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# Hollister Hills SVRA

# Trail Erosion Surveys

# Spring 2013

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## Executive Summary

As the number of outdoor recreationalists continues to increase, placing more demand on trails designated for off-highway vehicle use, conservation efforts are necessary to maintain trail sustainability. Resource managers in Hollister Hills State Vehicular Recreation Area (SVRA), one of California's eight SVRAs, where off-road driving is encouraged and managed, are developing a method for prioritizing trails for best management practice treatments. A 2012 report prioritized trail condition and sustainability based upon visual assessment and professional judgment. In collaboration with Natural Resources staff, a representative subset of those trails were selected for more detailed work aimed at quantifying trail erosion through time serial surveys. This report details the initial topographic surveys of 18 sample sites that were based on trail use type: road, all-terrain vehicle, and single-track; soil type: clay and granitic; and trail sustainability: green, yellow, and red. As a baseline assessment, a digital elevation model was created for each site using ArcGIS. Comparing these results with future surveys will produce erosion estimates. The information will be used to inform future erosion assessment methods in the park.

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# 1 Introduction

## 1.1 Background

As part of its ongoing effort to improve park resource management, Hollister Hills State Vehicular Recreation Area (HHSVRA) contracted the Watershed Geology Lab at Cal State Monterey Bay to measure erosion rates of trails. Soil conservation efforts within SVRAs are guided by a State Parks report (CSP 2008). In keeping with CSP (2008), HHSVRA Natural Resources staff created a trail erodibility index that ranks trail erosion as green (acceptable), yellow (marginal) and red (action needed) (HHSVRA 2012). The ranking system is based upon a visual assessment of the trail setting and condition. This system will be evaluated and potentially revised based upon the results of direct erosion measurements that are detailed in this report. This report presents digital elevation models derived from the first year of this study and fully describes the survey methods to foster precise comparisons with future surveys. Erosion rates will be estimated by comparing these baseline surveys with future surveys. The trail erosion assessment of HHSVRA will help the resource managers of the park understand and manage the erosion impacts of off-highway vehicles/all-terrain vehicles (OHVs/ATVs).

## 1.2 Study Area

HHSVRA was established in 1975 and is located in San Benito County, one hour south of San Jose. The park offers outdoor recreation to picnickers, campers and riding enthusiasts within the beautiful Gabilan Mountains (Figure 1). Three areas within the park's 6,640 acres were identified as providing a variety of trail conditions and riding options: Upper Ranch, Lower Ranch, and Renz Property. The Upper Ranch encompasses an 800-acre area with approximately 24 miles of 4-wheel drive (4x4) trails and a fenced motocross track. The Lower Ranch includes a 3,300-acre area with approximately 128 miles of trails and hill climbs for motorcycle and ATV use only. The Lower Ranch area also includes picnic areas, a practice Motocross Track, an ATV track, a Short-Track (dirt race), and a mini-track for the kids. The newest portion added to the park, the Renz Property, includes approximately 23 miles of motorcycle and ATV trails.

## 1.3 Goals

The long-term goal of the current study is to estimate trail erosion rates in a variety of soils, slopes, and type of trail use in the HHSVRA. This estimate will be based upon comparing future surveys with these baseline surveys at 18 sites (Figure 2). A baseline survey of trails within each erodibility category is presented here, and detailed descriptions are provided to ensure precise reproducibility for future surveys.

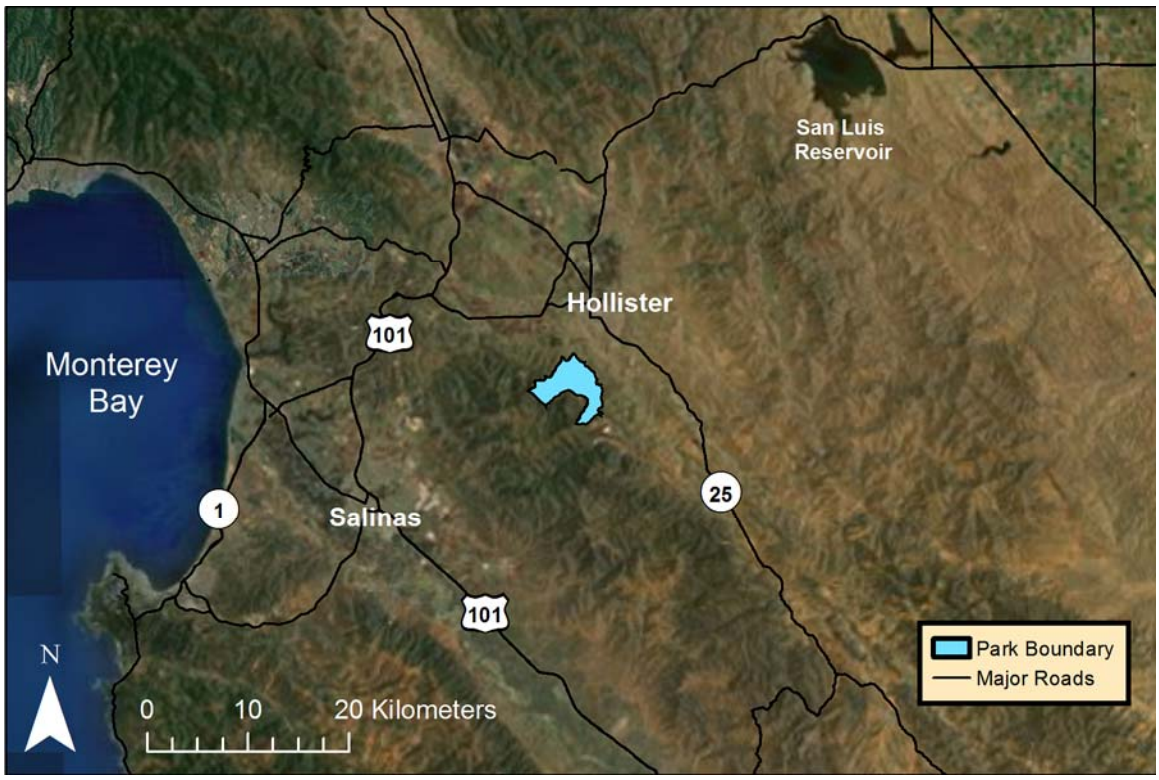



**Figure 1. Hollister Hills State Vehicular Recreation Area is found northeast of Salinas.**

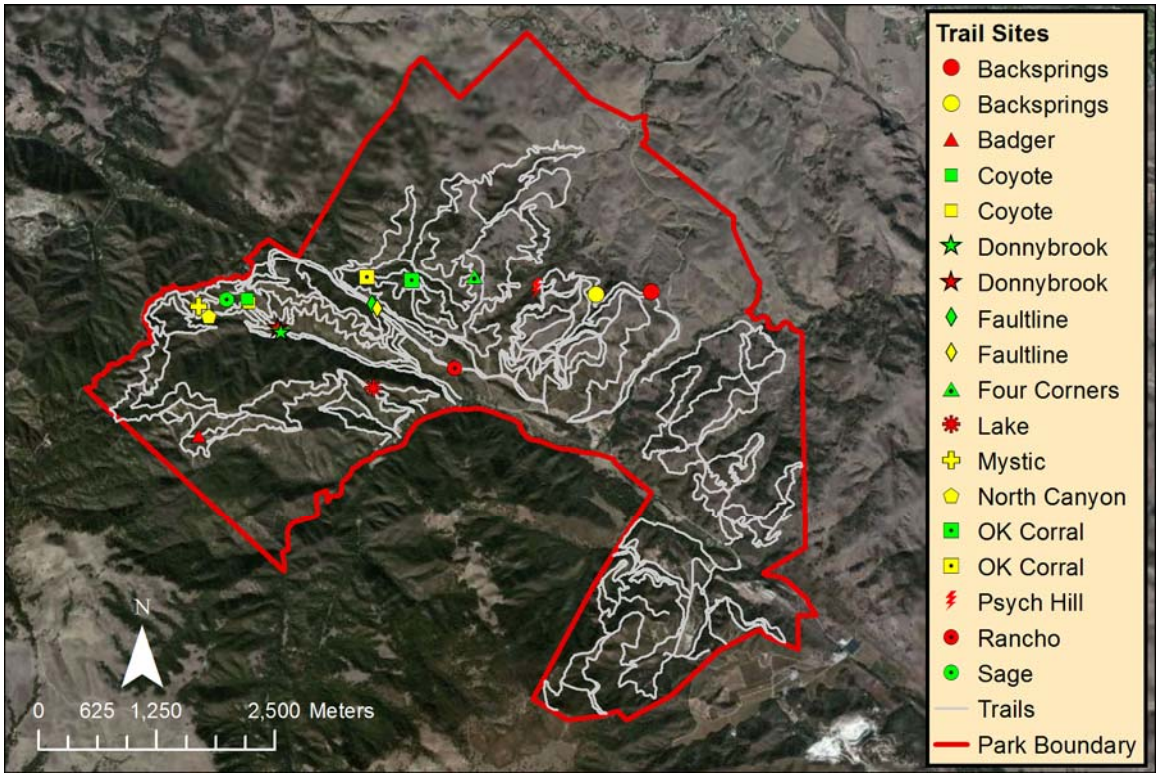



**Figure 2. Trail site locations within Hollister Hills State Vehicular Recreation Area.**

# 2 Methods

## 2.1 Study area sites

The study includes 18 trail sites within the HHSVRA (Table 1). The specific trail sites were chosen in collaboration with HHSVRA natural resource managers based on soil type, trail use types and trail condition. The two soil types found within the park are separated by the San Andreas Fault, which divides the park (Tuttle and Griggs 1987). Clay and loam soils occur in the northeast portion of the park, while gravelly sandy loams can be found in the southwest portion. The trail use types include off-road vehicle (4x4), all-terrain vehicle (ATV) and single-track (motorcycle). Park environmental scientists, based on visual inspection of trails, designed a trail erodibility rating system. The trail condition rating includes red for highly eroded, yellow for moderately eroded and green for no erosion. Our study sites span all three categories.

