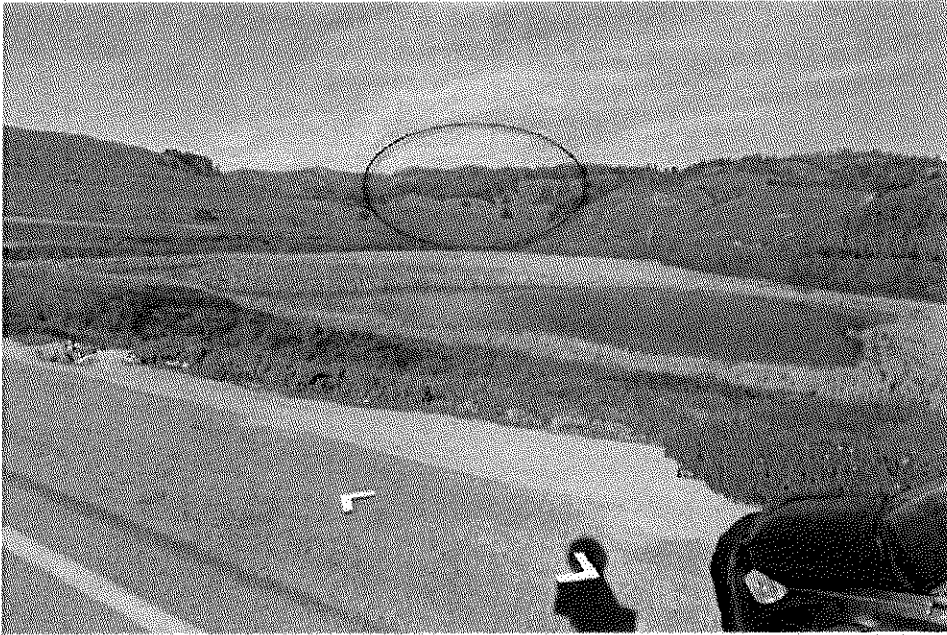
Viewshed analysis from upper and lower proposed structures with estimated building height of 25 feet and 20 feet respectively to identify potential locations on Highway 1 and Swanton Road. The Viewshed analysis based on terrain (no trees) with earth curvature correction option

Six potential sites are identified; however, trees, steep road banks, and long distances will prohibit seeing the structures. Google Streetview was used to simulate the visibility at each site.



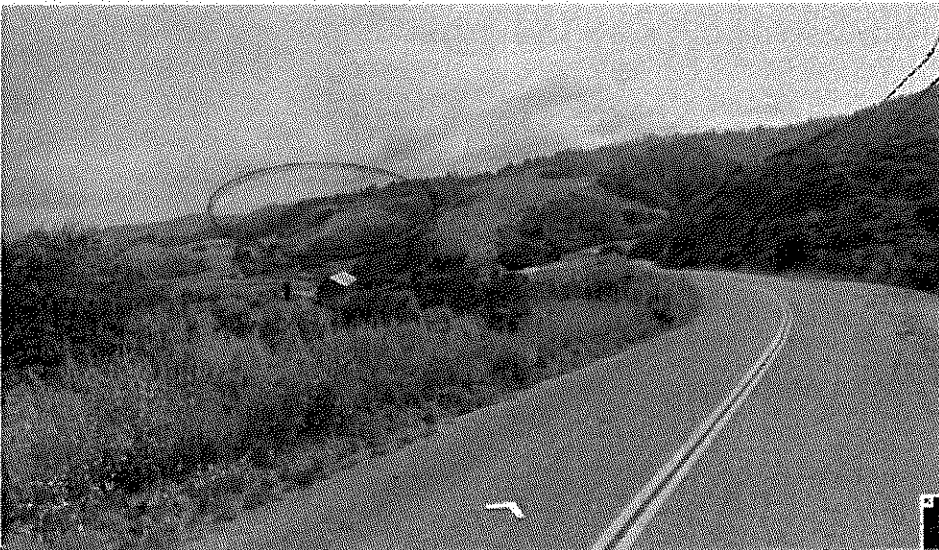
Site 1

Site is located near the Scotts Creek Bridge on Highway 1. Trees will block the view. Even if there were no trees, structures will be very difficult to see due long distance.



