Arana Gulch Habitat Management Plan
City of Santa Cruz

Year 4 (2017) Annual Report
Appendices

CDFW Permit No. 2081 (a)-13-013-RP
Coastal Development Permit No. 3-11-074 (Arana Gulch)

Final
May 4, 2018

Appendix A AMWG Meeting Minutes, 2017

A-1: AMWG Meeting Minutes for:

February 2017
Email correspondence, September 2017

Minutes

Arana Gulch Adaptive Management Working Group Meeting

Frederick/Broadway Entrance to Arana Gulch (Near Santa Cruz Bible Church)

9:00 a.m. – 12:30 p.m. on Thursday, February 16, 2017

PARTICIPANTS:
Kate Huckelbridge, Ecologist, CA Coastal Commission
Kathy Lyons, Biotic Resources Group
Noah Downing, Planner, City of SC Dept of Parks and Recreation
Mike Ferry, Senior Planner, City of SC Dept of Planning and Community Development
Grey Hayes, CNPS
Devii Rao, Livestock and Natural Resources Advisor, University of California Extension
Monica Oey, CDFW

Ohlone Tiger Beetle: The group discussed the site being a possible location for expanding Ohlone Tiger Beetle habitat which is an endangered species found only in a few locations in the area. The loam soil conditions and bare ground may be a great opportunity to increase habitat areas for this very rare insect.

Tree Removals: The Parks and Recreation Department will continue to remove the remaining trees from encroaching into the coastal prairie. Any tree that is on the prairie side of the pathway and that is non-heritage will be removed.

Trail Drainage: Additional trail drainages will be installed along the Coastal Loop Trail to reduce soil from leaving the pathway.

Grazing Regime: The group discussed the timing of the cattle entering the site and confirmed that it was good timing given the conditions. There was concern that shifting the cattle over to Grazing Area A may need to wait until the grass height increased to sustain the cattle. The group discussed that the City should work with the cattle rancher to monitor the conditions and shift the cattle over to Area A at the appropriate time. The City described that the cattle rubbing posts had been installed and that the trough in Area A had been moved 100 feet out into Area A to increase ground disturbance and minimize conflicts with dogs as the previous location was adjacent to the fence line near the multi-use trail. There was discussion of the RDM and grass height monitoring results and the amount of RDM and grass height was less than last year which indicates that the cattle grazing has had some success in meeting its objectives. There was no concern about fencing the wetland in Area A.

Trail Design: The trail on the hillside near the cotoneaster is muddy. Staff described that there is an opportunity to shift the trail segment through the oak woodlands for that section to decrease slope of the trail, place the trail under a canopy to reduce erosion from rain drops, and hopefully be in a location where water seepage doesn't drain directly on to the trail. A previous recommendation from the group was to fix that segment of the trail and staff will be moving forward with short-term improvements. The group recommended pursuing longer-term improvements by redirecting the trail through the woodland area, and also recommended that the Coastal Commission consider allowing the trail realignment under the existing permit which allows activities that help restore the property. In this case, a better trail alignment would reduce erosion and the existing trail would be returned back to the coastal prairie. Additionally, new ad-hoc paths are being created because park users are trying to find alternative routes around the mud. Another benefit is that the new trail would wind through invasives which would need to be removed as part of the project. A biological assessment would need to be performed to ensure that no native species would be impacted.

A similar discussion occurred near the wetland. The trail route crosses a wetland and is covered in water during the winter months. A new ad-hoc path has been created to avoid the wetland area and uses higher ground to avoid the wetter areas. The new ad-hoc path seems like a better long-term route and would increase the soil disturbance along the pathway. An alternative design would be to install a raised walkway around the wetland which would be a costly pursuit and would not completely resolve the problem because after the wetland the trail remains muddy because the water seeps out of the hillside to the lowest point where the trail is located. If the trail were realigned, then the existing loop's memorial bench and the existing interpretive panel may need to be moved which may cause concerns from the family that paid for the memorial. Staff would need to check-in with the family first to see if there would be any issues. The group discussed the possibility of seasonal paths to be created during the winter months. Staff had some concerns with long-term management to ensure those areas were respected during those seasonal times and that the trails did not remain in a permanent state year round. The group recommended that staff research alternatives and that the Coastal Commission approve the final recommendation from the group without requiring additional permit approvals, as the permit was intended to allow for activities that helped restore and protect habitat at the site.

Ivy: The group walked through the Marsh Vista Trail where extensive ivy was removed and like the idea of working outwards from the coastal prairie onto additional management objectives.

Map: The draft map of the management zones was discussed. The group discussed adding more sub-areas to the map.