**Table 1. List of trail and site names with their corresponding description and trail ratings from the OHV Trail Condition Evaluation table (CSP 2008).**

| Trail Name | Site Name | Trail Use | Soil Type | Trail Rating |
|---|---|---|---|---|
| Faultline | RCG | road | clay | green |
| Sage | RGG | road | granitic | green |
| Faultline | RCY | road | clay | yellow |
| North Canyon | RGY | road | granitic | yellow |
| Rancho | RCR | road | clay | red |
| Lake | RGR | road | granitic | red |
| Four Corners | ACG | ATV | clay | green |
| Coyote | AGG | ATV | granitic | green |
| Backsprings | AGY | ATV | clay | yellow |
| Coyote | AGY | ATV | granitic | yellow |
| Backsprings | ACR | ATV | clay | red |
| Badger | AGR | ATV | granitic | red |
| OK Corral | SCG | single-track | clay | green |
| Donnybrook | SGG | single-track | granitic | green |
| OK Corral | SCY | single-track | clay | yellow |
| Mystic | SGY | single-track | granitic | yellow |
| Psych Hill | SCR | single-track | clay | red |
| Donnybrook | SGR | single-track | granitic | red |

## 2.2 Survey Techniques

*Site selection and setup*

Each site selected was based on trail condition, accessibility and total station placement. A Trimble s6 Robotic Total Station (TS) was used to make a prismless laser scan of the site. The scanned area encompassed approximately 4 square meters, less on the narrower trails. For the most accurate results, the TS was placed in a location that enabled the laser to be as close as possible to a perpendicular angle with the ground, therefore a high vantage point was preferable. The TS placement determined benchmark (BM) location, so longevity, durability and safety to riders were also considered. Efforts were made to place all BMs near other permanent markers such as a tree, large rock, sign or fence post to aid in future BM recovery. The BM was marked by a 12" piece of rebar hammered into the ground and topped with a plastic orange cap that was pressed down flush with the earth. The entire cap was covered with soil or plant matter after completing each survey. These BMs can be relocated by referring to the UTM coordinates for their approximate location, photographs and detailed site descriptions (Appendix C) for each site.

*Instrument setup*

A plumb bob was used to accurately place the TS directly over the center of the BM, while using the instrument's spirit level to roughly level the machine. With the feet of the survey tripod securely pushed into the ground, the optical plummet was used to directly line up the instrument over the BM. Then more precise leveling was completed using an internal electronic level (*Select/Level* under the *Select Mode* menu to display the electronic bubble). Once the bubble was centered, we changed to the *Setup* menu by pressing enter. The *Radio settings* were left on the default setting (Channel 1) and no other parameters were adjusted from this menu. After exiting this menu, pressing the Trimble key displayed the *Trimble functions* where another *Electronic Level* was selected to fine tune the level of the instrument. Once the level's reading was < 0°00'10" in either direction, the instrument's placement was confirmed by pressing *Accept.* Under the *Trimble functions* menu, turning on TRK mode provided continuous distance measurements that increased the speed of the surface scan.

From the Main menu, the *Survey/Station setup* was selected to enter specific information for the placement of the station and other setup points. Parameters in the *Corrections* dialog box were not adjusted. The scale factor under the *Coordinate System* dialog box was kept at 1.000 (default). The instrument point name for every site was labeled BM for Benchmark. The instrument height, measured using a tape measure placed on the top of the BM and stretched to the center of the top mark on the side of the instrument, was entered as the *True Height* (default), along with the name of the *Backsight* (BS) and the BS height, which is the height of the survey rod. The *Azimuth* to the BS point was set to zero (0°00'00") and the measurement method (*Angles and Distance*) was entered (see Table 2 for approximate bearing of BS to the BM for each site). A "false northing" was used for each site and set based on the location of the BS. The instrument was aimed at the center cross hairs of the survey rod's prism, measured and stored to complete the station setup.

**Table 2. Parameters and coordinates for each site. Instrument settings include height of instrument (HI) and height of rod (HR). Site coordinates are designated by left corner (L1), right corner (R2) and bottom edge (B3) for the scanned area.**

| | | | | | | Site Coordinates | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trail Name | Site Name | HI (m) | HR (m) | BS Bearing (°N) | BS Distance (m) | LI Bearing (°N) | LI Distance (m) | R2 Bearing (°N) | R2 Distance (m) | B3 Bearing (°N) | B3 Distance (m) |
| Faultline | RCG | 1.75 | 1.6 | 20 | 8.29 | 23 | 3.67 | 81 | 5.38 | 86 | 2.10 |
| Sage | RGG | 1.24 | 1.6 | 340 | 7.30 | 328 | 7.10 | 8 | 5.35 | 323 | 3.50 |
| Faultline | RCY | 1.74 | 1.6 | 25 | 10.57 | 212 | 4.55 | 235 | 6.21 | 230 | 2.03 |
| North Canyon | RGY | 1.83 | 1.6 | 20 | 8.50 | 0 | 4.95 | 35 | 5.02 | 17 | 0.80 |
| Rancho | RCR | 1.73 | 1.6 | 14 | 6.06 | 366 | 5.31 | 58 | 5.33 | 343 | 2.32 |
| Lake | RGR | 1.81 | 1.6 | 340 | 8.93 | 280 | 7.59 | 340 | 8.80 | 340 | 5.72 |
| Four Corners | ACG | 1.32 | 1.6 | 10 | 5.53 | 0 | 4.43 | 32 | 6.12 | 45 | 3.49 |
| Coyote | AGG | 1.38 | 1.6 | 23 | 8.86 | 55 | 3.40 | 138 | 2.95 | 43 | 1.30 |
| Backsprings | AGY | 1.70 | 1.6 | 18 | 4.33 | 256 | 4.71 | 294 | 5.52 | 335 | 1.53 |
| Coyote | AGY | 1.81 | 1.6 | 0 | 3.53 | 220 | 7.50 | 240 | 7.81 | 240 | 4.59 |
| Backsprings | ACR | 1.85 | 1.6 | 2 | 6.97 | 355 | 6.04 | 324 | 5.42 | 321 | 1.75 |
| Badger | AGR | 1.76 | 1.6 | 40 | 2.22 | 294 | 5.25 | 362 | 4.84 | 257 | 2.70 |
| OK Corral | SCG | 1.87 | 1.6 | 205 | 8.66 | 245 | 2.00 | 330 | 7.67 | 350 | 3.10 |
| Donnybrook | SGG | 1.12 | 1.6 | 23 | ~20 | 283 | 5.86 | 3 | 2.29 | 293 | 2.14 |
| OK Corral | SCY | 1.61 | 1.6/2.6 | 350 | ~12 | 345 | 5.23 | 28 | 3.85 | 338 | 3.12 |
| Mystic | SGY | 1.91 | 1.6 | 7 | 2.73 | 332 | 4.23 | 337 | 4.51 | 357 | 1.65 |
| Psych Hill | SCR | 1.76 | 1.6 | 12 | 6.30 | 69 | 9.13 | 104 | 9.95 | 75 | 6.70 |
| Donnybrook | SGR | 1.48 | 1.6 | 0 | 3.58 | 297 | 2.37 | 352 | 3.20 | 97 | 3.62 |

From the main menu, *Survey/Surface scan* was selected. The *Start point name* was labeled with the trail name. The *Scan method* selected was *Measure*. The 1st corner, labeled L1, was measured by aiming the instrument at the center of the bottom of the L1 marker (orange stake) on the ground. The 2nd corner (R2) and Point on opposite edge (B3) were measured the same way. The height of these points was entered as zero since the survey rod was not used. The Vertical Direction (VD) interval was 0.1 m and Horizontal Distance (HD) was zero for every site. Pressing start commences the scan and information such as the total number of points to measure and estimated time to completion appears on the screen. Upon completion of the scan, press close to exit and save.

### 2.3 Surface Modeling

Data points were downloaded directly from the TS unit as a comma separated value file and as a shapefile. These shapefiles were used to make a digital elevation model (DEM) of each site using the *Natural Neighbor* tool in ArcMAP 10.0.

## 3 Results

The following figures show the DEM and photographs showing the location of the Benchmark (BM) and the Backshot (BS) in relation to the trail. The color ramp on the DEM is unitless since the data have not been geospatially represented.

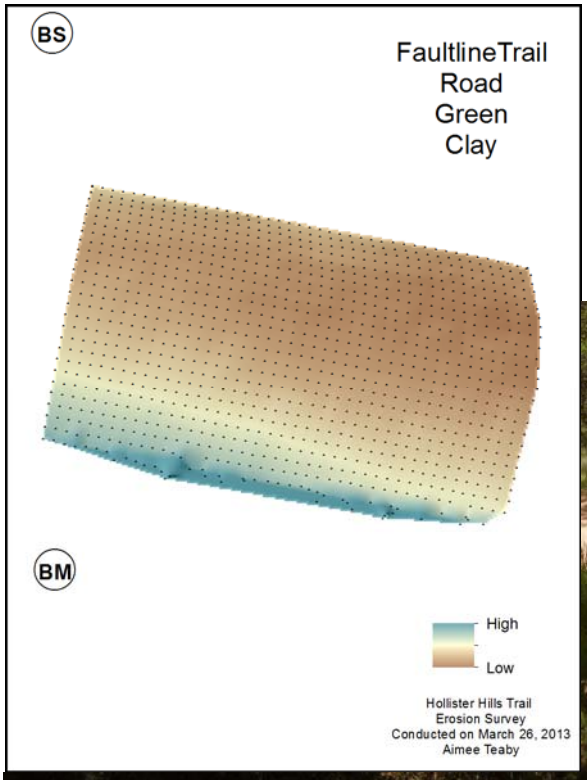
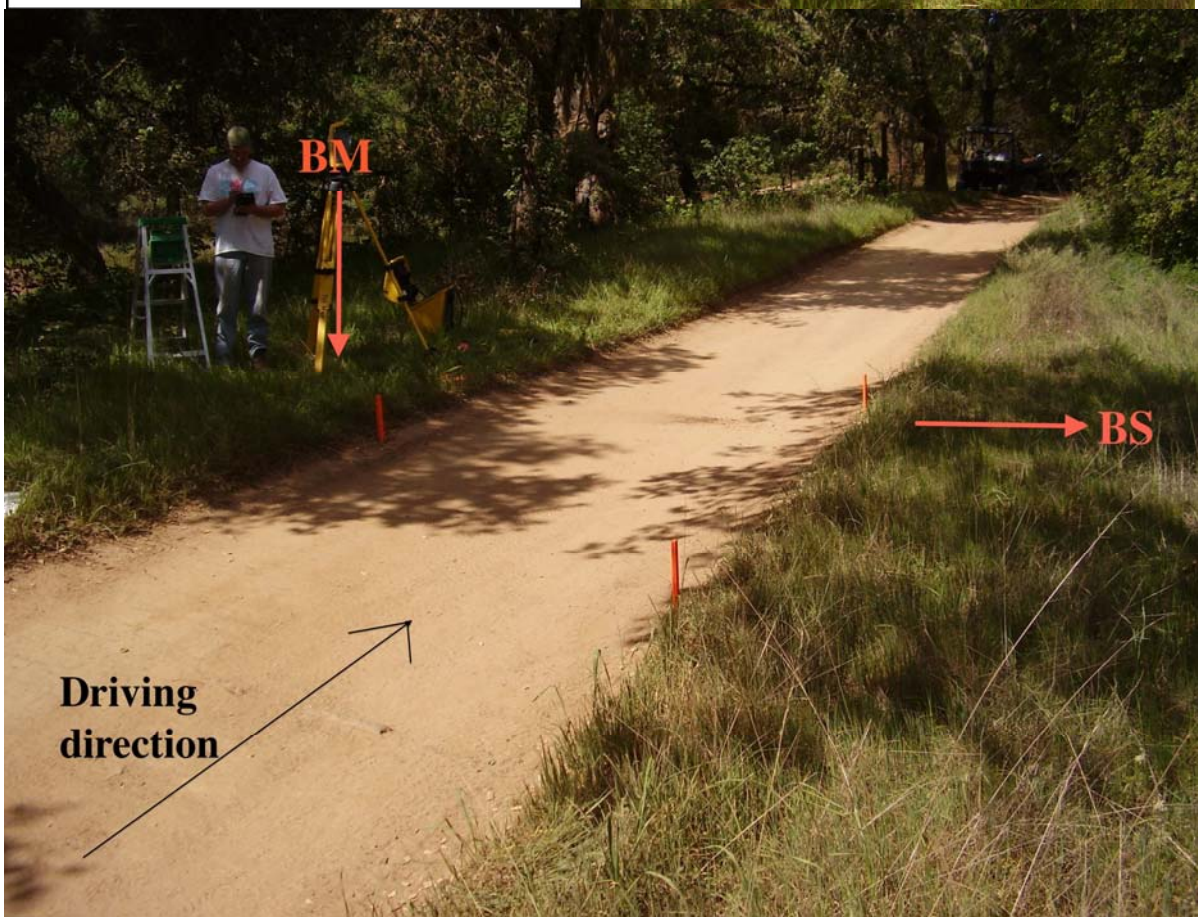



Figure 1. Top left: DEM of the RGC - Faultline Trail site. Photographs (below) show relative locations of the Benchmark (BM) and Backshot (BS) (both taken March 2013).