Site 2

Site 2 is located on Swanton road just above the "Green House" and the barn. Similar to Site 1, trees and long distance will prevent seeing the structures.



Site 3

Site 3 is located on Swanton Road between Jacob's Farm and the CALFIRE station. Steep road banks and roadside trees blocks view.



Site 4

Site 4 is located between Little Creek Bridge and the road to Al's House. Trees blocks the view



Site 5

Site 5 is located on Swanton Road near the old school. Trees will block the view to structures. Even if there are no trees, long distance to structure site will make it very difficult to see.



Site 6

Site 6 is located on Swanton Road near the top of hill. Thick trees near the road block the view. This site is also far from the structure site





June 27, 2012

Robyn Cooper, Senior Associate Engineer
Fall Creek Engineering Inc.
P.O. Box 7894
Santa Cruz, CA 95060

RE: Swanton Road – Sight Distance Analysis; Santa Cruz County, California

Dear Ms. Cooper:

This letter documents an analysis of corner sight distance conditions at the Swanton Road/Old Schoolhouse Road intersection in Santa Cruz County, California.

A traffic analysis for the Swanton Ranch project was prepared in 1999 that included an analysis of the sight distance provided at the intersection of Swanton Road/Old Schoolhouse Road. Measurements of the corner sight distance taken at that time established that the corner sight distance looking from the Old Schoolhouse Road approach to the north would not meet the minimum required corner sight distance for the field conditions. Looking south from Old Schoolhouse Road, the corner sight distance is 400 feet and the corner sight distance looking north from the Old Schoolhouse Road approach looking north is 165 feet. Based on the corner sight distance formula published by the American Association of State Highway and Transportation Officials, a corner sight distance of 290 feet should be provided looking to the north.¹ This distance is based upon a 40 mph design speed for Swanton Road. The stopping sight distance calculation is shown on Exhibit 1.

The sight distance measurements were confirmed in a recent field visit to the location. It should be noted that the sight distance measurements are based on a setback for the driver of the vehicle on Old Schoolhouse Road of 8 feet. This is the minimum practical setback for a driver with the front of the vehicle positioned at the edge of the travel way. The measurement standard established by Caltrans requires the setback be a minimum of 10 feet plus the shoulder width of the major road, but not less than 15 feet. When the sight distance measurement is obtained from a position 15 feet from the edge of travel way, the sight distance looking to the north is 90 feet.

The objective of this study is to identify improvements that would increase the corner sight distance to the maximum extent possible at the existing intersection and/or mitigate the existing constrained condition to the greatest extent possible. The intersection is located in an environmentally sensitive area with topographic constraints that make implementing improvements difficult.

In the 1999 report, two alternatives were recommended for achieving the minimum required sight distance:

1. Grade the embankment located immediately north of the Old Schoolhouse Road intersection that currently obstructs the sight line between a motorist on the Old

¹ *A Policy on Geometric Design of Highways and Streets*, American Association of State Highway and Transportation Officials, 2011



Schoolhouse Road approach to Swanton Road and a motorist approaching the intersection from the north. This improvement would create impacts on the forest area, require the removal of several large trees located north of Old Schoolhouse Road and would require extensive grading.

2. Relocate the intersection of the Swanton Road and Old Schoolhouse Road to a location that improves the sight distance looking to the north to the required distance. This improvement would also create impacts on the forest area.

It has been proposed to relocate Old Schoolhouse Road about 40 feet south of the existing approach to Swanton Road. Relocation of the driveway 40 feet to the south would increase the sight distance looking to the north to about 190 feet measured 8 feet from the edge of travel way, which would still be less than the 290 feet of sight distance that is required

In lieu of constructing improvements that would improve the corner sight distance to the recommended minimum distance, the following two additional alternatives are proposed for consideration:

1. Widen Swanton Road through the intersection with Old Schoolhouse Road to provide a left turn refuge lane for vehicles turning left from Old Schoolhouse Road to southbound Swanton Road, or
2. Relocate Old Schoolhouse Road to the south as proposed and prohibit left turn movements at the intersection. This would require the construction of a raised island on the approach of Old Schoolhouse Road to Swanton Road.