Appendix B Restoration Maintenance Activity Log

B-1. Arana Gulch Restoration Maintenance and Activity Log

Appendix C Coastal Prairie/Santa Cruz Tarplant Management Area

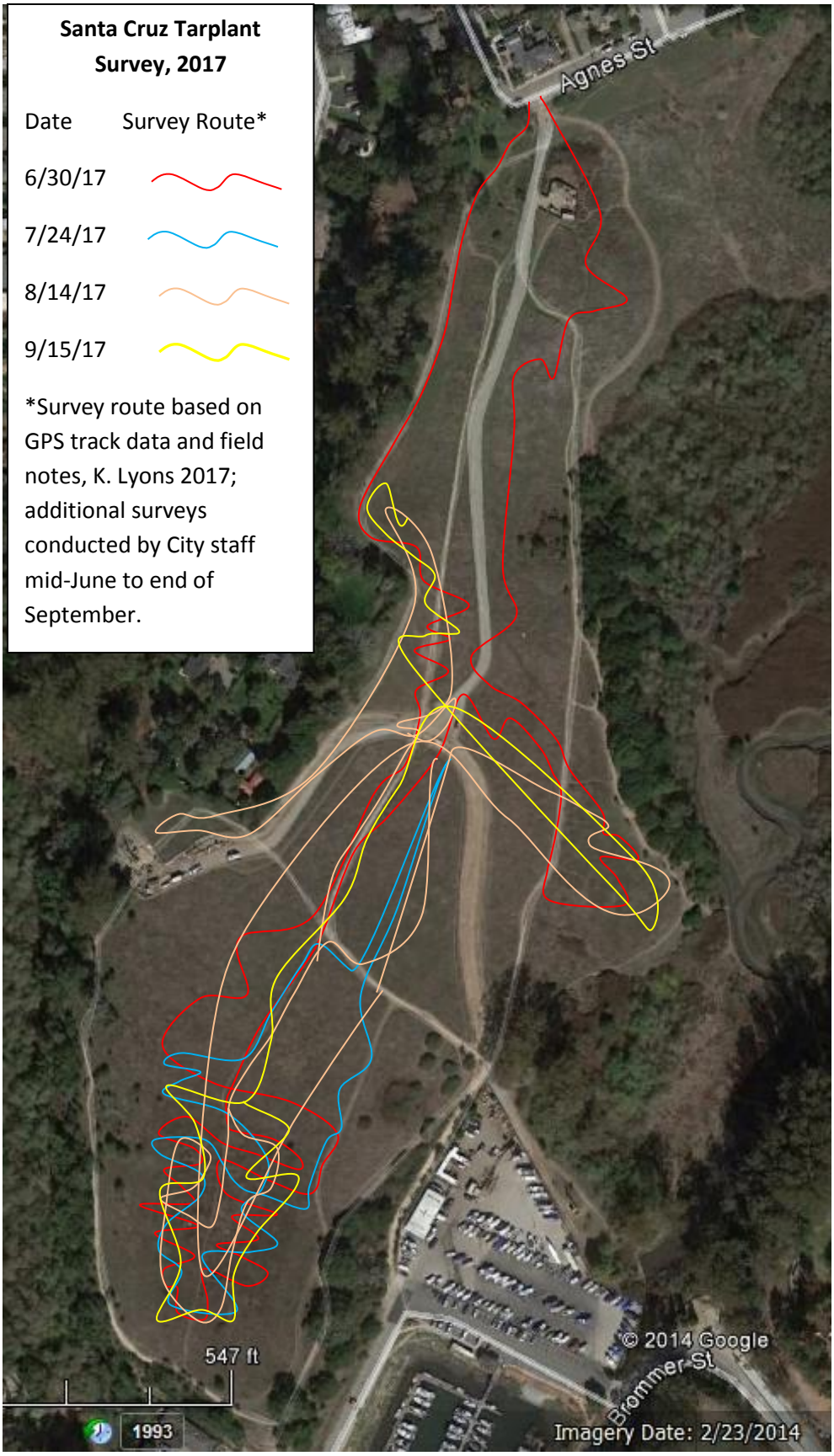
C-1. SCT Survey Route Map

C-2. Pre-mow Plant and Breeding Bird Survey

C-3. Transect Photos

C-4. Photo Monitoring

SCT Census Survey Routes and Dates, 2017



No Mow Zone- Avoid Yellow Mariposa Lily and Ithuriel's Spear

No Mow Zone- Avoid lupine and CA poppy

6 Jun 2017

Pre Mowing Nesting Bird Survey

Arana Gulch

Santa Cruz CA 95060

Garv Hoefler, wildlife biologist

Introduction: The purpose of this survey was to search all possible niches for the presence of nesting birds, nests, courtship behavior, or possible other species of special concern prior to the annual mowing of the grassland areas.