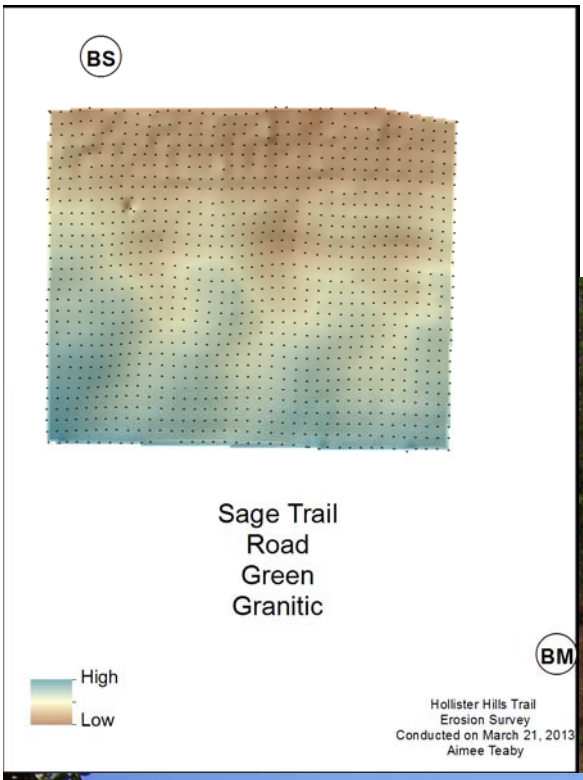
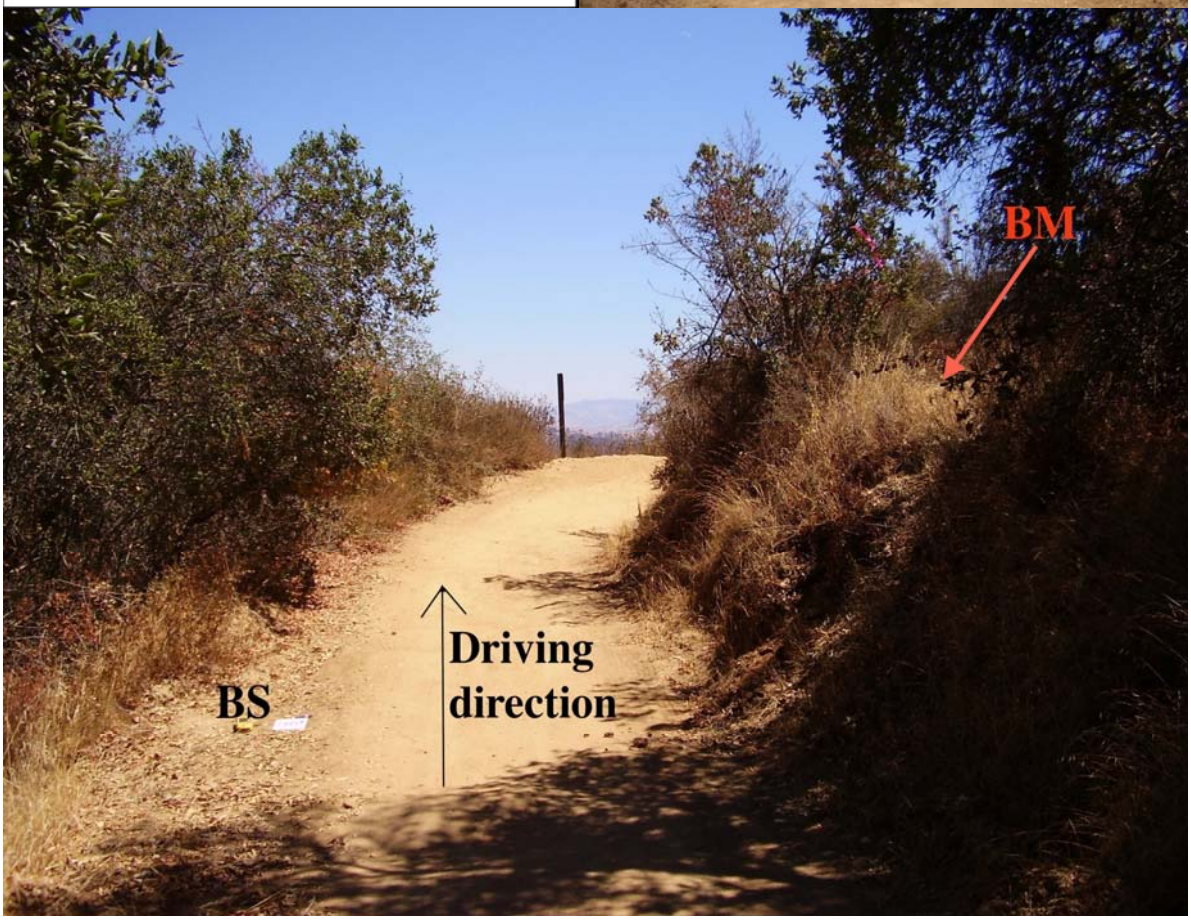



Figure 2. Top left: DEM of the RGG - Sage Trail site. Photographs (below) show relative locations of the Benchmark (BM) and Backshot (BS). Small photo taken in March 2013; large photo taken August 2013.

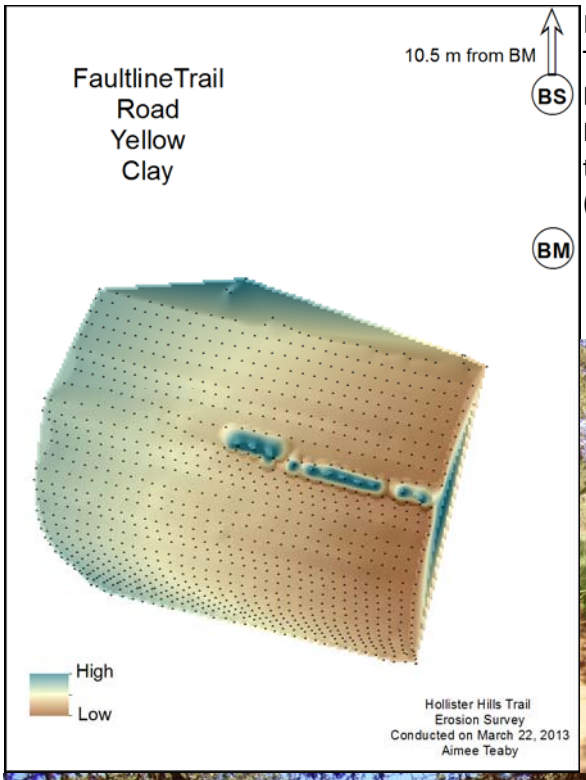



Figure 3. Top left: DEM of the RYC - Faultline Trail site. Small photo shows up-close shot of Benchmark (BM) and surveyed area (taken March 2013). Large photo shows location of the BM and Backshot (BS) in relation to the trail (taken July 2013).