In addition to the alternatives described above, it is recommended that the vegetation located on Swanton Road adjacent to the Old Schoolhouse Road intersection be cut-back on a periodic basis to ensure that the vegetation does not obstruct motorist sight lines. In addition, intersection signs and other physical objects should not be located in areas that would block sight lines between motorists on Swanton Road and motorists on the Old Schoolhouse Road approach to Swanton Road.

Should you have any questions regarding this report, please do not hesitate to contact me.

Sincerely yours,

Keith B. Higgins, CE, TE
Vice President
T 408.848.3122 F 408.848.2202
keith.higgins@hatchmott.com

Swanton Pacific Ranch Management Plan

4. ARCHAEOLOGY

There are several archaeological sites known to exist on both Swanton Pacific Ranch and Valencia Creek properties. Further details of these sites may be requested from the Ranch Director and will be provided for relevant purposes. Familiarity with these sites should be made prior to commencing excavations or ground disturbance operations, and may require a qualified person to be present during soil removal to identify any artifacts or site remains that may be discovered.

4.1. Swanton Pacific Ranch

There are five recorded prehistoric archaeological sites (CA-SCR-30, -31, -95, -96 and -178 at the Swanton Pacific Ranch site. There are no recorded historic archaeological sites listed with the California Archaeological Inventory. The National Register of Historic Places, California Historical Landmarks, and Points of Historical Interest list no cultural resources within the Ranch. The California Inventory of Historic Resources lists "China Ladder", the Gianone Rock House", and "The Swanton Ranch" within and adjoining the area (Coe, 1990).

A number of prehistoric cultural resources have been identified in various settings in this area of Santa Cruz County. Six prehistoric archaeological sites have also been identified immediately adjacent to the Ranch. According to an archaeological records search done by Katherine Coe as a senior project in 1990, less than 5% of Swanton Pacific Ranch has been studied for cultural resources.

A brief description of the sites is presented below. For further information the California Archaeological Inventory at the Northwest Information Center of Sonoma State University, Rohnert Park, CA should be contacted.

CA-SCR-30

An assortment of artifacts such as mortars were found at this midden site which contained black soil and scattered shell. These are in the Pilkington collection.

CA-SCR-31

This is recorded as a possible burial site with mortars and pestles found in midden with black soil and large amounts of shell.

CA-SCR-95

This site may have been a temporary campsite as only a very small scattering of shell and sparse chert was noted.

Swanton Pacific Ranch Management Plan

CA-SCR-96

A moderate scatter of Monterey banded chert and some basalt flakes are recorded for this site.

CA-SCR-178

This site may have been a campsite along a travel route with few surface indicators. Lithic scatter was noted and much of the site may be subsurface. A bifacial Monterey chert tool, chert flakes and a possible groundstone fragment were found.

4.2. Valencia Creek

All of the harvest area of Valencia Creek property (504 acres) was surveyed for archaeological sites (Culver et al, 2001). There were no recorded Native American cultural resources or historical cultural resources located within the project area. There is a moderate likelihood that unrecorded Native American cultural resources and historical cultural resources exist. Seven historical sites related to logging history were discovered. These consisted principally of a redwood bolt pile, a springboard, two log corridors and two remains of steam boilers. There is also a section of the Shoquel Augmentation fence line. Recommended protection measures were to avoid logging operations or equipment manoeuvres in the immediate vicinity.

Summary of Archaeological Assessment and Evaluations for the Swanton Pacific Education Center and Field Camp

In 2008, a Confidential Archaeological Addendum (CAA) was filed as part of the Swanton Pacific Ranch Non-industrial Timber Management Plan (NTMP). The NTMP is considered functionally equivalent to an Environmental Impact Report (EIR) complying with the California Environmental Quality Act (CEQA). A copy of the NTMP, excluding the CAA because it is confidential, can be found on the Swanton Pacific Ranch website: <http://spranch.calpoly.edu/documents.ldml>

The Archaeological Records Check Request for the NTMP's CAA also included the proposed location of Swanton Pacific Education Center and Field Camp (SPECFC). No records of historic or pre-historic sites were returned from the Northwestern Information Center for the proposed location of the SPECFC site or access roads.