Methodology: Working again with Brett Snider from Santa Cruz Parks and Recreation we entered the property via a gate on the westerly side and not too far from the north end. Careful searching was done in and around the trees along that end first. We then separated and walked through the grassland areas in a stochastic fashion, so as to flush any ground nesting birds. If any birds flew up then it would be possible to zero in on the area to find a nest. As we approached the eastern or the western sides we checked as much as possible the stands of trees – mostly Coast Live Oak *(Quercus agrifolia)* – both with unaided eyes and when wanting more detail, with binoculars. These searches included the understory as well. Once to the nonnative plum tree, we then worked the grassland, which opens to the east and is bordered mostly by willows *(Salix sp.)*. These were searched as much as possible given how dense is their foliage. As we got to the south side of that are we searched both the understory and the trees there. Moving back out to the main grassland area, we resumed a wandering, roaming style to maximize coverage of about half of this parcel. As we got nearly to the south end, we turned back and continued the survey in the same fashion including all the shrubs and trees along the fenced in area. Brett then took me via cart down to the south end to show me a couple nests and we searched the trees and shrubs there as well.

Observations: Nowhere did we flush any birds, so there were no active nests in the grassland sections. We did see some scraped out areas, which might have served as previous nests, but there was no diagnostic evidence in or around those. Most likely they were scrapings by mammals after prey. On the east side at least 50 feet into the woodland area away from the proposed mowing area there was an old nest – most likely that of an American Crow *(Corvus brachyrhyncus)* – and way to the south there was another old nest, which was larger than the crow's and was probably that of a hawk. Brett mentioned there had been a Red-tailed Hawk *(Buteo jamaicensis)* there maybe last year. Also across from that are we checked out an old nest, possibly from a California Towhee *(Pipilo crissalis)*; however, as we were trying to see if it was occupied, Brett noticed we could see through it. Otherwise we found no active nests and observed no active nest building or courtship activities. One Dusky-footed Wood Rat *(Neotoma sp.)* nest was observed about 50 feet into the woodland area on the east side. No way to determine if it was for the subspecies of special concern; however, it

will not be disturbed in any way by the mowing project. We did come across one dead Norway Rat *(Rattus norvegicus)*; whereas, last time we had found 6. No signs of chewing or tearing on it; poisoned maybe somehow? Lastly we observed a small group of Black and Yellow Mud Wasps *(Sceliphron caementarium)* literally sitting quietly atop a small shrub in the grassland.

Conclusion: Mowing can proceed as planned.

Note: Quite different from last year's very little showing of any bird species, we observed 20 this year; possibly a reflection of the vegetative response to the much heavier rains for this season.

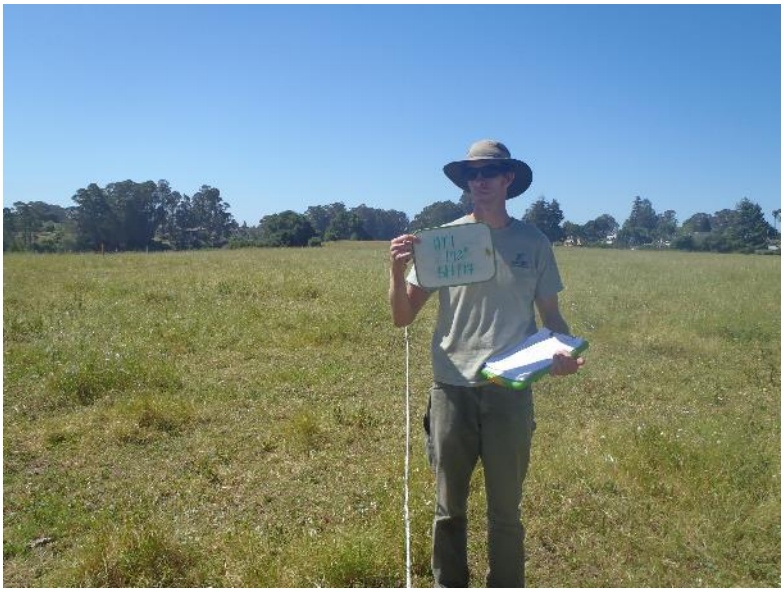
Birds seen: Turkey Culture, Red-tailed Hawk, Brandt's Cormorant, California Gull, Mourning Dove, possible Vaux's Swift, Anna's Hummingbird, Barn Swallow, Violet Green Swallow, Western Scrub Jay, American Crow, Chestnut-backed Chickadee, Northern Mockingbird, American Robin, Brown-headed Cowbird, House Finch, Lesser Goldfinch, California Towhee, Dark-eyed Junco, and White-crowned Sparrow