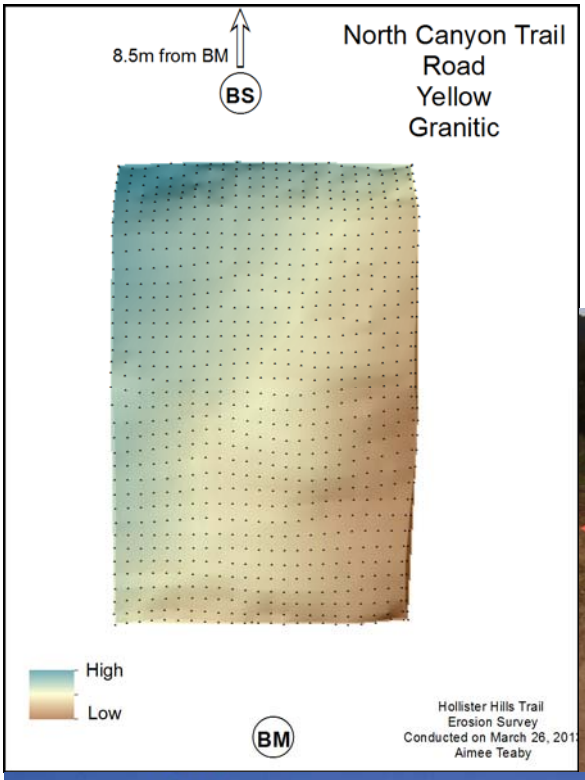
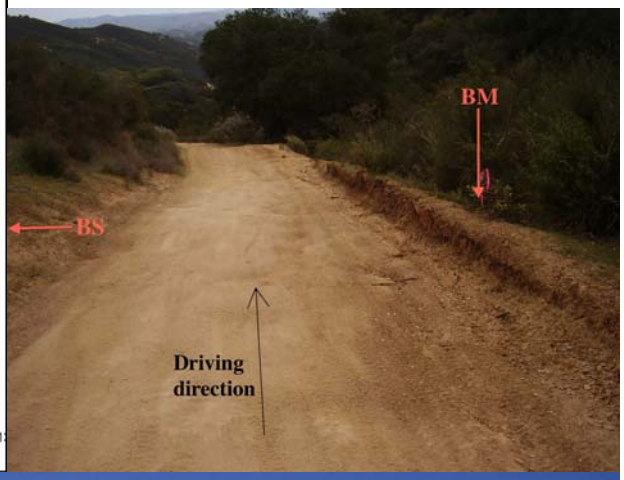
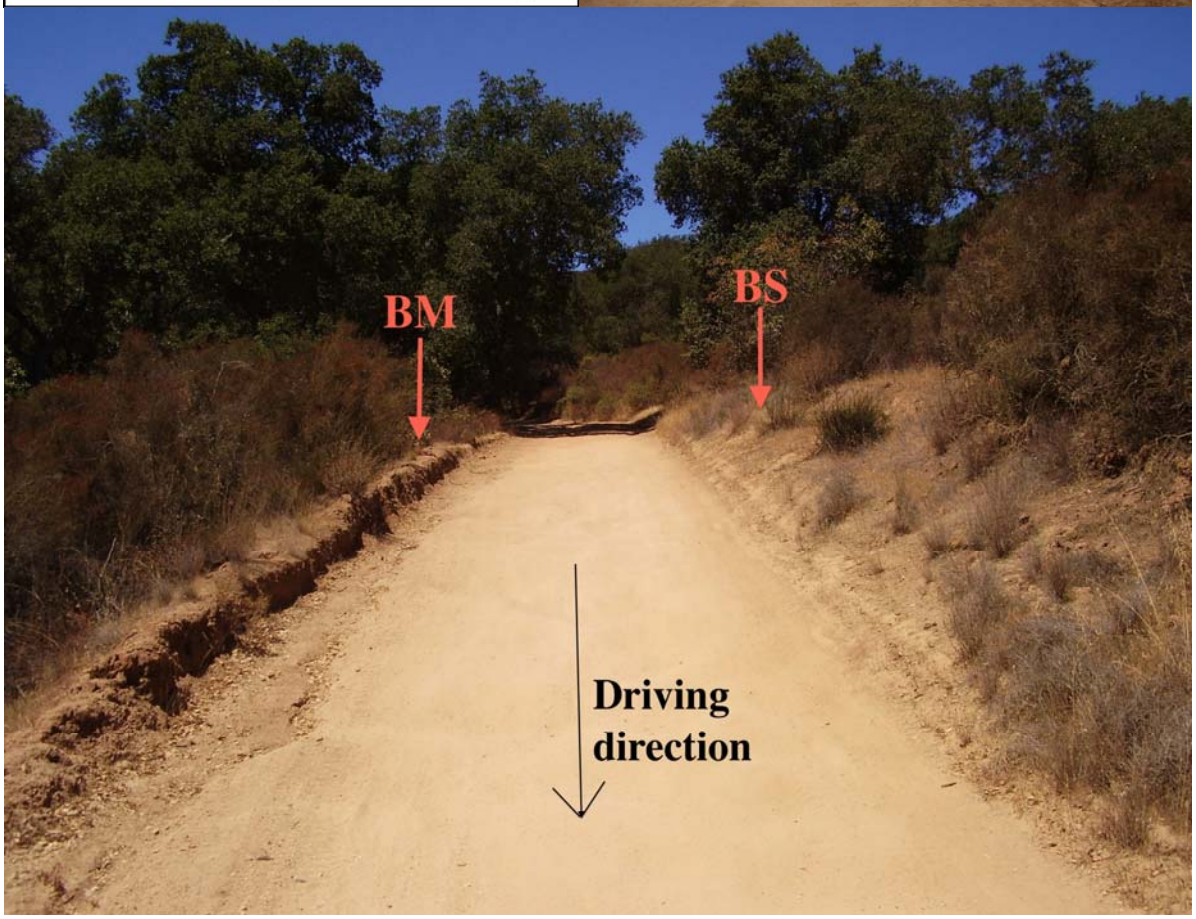




Figure 4. Top left: DEM of the RYG - North Canyon Trail site. Small photo shows locations of the Benchmark (BM) and Backshot (BS) while facing east (taken March 2013). Large photo shows their locations while facing west (taken August 2013).



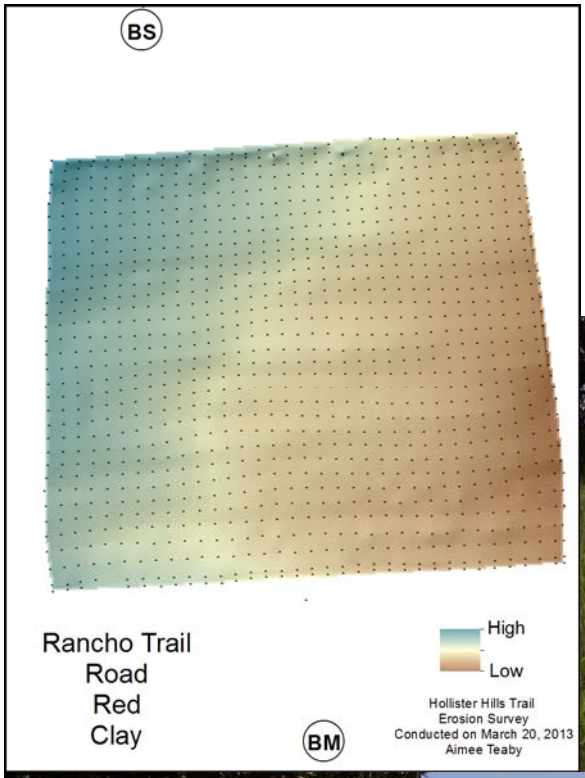
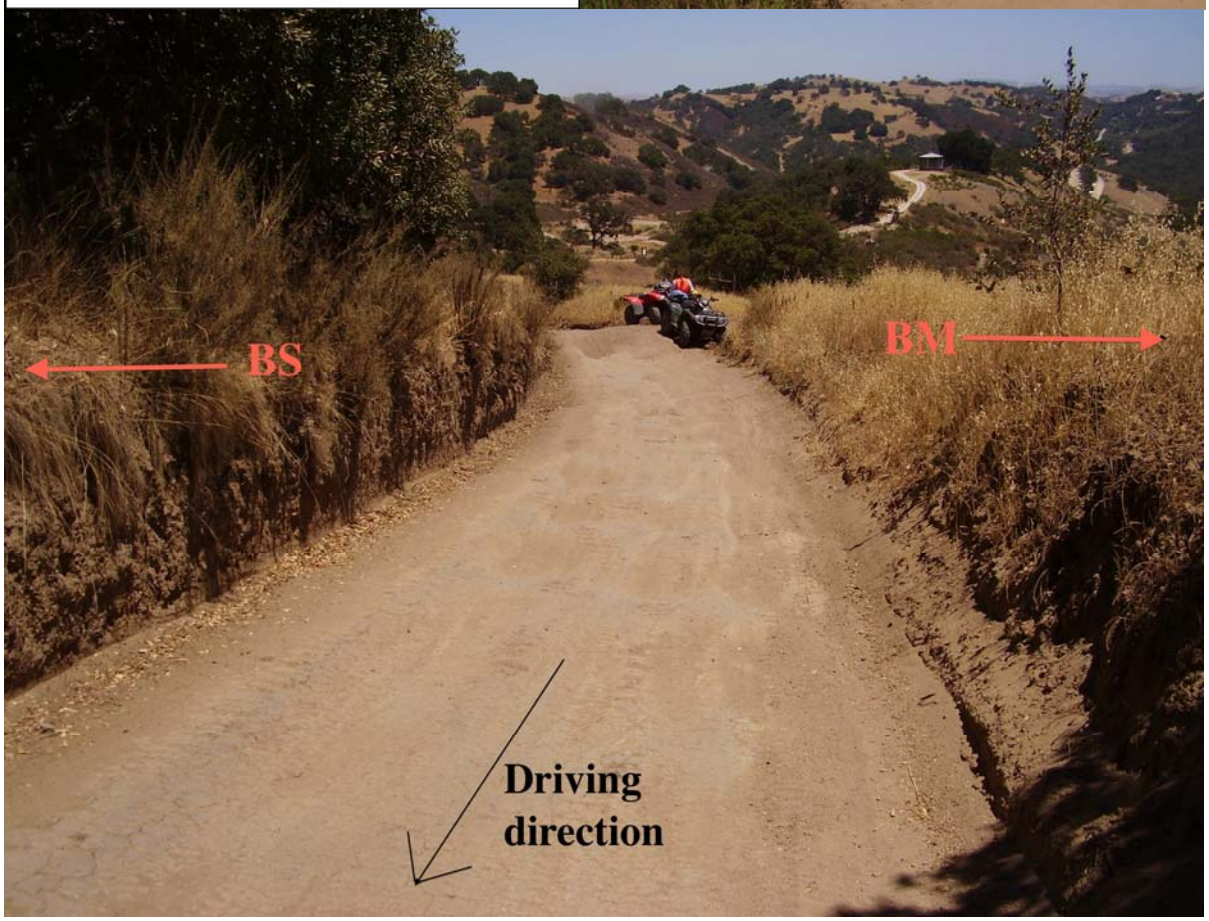



Figure 5. Top left: DEM of the RRC - Rancho Trail site. Small photo shows locations of the Benchmark (BM) and Backshot (BS) while facing west (taken March 2013). Large photo shows their location while facing east (taken August 2013).