As part of the multi-day field archaeological investigation for the NTMP Nadia Hamey, Registered Professional Forester #2788 and Steve R. Auten, Registered Professional Forester #2734, both certified as Archaeological Surveyors for Cal Fire, evaluated the SPECFC portion of the NTMP. No evidence of either historic or pre-historic presence were found at the proposed location of the SPECFC site or access roads.



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

MITIGATION MONITORING AND REPORTING PROGRAM
 for the

**PROPOSED STAUB FIELD CAMP, STAFF CABINS AND
 LEARNING/DINING CENTER**

Application No. 121314, January 26, 2015

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
BIO-1	<p>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?</p>	<p><u>Bird Impact Avoidance Measures</u></p> <ul style="list-style-type: none"> Conduct construction operations during the fall and winter, outside of the nesting period. Alternatively, a nest site (clearance) survey could be conducted in the spring/summer months just prior to planned construction to identify, mark and avoid any active bird nest trees in the few remaining trees left on the site. Use directional (downward-facing) outdoor lighting and low wattage so as to minimize light pollution Secure human food and food waste related to the construction and operation of the facility to reduce the likelihood of attracting corvids and potential predation of bird eggs. 	<p>Applicant, Contractor, and Project Biologist</p>	<p>To be monitored by the County Planning Department, Applicant, Contractor, and the Project Biologist.</p>	<p>To be implemented during project design, construction and during operations.</p>
BIO-2		<p><u>Mammal Impact Avoidance Measures</u></p> <ul style="list-style-type: none"> Prohibit the use of rodenticides in the Field Camp area. Restrict exterior lighting to downward-pointing outdoor lighting. Remove any potential bat roost trees during the period when no maternity roosts are likely present (September 15 – January) or install exclusionary devices on the trees to prevent roosting prior to felling selected trees. 	<p>Applicant, Contractor, and Project Biologist</p>	<p>To be monitored by the County Planning Department, Applicant, Contractor, and the Project Biologist.</p>	<p>To be implemented during project design, and construction.</p>
BIO-3		<p><u>California Red-legged Frog Impact Avoidance Measures (Construction)</u></p> <p>All construction shall comply with the following measures:</p> <ul style="list-style-type: none"> Minimize the area over which wet-season construction activities occur. Attempt to construct most ground-disturbing activities to the dry months of the year when the red legged frogs (RLF) are unlikely to inhabit or move across upland sites. Require construction monitoring for red-legged frogs just prior to and during all the construction and delivery of equipment/supply activities to ensure no take of this species could occur during construction. The designated RLF Monitor will be notified by the Swanton Pacific Ranch Resource manager in a timely manner regarding the upcoming schedule for all construction activities. The RLF Monitor will be present during and prior to all construction activities, to conduct clearance surveys of roads and staging areas and construction zones, guide delivery trucks entering the site, and to give environmental training to all construction workers 	<p>Applicant, Contractor, and Project Biologist</p>	<p>To be monitored by the County Planning Department, Applicant, Contractor, and the Project Biologist.</p>	<p>To be implemented during project construction.</p>