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

AT1 2015

AT1 2016

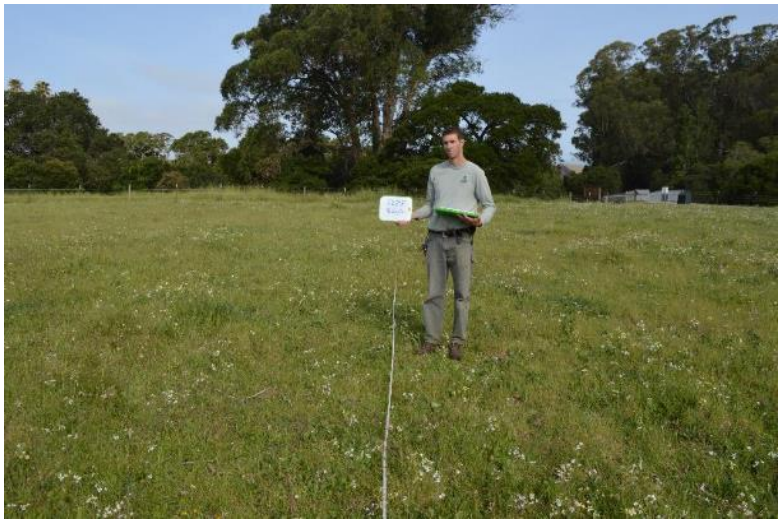
AT1 2017



Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

AT2 2015

AT2 2016



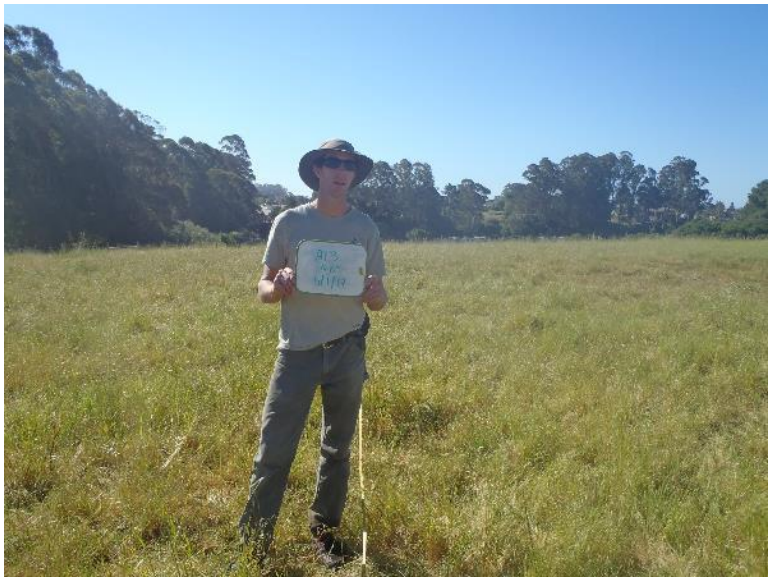
AT2 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

AT3 2015

AT3 2016

AT3 2017



Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

AT4 2015

AT4 2016

AT4 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

AT5 2015

AT5 2016

AT5 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

AT6 2015

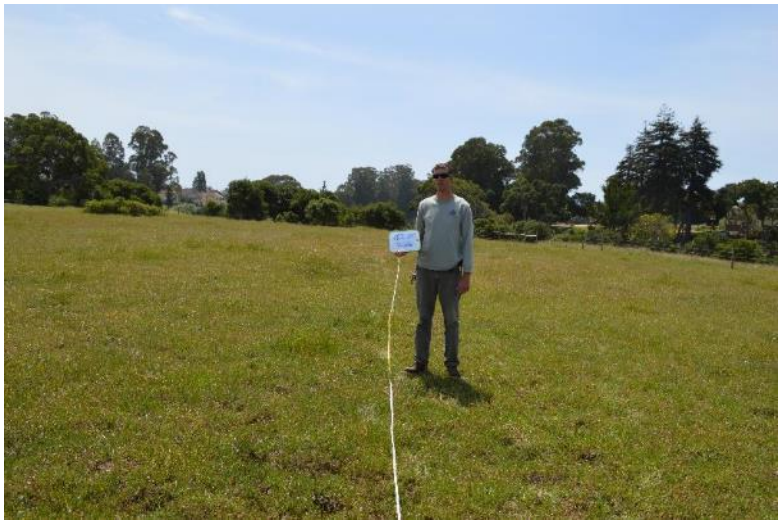
AT6 2016

AT6 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

AT7 2015

AT7 2016



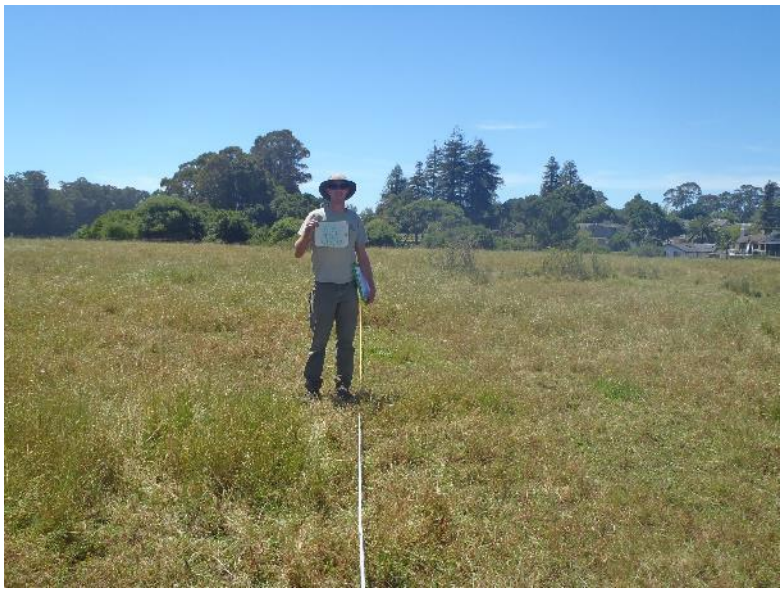
AT7 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