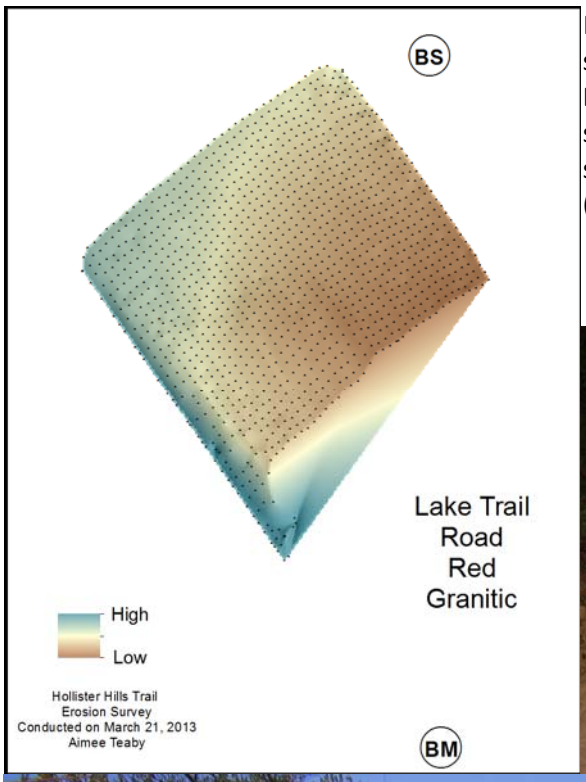
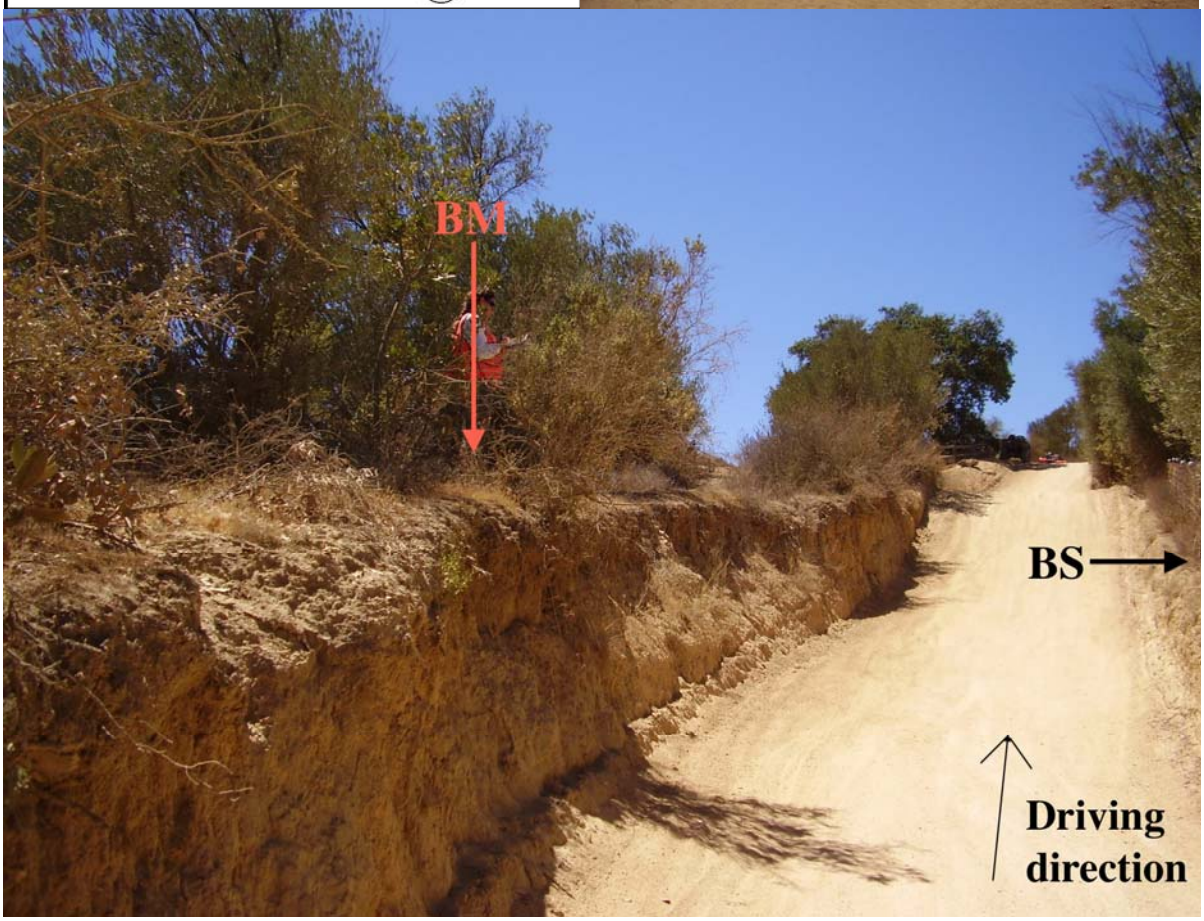



Figure 6. Top left: DEM of the RRG - Lake Trail site. Small photo shows locations of the Benchmark (BM) and Backshot (BS) while facing southeast (taken March 2013). Large photo shows their location while facing northwest (taken August 2013).

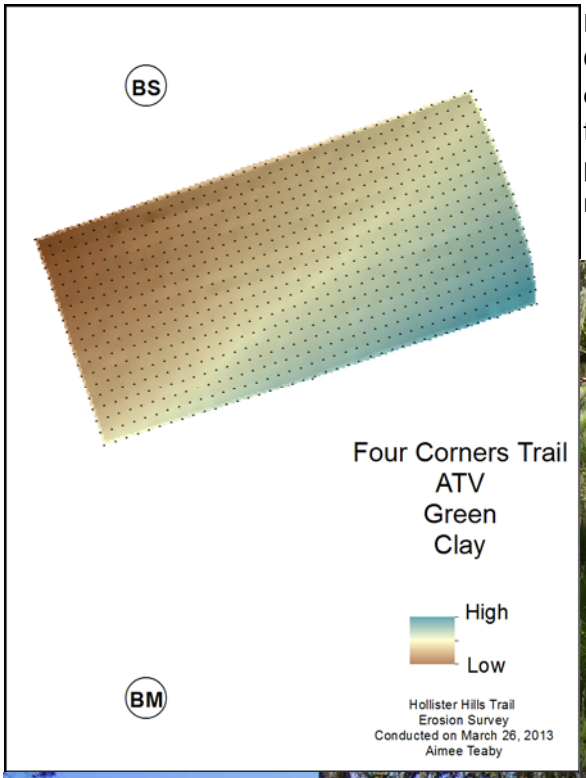



Figure 7. Top left: DEM of the AGC - Four Corners Trail site. Small photo shows locations of the Benchmark (BM) and Backshot (BS) while facing southeast (taken March 2013). Large photo shows their location while facing northwest (taken August 2013).

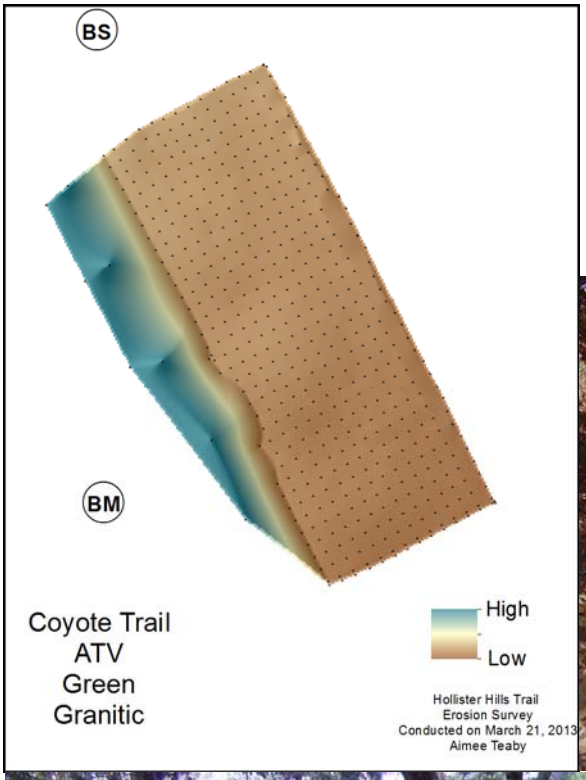
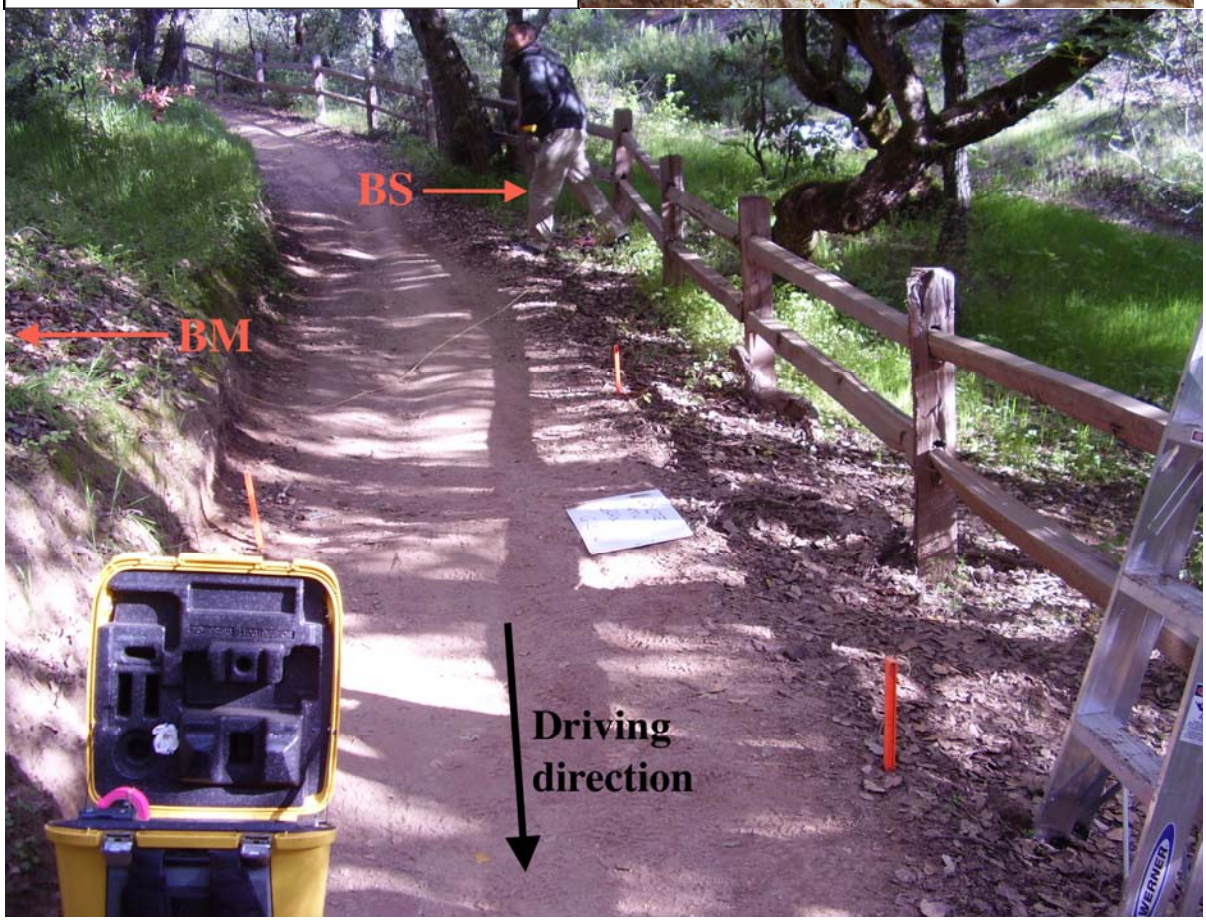




Figure 8. Top left: DEM of the AGC - Coyote Trail site. The small photo (taken August 2013) and the large photo (taken March 2013) both show the location of the Benchmark (BM) and Backshot (BS) while facing north.