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
		<p>and associated vehicles and personnel those entering the site.</p> <ul style="list-style-type: none"> The RLF monitoring and red-legged frog training should be conducted by an independent professional biologist certified as having experience conducting red-legged frog monitoring. Training of staff and construction crews will include red-legged frog identification, habits, occurrence in the area, legal status, how to operate and drive vehicles in the area, and what to do and who to contact should a frog be seen or detected in or near the construction zone. Laminated pocket cards regarding RLF avoidance procedures, field identification and reporting procedures will be handed out by SP staff to all those anticipated making more than one visit to the site for construction purposes. The SP Resource Manager will be responsible for ensuring that a RLF Avoidance and Monitoring Plan is implemented whereby the designated RLF Monitor will be present each day throughout the delivery/construction period or available by phone to assess what level of monitoring the proposed day's/week's construction activities will require. Any project-related trucks that need to use the upper Staub Road or drive past the Staub Pond or any staging areas within 300 feet of the pond will require that the designated RLF Monitor be notified and present to conduct a clearance survey and ensure that those areas are clear of any red-legged frogs immediately prior to them being used. The independent experienced RLF Monitor could delegate some minor or ongoing RLF construction monitoring duties to specifically identified and trained Ranch staff or student, at the discretion of the independent monitor. The decision by the independent RLF Monitor will take into consideration the time of year, type of work being done that day/week, proximity to Staub Pond and adjacent road, and the training and experience level of the staff/student monitor. Reduce to the maximum extent possible activities and practices that could result in sediments reaching Lower Staub Pond due to truck traffic on the road past the pond. Require all trucks and construction equipment to be cleaned with a pressure-hose prior to being driven onto the site to reduce the chance of introduction of invasive species or seeds/eggs to the site. The staging areas for construction materials, equipment and trucks from contracted personnel should be clearly delineated on aerial photographic maps and roped off on the ground to ensure the footprint of the project is minimized. Construction equipment and related trucks should be limited to moving and staging within the project site, which should be marked with norplex fencing. Should a staging area or trucks turn around area be needed in the Staub House area, norplex fencing should be erected prior to construction activity by a certified Red-legged frog biologist, with regular monitoring of the road and construction area if construction occurs during frog breeding or dispersal periods. 			

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
BIO-4		<p><u>California Red-legged Frog Impact Avoidance Measures (Operations)</u> Once construction has been completed, the following operational measures shall be followed:</p> <ul style="list-style-type: none"> • Vehicles using the Field Camp Cabins will be parked more than 500 meters from Staub Pond, thus reducing the probability of road-killed frogs to nearly zero. • With the exception of emergency vehicles and handicapped access, travel off-road on the campus is limited to foot traffic on a system of developed footpaths. • Placement of signboards at two locations near the pond identifying this area as habitat for a threatened species and giving a brief description of red-legged frog natural history and habitat use. • Prohibition of any activities within the pond and within 10 meters of the pond except those related to research, livestock management, forest management (as directed by the State-approved NTMP) and designated trail use of the existing trail by the Staub Pond. These uses will be limited to only those CalPoly staff/contractors that have received training in red-legged frog identification, biology, and impact avoidance measures by a certified RLF biologist. • Require all students and staff residing at the field camp to watch a PowerPoint, video or printed presentation on red-legged frogs, prepared by a certified specialist. The material should cover red-legged frog identification, biology, and impact avoidance measures during the first two weeks of their attendance at the field camp. All staff and students and visitors should sign a form indicating that they have reviewed the educational materials and will comply with the provisions required by the regulatory agencies as conditions of project approval. • Special precautions will be taken with food and trash storage to avoid attracting predators like raccoons. Trash containers in and/or near the cabin sites will be secured. 	Applicant	To be monitored by the County Planning Department and Applicant.	To be implemented during project operations.
BIO-5		<p>The following mitigation measures will be required to ensure no adverse impacts to botanical resources occur:</p> <ul style="list-style-type: none"> • No planting of CalIPC (California Invasive Plant Council (CalIPC) 2011) listed species, which are recognized threats in the region, shall occur. • No planting of species in the following genera, as these could hybridize with sensitive species in the vicinity, threatening the integrity of the gene pool. If these genera are desired, local collections shall be used in the landscape. <ol style="list-style-type: none"> 1) Arctostaphylos 2) Ceanothus 3) Quercus 4) Pinus <p><u>Invasive Species</u></p>	Applicant, Contractor, and Project Biologist	To be monitored by the County Planning Department, Applicant, Contractor, and the Project Biologist.	To be implemented during project design and construction.

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
		<ul style="list-style-type: none"> Plant species prioritized for the region as cited by CallPC shall be controlled in areas disturbed and adjacent to disturbance associated with the project until replacement plantings have been established. 			