AT8 2015

AT8 2016

AT8 2017

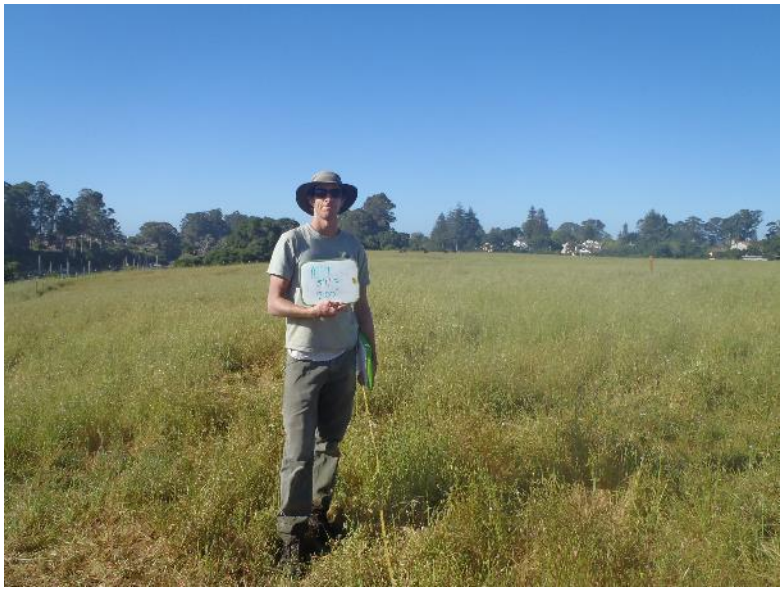


Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

AT9 2015

AT9 2016

AT9 2017



Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

AT10 2015

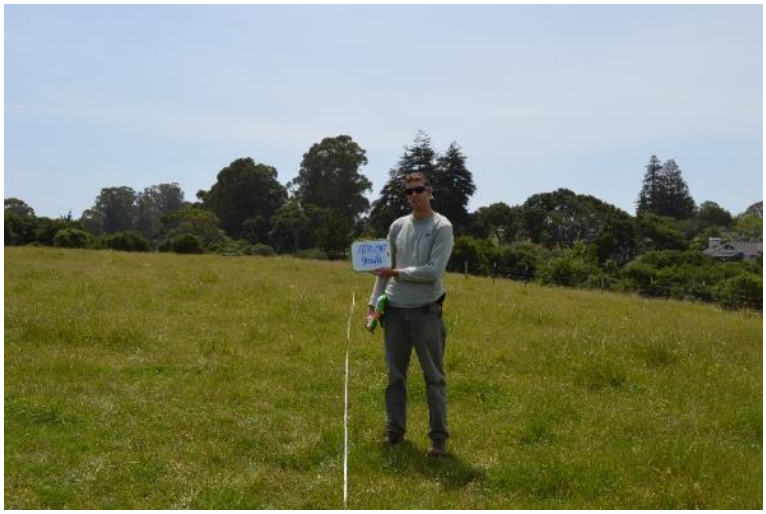
AT10 2016

AT10 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

AT11 2015

AT11 2016

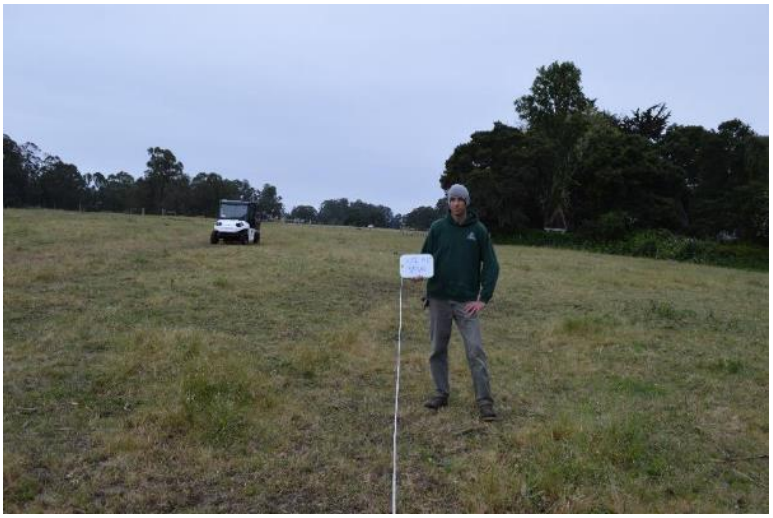


AT11 2017