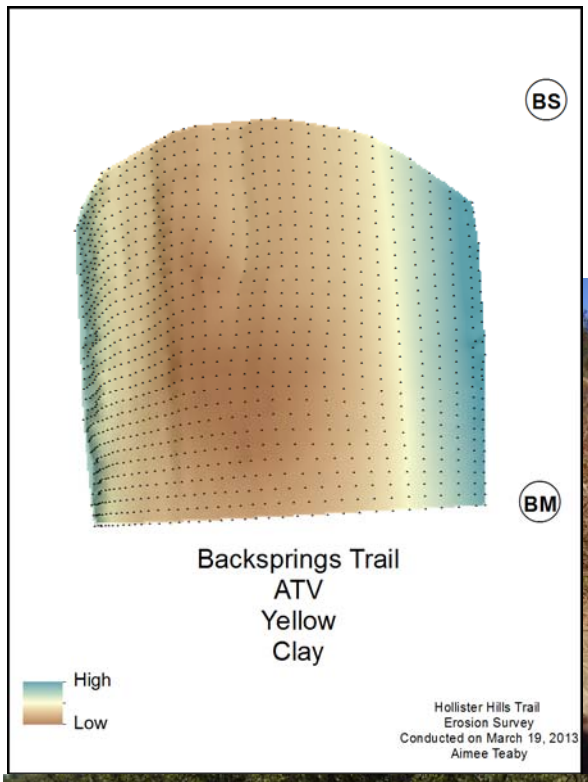
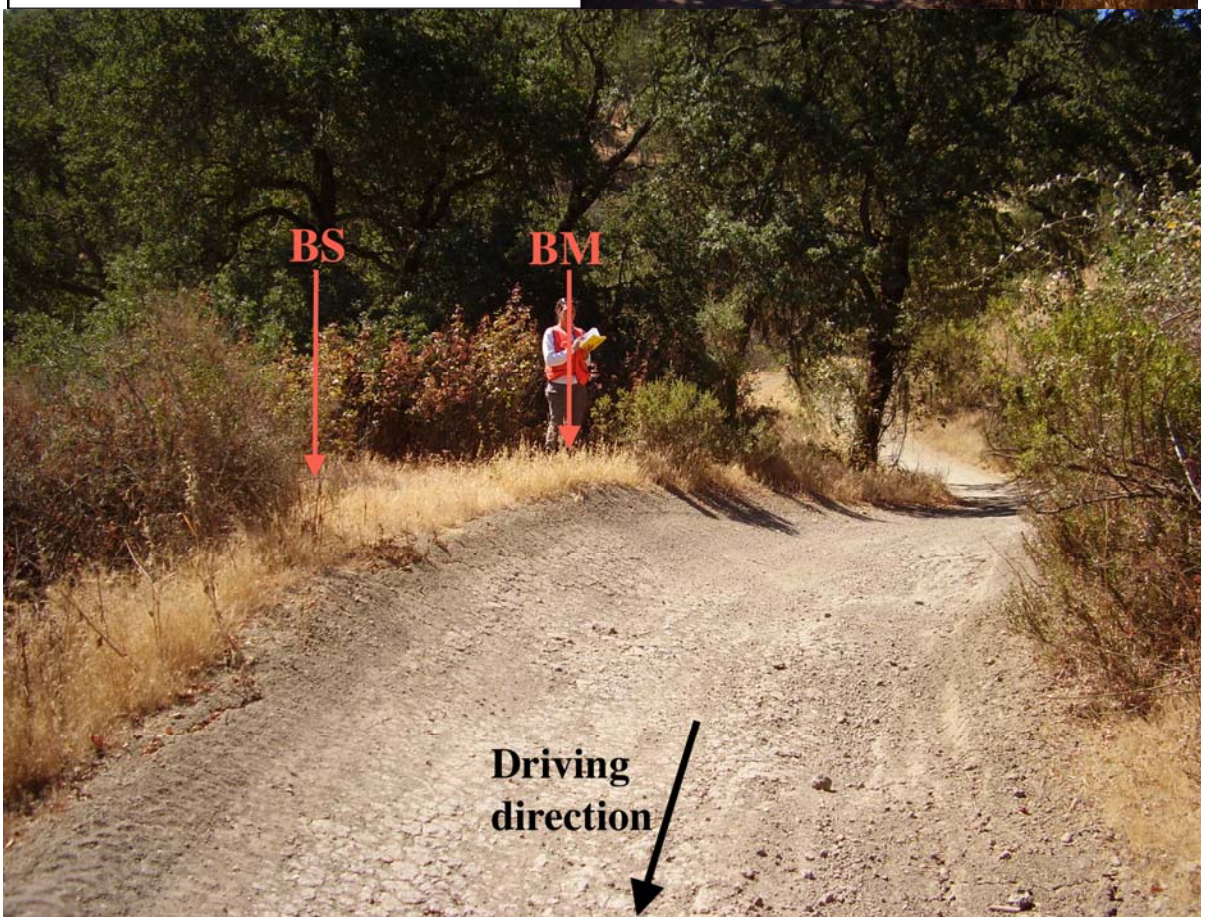



Figure 9. Top left: DEM of the AYC - Backsprings Trail site. Small photo shows location of the Benchmark (BM) and Backshot (BS) while facing north. Large photo shows their location while facing south (both taken July 2013).

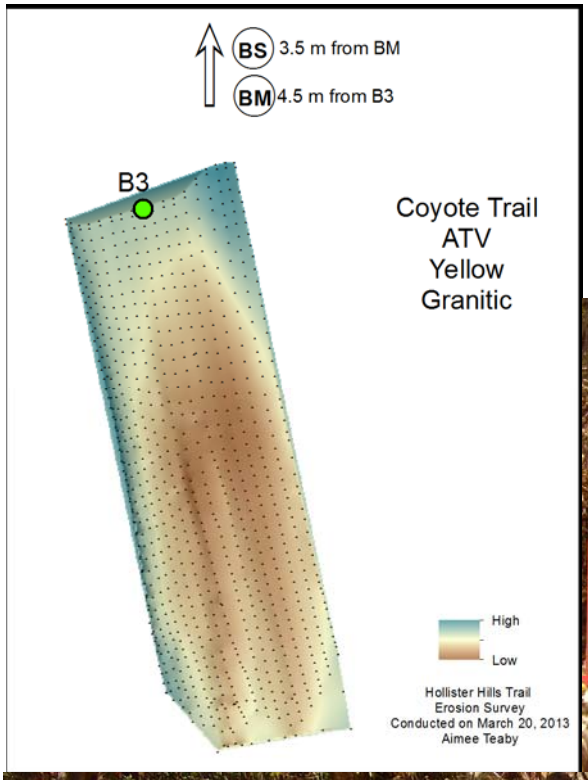



Figure 10. Top left: DEM of the AYG - Coyote Trail site. Small photo shows location of the Benchmark (BM) and the bottom edge of the surveyed area (B3) while facing south. Large photo shows the location of the BM and the Backshot (BS) while facing north (both taken August 2013).

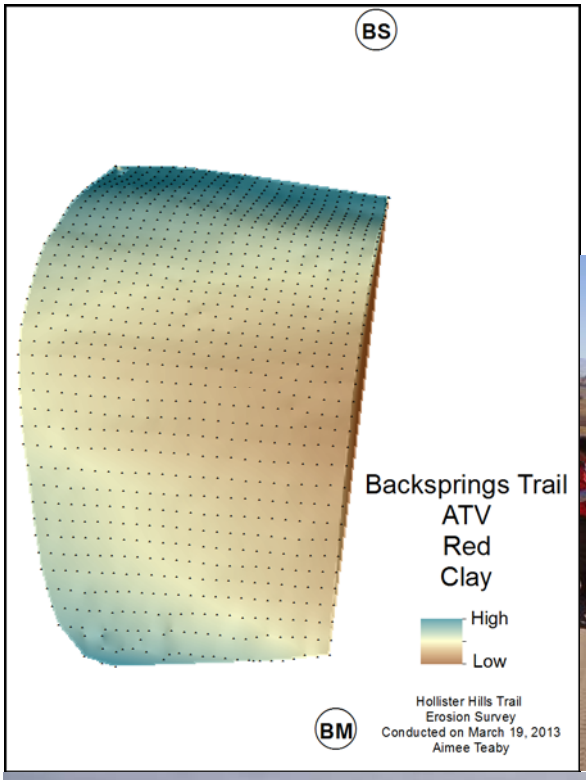




Figure 11. Top left: DEM of the ARC - Backsprings Trail site. Small photo shows the location of the Benchmark (BM) while facing east (taken July 2013). Large photo shows the location of the BM and the Backshot (BS) while facing northeast (taken March 2013).

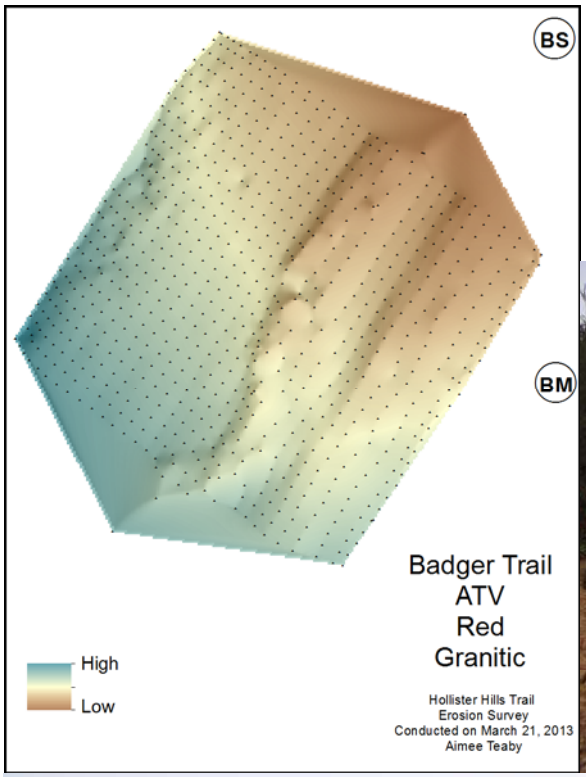




Figure 12. Top left: DEM of the ARG - Badger Trail site. Small photo shows the location of the Benchmark (BM) while facing west. Large photo shows the location of the BM and the Backshot (BS) while facing northeast (both taken March 2013).