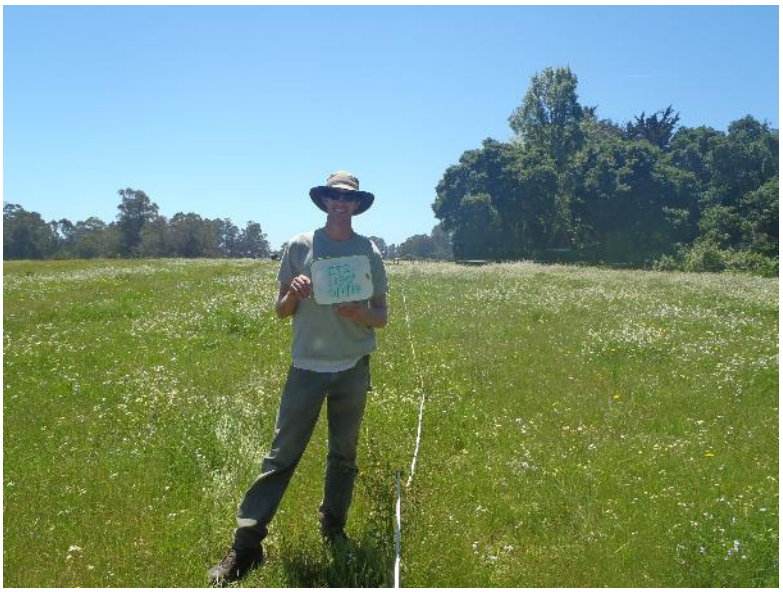
Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

CT2 2015

CT2 2016



CT2 2017



Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

CT3 2015

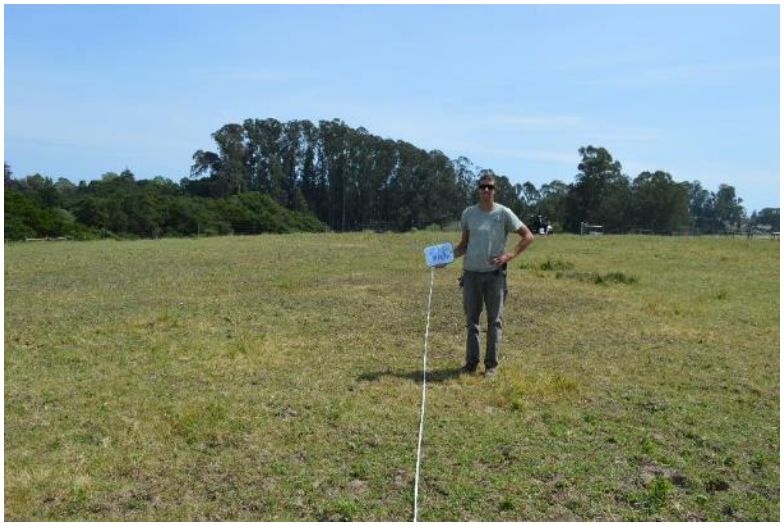
CT3 2016

CT3 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

CT5 2015

CT52016



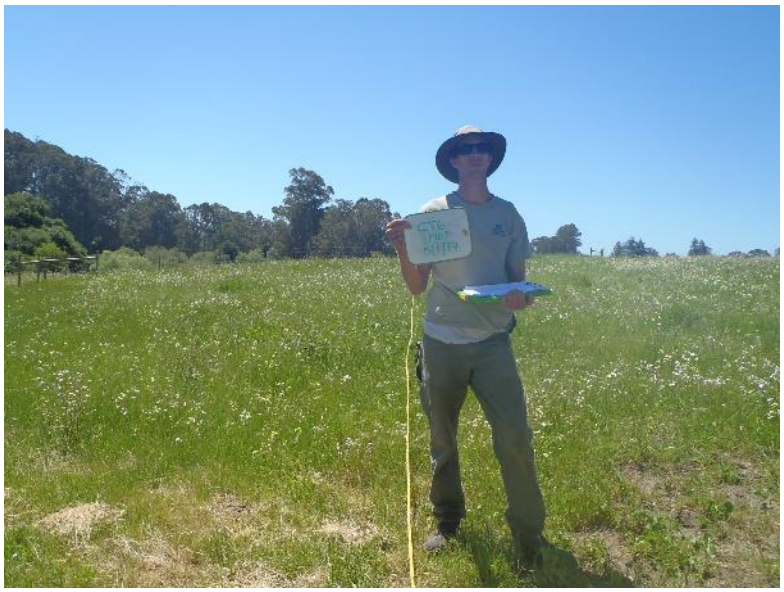
CT5 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

CT6 2015

CT6 2016

CT6 2017



Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

CT7 2015

CT7 2016

CT7 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

DT1 2015

DT1 2016

DT1 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

DT2 2015

DT2 2016

DT2 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

DT3 2015

DT3 2016

DT3 2017

Appendix A Arana Gulch Vegetation Assessment – Permanent Transect Photos

DT4 2015

DT4 2016

DT4 2017

Arana Gulch Photo Monitoring 2015-2017

PP1 1 2015

PP1 1 2016

PP1 1 2017

PP1 2 2015

PP1 2 2016

PP1 2 2017

PP1 3 2015

PP1 3 2016

PP1 3 2017

PP1 4 2015

PP1 4 2016

PP1 4 2017

PP2 1 2015

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PP7 4 2017

PP8 1 2015

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PP8 1 2017

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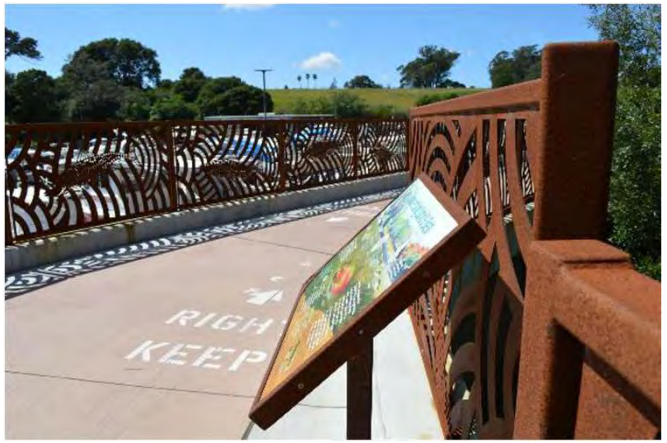
PP8 2 2017

PP8 3 2015

PP8 3 2016

PP8 3 2017

PP8 4 2015



PP8 4 2016

PP8 4 2017

PP9 1 2015

PP9 1 2016

PP9 1 2017

PP9 2 2015

PP9 2 2016

PP9 2 2017

PP9 3 2015

PP9 3 2016

PP9 3 2017

PP9 4 2015

PP9 4 2016

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PP10 1 2015

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PP17 2 2017

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PP17 3 2016

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PP17 4 2016

PP17 4 2017

PP 23 2015

PP 23 2016

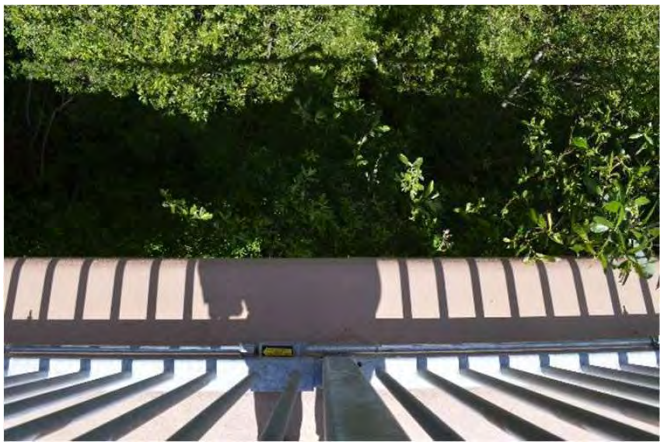
PP23 2017

HG1 2015

HG1 2016

HG1 2017

HG2 2015



HG2 2016

HG2 2017

HG3 2015

HG3 2016

HG3 2017

HG4 2015

HG4 2016

HG4 2017

Appendix D Arana Gulch Creek Riparian Woodland and Wetland Management Area and Hagemann Gulch Riparian Woodland Management Area

D-1: Arana Creek Revegetation Areas: Revegetation Monitoring Results: CNPS and CDFW Combined Vegetation Rapid Assessment and Releve Field Forms

CNPS and CDFG Combined Vegetation Rapid Assessment and Relevé Field Form

Relevé or Rapid Assessment (Circle One) (Revised Sept 10, 2009)

For Office Use:	Final database #:	Final vegetation type name:	Alliance / Association: Year 3 Monitoring

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION

Polygon/Stand #:	Air photo:	Date:	Name(s) of surveyors (circle recorder):
Arana A		10/11/17	K. Lyons

GPS wypt #: _____ GPS name: _____ Datum: _____ or NAD83. Bearing, left axis at SW pt_____ (degrees) of Long / Short side

UTME ___ ___ ___ ___ ___ ___ UTMN ___ ___ ___ ___ ___ ___ ___ Zone: 10 / 11 (circle one) Error: ±_____ ft / m / pdop

GPS within stand? Yes / No If No, cite from waypoint to stand, distance _____(meters) & bearing _____(degrees)

Elevation: ft / m Camera Name/Photograph #'s:

Stand Size (acres): (<1) 1-5, >5 | Plot Size (m^2): 10 / 100 / 400 / 1000 | Plot Shape ___ x___ ft / m or Circle Radius____ft / m

Exposure, Actual °: W NE NW SE SW Flat Variable /All | Steepness, Actual °: _____ 0° 1-5° (5-25°) > 25°

Topography: Macro: top (upper) mid (lower) bottom | Micro: convex flat concave undulating

Geology code: _____ Soil Texture code: _____ | Upland or (Wetland/Riparian) (circle one)