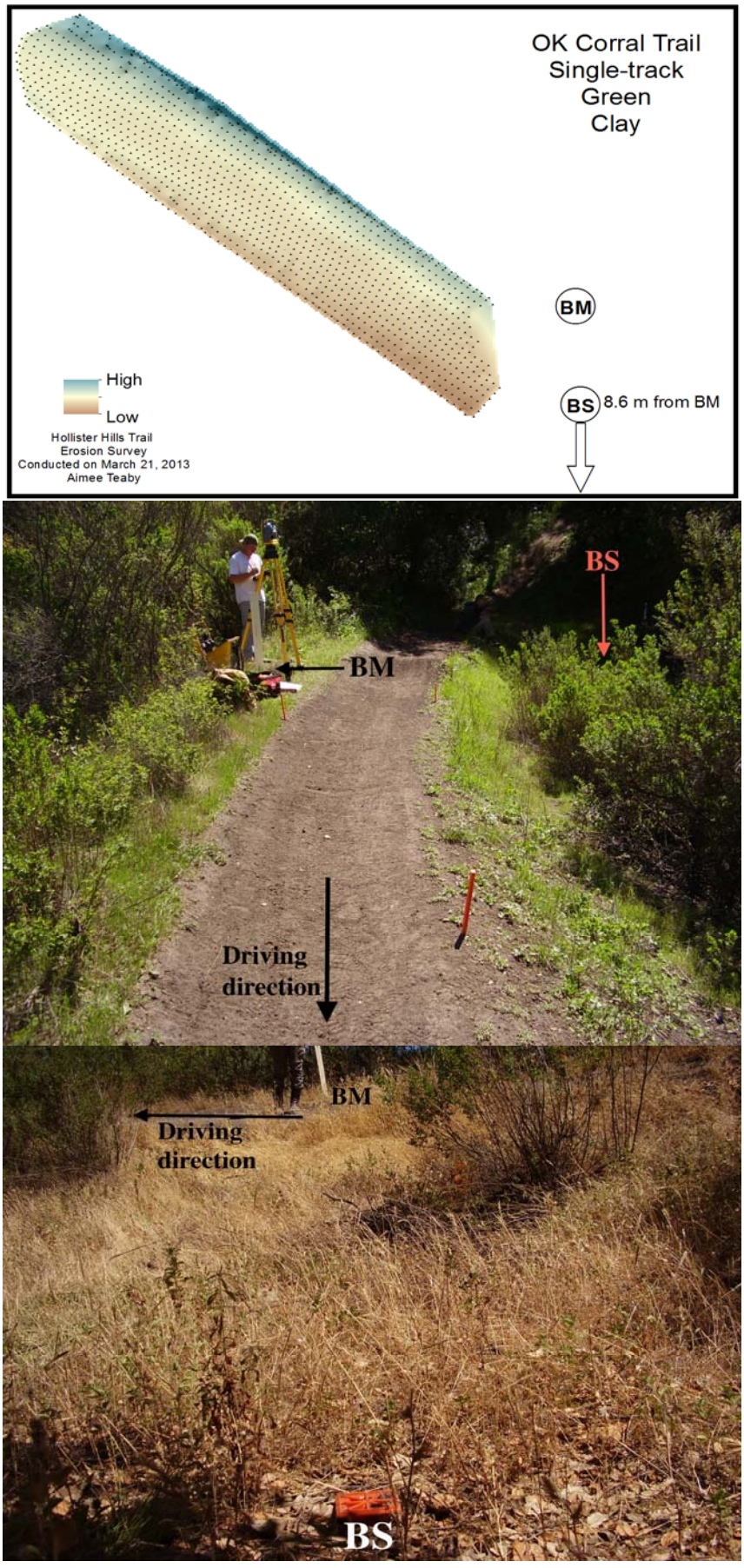




Figure 13. Top: DEM of the SGC - OK Corral Trail site. Middle: photo shows the location of the Benchmark (BM) and the Backshot (BS) while facing southeast (taken March 2013). Bottom: photo shows the location of the BM and the BS while facing north-northeast (taken July 2013).

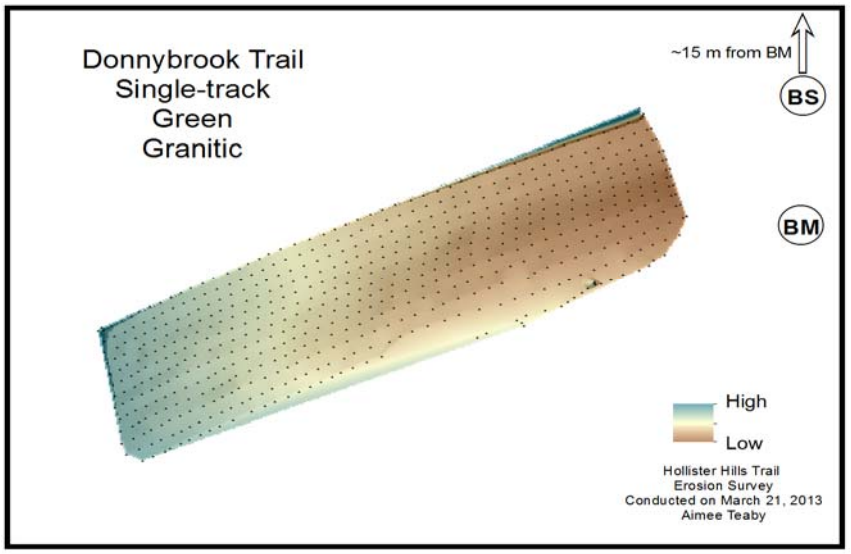





Figure 14. Top: DEM of the SGG - Donnybrook Trail site. Middle: photo shows the location of the Benchmark (BM) and the Backshot (BS) while facing east (taken August 2013). Bottom: photo shows the location of the BM while facing west (taken March 2013).

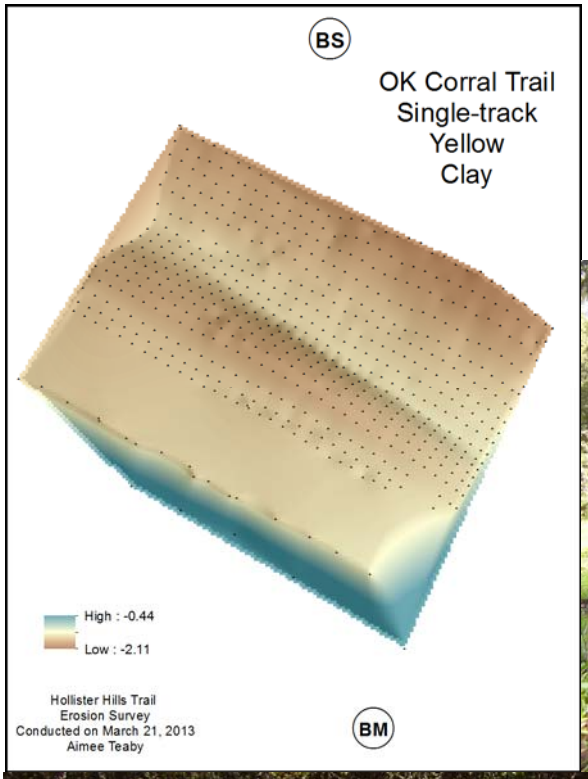



Figure 15. Top left: DEM of the SYC - OK Corral Trail site. Small photo shows the location of the Benchmark (BM) while facing east (taken March 2013). Large photo shows the location of the BM and the Backshot (BS) while facing west (taken July 2013).

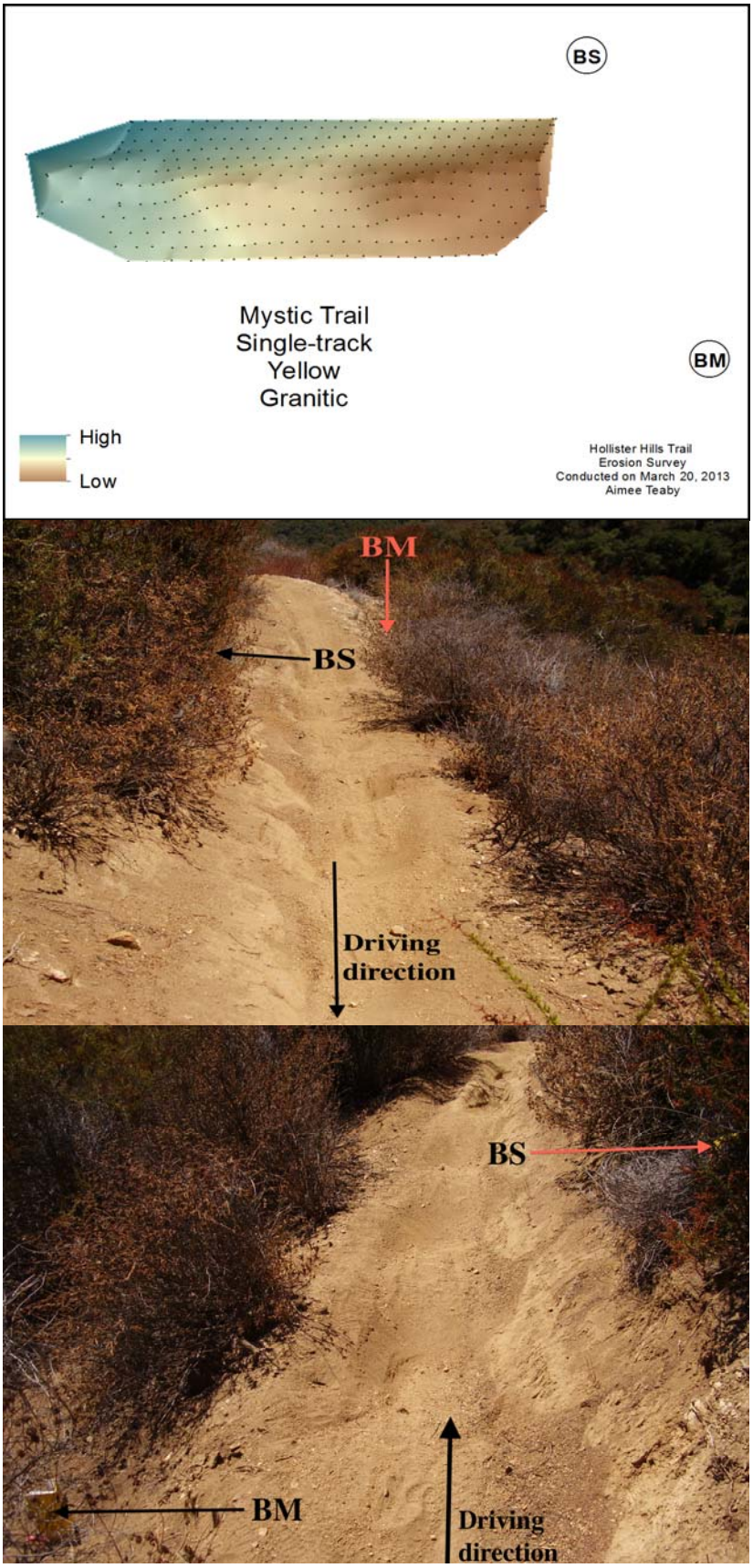




Figure 16. Top: DEM of the SYG - Mystic Trail site. Middle: photo shows the location of the Benchmark (BM) and the Backshot (BS) while facing east. Bottom: photo shows the location of the BM while facing west (both taken August 2013).

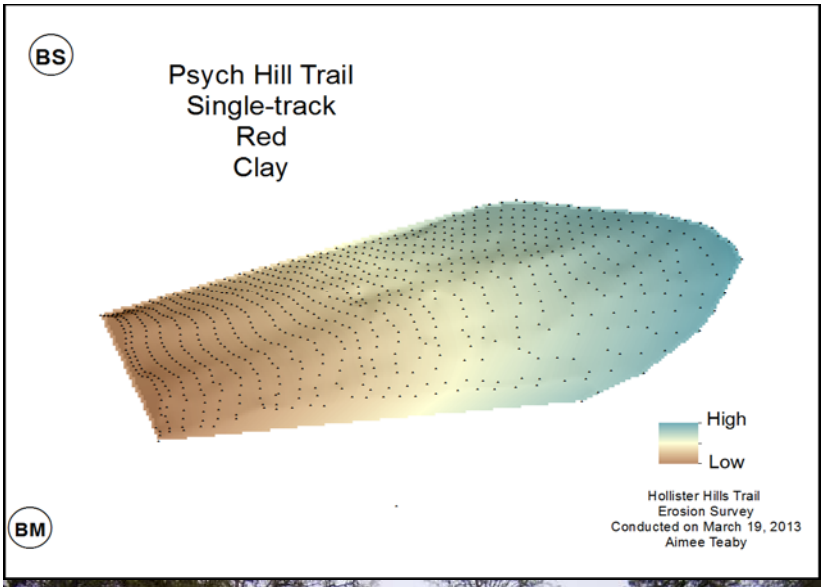





Figure 17. Top: DEM of the SRC - Psych Hill Trail site. Middle: photo shows the location of the Benchmark (BM) while facing east. Bottom: photo shows the location of the BM and the Backshot (BS) while facing east (both taken July 2013).

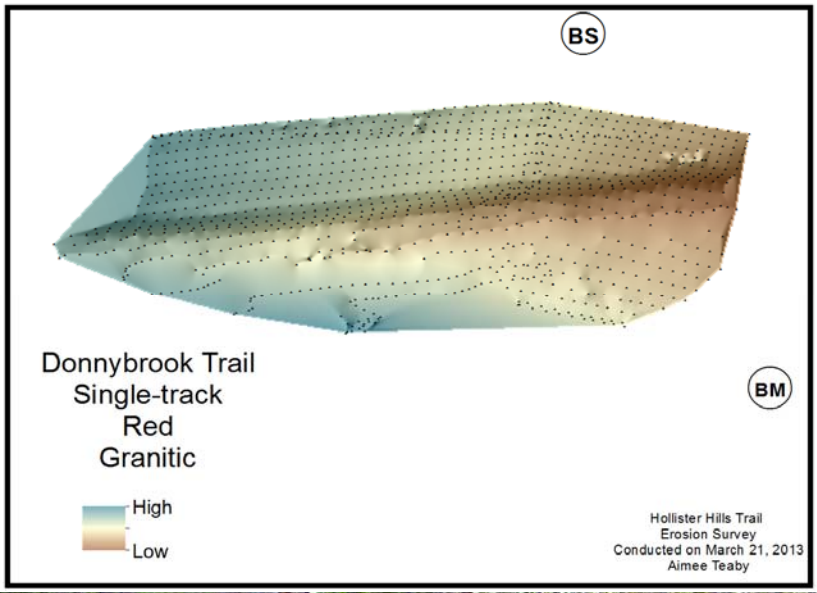





Figure 18. Top: DEM of the SRG - Donnybrook Hill Trail site. Middle: photo shows the location of the Benchmark (BM) and the Backshot (BS) while facing northwest (taken July 2013) Bottom: photo shows the location of the BM and the BS while facing east (taken July 2013).

## 4 References

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**Appendix A – Detailed site location description**

All geographic coordinates are defined using Universal Transverse Mercator (UTM) units in Zone 10 North.

RCG - Faultline
UTM Coordinates: 4071990.01 N, 639170.34 E
Site is located 0.7 miles from the Faultline trailhead. BM is located on the left side of the trail, 5 meters east of tree with pink flagging and 20 meters east of large dead oak tree with big corms and no leaves. The BS is located at 20°N from the BM on the right side of the trail approximately 5 meters from the fence.

RGG - Sage
UTM coordinates: 4072033.87 N, 637638.68 E
The BM is located on the right of the trail up on the hill just before a sharp right-hand turn with two 'DO NOT ENTER' signs. The BS is located at the very edge of the left side of the trail, 7.2 meters and 340°N from the BM. The BS is not currently located near anything permanent and may become unusable depending on erosion. Future surveys should consider a replacement location of the BS.

RCY - Faultline
UTM Coordinates: 4071943.74 N, 639230.43 E
Site is located 0.5 miles from the Faultline trailhead. The BM is located on the right side of the trail approximately 2 meters from the edge of the trail. The BS is located at 10.57 meters and 25°N from the BM near a fence and tree.

RGY - North Canyon
UTM Coordinates: 4071860.53 N, 637444.31 E
Site is located approximately 57 meters before a DO NOT ENTER sign and approximately 90 meters before the ONE-WAY TRAIL & North Canyon Road signs. This site is somewhat difficult to locate since it doesn't have any major defining features. There is one other section located after this site

that looks identical to this site. For this reason, it is slightly easier to find this sight by approaching from the west, traveling in the direction of traffic. The BM is located on the right side of the trail within one meter of the trail's edge. The BS is located at 8.5 meters and 20°N from the BM on the right side of the trail.

RGR - Lake
UTM Coordinates: 4071099.28 N, 639185.56 E
Site is located 0.9 miles from the Lake trailhead. The BM is located on the left side of the trail near a large tree. To access the BM, walk up approximately 60 meters from the survey site to the wood fence on left side of trail. Go over the fence and walk east (opposite of driving direction). BM located approximately 1 meter from top edge of trail wall. The BS is located at the top of the berm thru a hole in the fence on the right side of the trail. The BS is located at 9 meters and 340°N from the BM. An old olive orchard surrounds this site.

RCR - Rancho
UTM Coordinates: 4071310.10 N, 640046.42 E
Site is located 0.1 miles from the Renz property entrance. The BM is located on the left side of the road, just after a small trail that connects to a return portion of the Rancho Road trail. A large dead log is approximately 4 meters behind the BM. The BS is located at 6 meters and 14°N from the BM on the right side of the trail.

AGG - Coyote
UTM Coordinates: 4072044.51 N, 637851.99 E
Site is located 0.5 miles from the Coyote trailhead, approximately 50 meters before the AGY site. The BM is located on the right side of the trail approximately 1 meter from edge of the trail. The BS is located at 9 meters and 23°N from the BM. The site is totally shaded with an abundance of tree litter on both sides of the trail, which will most likely completely cover both markers.

ACG - Four Corners
UTM Coordinates: 4072278.4 N, 640254.51 E
Site is located 0.9 miles from the Renz property entrance, 0.6 miles from the Four Corners trailhead, and 0.2 miles from the San Andreas trail split. There is a fiberglass marker (WR, P#1, D230) approximately 45 meters before the survey site on the left side of trail. The BM is located up on the hillside on the right side of the trail near a tree. The BS is located at 5.5 meters and 10°N from the BM near the base of a tree.

AGY - Coyote
UTM Coordinates: 4072005.49 N, 637873.8 E
Site is located approximately 50 meters downhill from AGG. The BM is located in the left side of the trail near a fence post. The BS is located 3.5 meters and 0°N from the BM near a fence post and a tree. Both markers are accessed by going thru a gap in the fence near a tree in the opposition direction of the BS location.

ACY - Backsprings
UTM Coordinates: 4072088.63 N, 641547.15 E
Site is located in mid-Backsprings. The first trail split-off is for Adobe Road. The second trail split is unmarked. The site is located 0.1 miles after this split. The BM and BS are on right side of trail. The BM is less than 2 meters from edge of trail near a small shrub. The left side of trail is very thick with bushes and a lot of poison oak. The whole area is heavy with poison oak. The BS is located 4.3 meters and 18°N from the BM in an open space but near several bushes of poison oak.

AGR - Badger
UTM Coordinates: 4070599.57 N, 637339.46 E
Site is located approximately 50 meters from the Badger trailhead. The BM is located approximately 15 meters downhill from a ONE-WAY TRAIL & Badger Trail sign that are on the right side of trail. The BM is located less than 2 meters from the edge of the trail. The BS is located 2.2 meters downhill and 20° N from the BM near a large rock. There are many trees and bushes around the BM and BS.

ACR - Backsprings
UTM Coordinates: 4072118.68 N, 642124.07 E
Site is located near the beginning of the trail, just before the Middlefield trail turnoff, right next to the sign for the Lowerfield trail, on the left side of the trail. The BS marker is located at almost 7 meters and 2°N from the BM, on right side of trail at the top of the berm.

SGG - Donnybrook
UTM Coordinates: 4071705.41 N, 638210.21 E
Site should be accessed from the bottom/end of the Donnybrook Trail. Site is located approximately 53 meters from a 'DO NOT ENTER' sign at the bottom of the trail that is near the intersection of Harmony Gate Road and Donnybrook Trail. The BM is on the right side of the trail on the inside of the last right-hand turn of the trail. The BS is located across the trail and creek, up the hill approximately 20 meters and 23° N from the BM. It is marked by a nail in a tree located to the right of an unnamed volunteer trail.

SCG - OK Corral
UTM Coordinates: 4072238.31, 639593.81 E
Site should be accessed from the end/bottom of the OK Corral Trail, either on foot or motorcycle. The BM is located on right side of the trail, approximately 250 meters from the end of the trail and approximately 1 meter up from 'Trail Marker 4' sign. The BS is located at 8.66 meters and 205°N of the BM on the left side of trail. The BS could possibly be submerged during the wet season since it is in a depression.

SGY - Mystic
UTM Coordinates: 4071969.82 N, 637339.32 E

Site is located at the first set of whoops (bumps in trail) going uphill that lead to a crest in the trail. The BM is on left side of trail approximately 0.5 meters from the edge of the trail. This area has a lot of loose dirt and the BM could become quite buried over time. The BM is also missing its rebar cap. The BS is located at 2.7 meters and 7° N from the BM on the right side of trail.

SCY - OK Corral

UTM Coordinates: 4072247.49 N, 639159.7 E

Site is located approximately 1.75 miles from the OK Corral trailhead. Site is only accessible by foot or motorcycle so the trail mile markers should be used. The BM is located on right side of trail up on the hill near a Buckeye tree and poison oak bushes. The hill is fairly steep to climb up so having a step stool would be helpful. The BS is located at approximately 12 meters and 340°N from the BM, marked by a nail in a large tree.

SGR - Donnybrook

UTM Coordinates: 4071749.16 N, 638210.21 E

Site is located approximately 100 meters from the bottom of the trail and 50 meters from the other Donnybrook site. This site should also be accessed from the bottom/end of the Donnybrook Trail and is only accessible by foot or motorcycle. There is a small volunteer trail off to the left just after this survey site. The BM is on right side of trail. The BS is located 3.5 meters and 0°N from the BM.

SCR - Psych Hill

UTM Coordinates: 4072158.05 N, 640914.62 E

Site is located 0.4 miles from the Buckeye Thicket Trail sign and 0.5 miles from the Backsprings Trail sign near the trail split. The BM is located to the right of the trail just behind the base of the Psych Hill Trail sign. The BS is located on berm near unmarked trail split at 6.3 meters and 12°N from the BM. A step stool is definitely needed to run the TS for this site.