% Surface cover

H20:____ BA Stems:____ Litter: ____ Bedrock:____ Boulder:____ Stone:____ Cobble: _____ Gravel:____ Fines:_____ =100%

(Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

% Current year bioturbation _____ Past bioturbation present? Y / N | % Hoof punch _____

Site history, stand age, comments:

Slope adjacent to trail & toe of slope of Arana Creek

Type/ Level of disturbance codes: ____/___ ____/___ ____/___ ____/___ ____/___ "Other"

II. HABITAT AND VEGETATION DESCRIPTION

Tree DBH: (T1) (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: (S1) seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: (H1) (<12" plant ht.), H2 (>12" ht.) % Non-Vasc cover: 0 Total % Vasc Veg cover: 100%

% Cover -Overstory Tree Conifer/Hardwood: ____/ 0 Low-Medium Tree: 15 Shrub: 90 Herbaceous: 10

Height Class - Overstory Conifer/Hardwood: ____/ 0 Low-Medium Tree: 05 Shrub: 03 Herbaceous: 01

Height classes: 01=<1/2m 02=1/2-1m 03=1-2m 04=2-5m 05=5-10m 06=10-15m 07=15-20m 08=20-35m 09=35-50m 10=>50m

Species, Stratum, and % cover. Stratum categories: T= Overstory tree, U= Understory Tree, S = Shrub, H= Herb, N= Non-vascular.
% cover intervals for reference: <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, 75%.

Strata	Species	% cover	C	Strata	Species	% cover	C
T	Salix sp.	10					
T	Eucalyptus globulus	5					
S	Genista monspessulanus	40					
S	Rubus armeniacus	40					
S	Toxicodendron diversilobum	10					
H	Elymus glaucus	10					

Unusual species: _____

III. INTERPRETATION OF STAND

Field-assessed vegetation alliance name: _____

Field-assessed association name (optional): _____

Adjacent alliances: _____

Confidence in alliance identification: L M H Explain: _____

Phenology (E,P,L): Herb___ Shrub___ Tree___ Other identification or mapping information: _____

~~CNPS and CDFG~~ Combined Vegetation Rapid Assessment and Relevé Field Form

Relevé or Rapid Assessment (Circle One) (Revised Sept 10, 2009)

For Office Use:	Final database #:	Final vegetation type name:	Alliance / Association Year 3 Monitoring

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION

Polygon/Stand #:	Air photo:	Date:	Name(s) of surveyors (circle recorder):
Arana C		10/11/17	Kvigans

GPS wypt #: _____ GPS name: _____ Datum: _____ or NAD83. Bearing, left axis at SW pt_____ (degrees) of Long / Short side

UTME ___ ___ ___ ___ ___ ___ UTMN ___ ___ ___ ___ ___ ___ ___ Zone: 10 / 11 (circle one) Error: ±_____ ft / m / pdop

GPS within stand? Yes / No If No, cite from waypoint to stand, distance _____(meters) & bearing _____(degrees)

Elevation: ft / m Camera Name/Photograph #'s:

Stand Size (acres): <1, 1-5, >5 | Plot Size (m^2): 10 / 100 / 400 / 1000 | Plot Shape ___ x___ ft / m or Circle Radius____ft / m

Exposure, Actual °: _____ NE NW SE SW Flat Variable /All | Steepness, Actual °: _____ 0° 1-5° 5-25° > 25°

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: _____ Soil Texture code: _____ | Upland or Wetland/Riparian (circle one)

% Surface cover

H20:____ BA Stems:____ Litter: ____ Bedrock:____ (Incl. outcrops) Boulder:____ (>60cm diam) Stone:____ (25-60cm) Cobble: _____ (7.5-25cm) Gravel:____ (2mm-7.5cm) Fines:_____ (Incl sand, mud) =100%

% Current year bioturbation _____ Past bioturbation present? Y / N | % Hoof punch _____

Site history, stand age, comments:

Revegetation area NW of Arana Creek causway

Type/ Level of disturbance codes: ___/___ ___/___ ___/___ ___/___ ___/___ "Other"

II. HABITAT AND VEGETATION DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.) % Non-Vasc cover: 0 Total % Vasc Veg cover: 90

% Cover -Overstory Tree Conifer/Hardwood: ___/0 Low-Medium Tree: 5 Shrub: 35 Herbaceous: 60

Height Class - Overstory Conifer/Hardwood: ___/0 Low-Medium Tree: 05 Shrub: 02 Herbaceous: 01

Height classes: 01=<1/2m 02=1/2-1m 03=1-2m 04=2-5m 05=5-10m 06=10-15m 07=15-20m 08=20-35m 09=35-50m 10=>50m

Species, Stratum, and % cover. Stratum categories: T= Overstory tree, U= Understory Tree, S = Shrub, H= Herb, N= Non-vascular.
% cover intervals for reference: <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, 75%.

Strata	Species	% cover	C	Strata	Species	% cover	C
T	Cupressus macrocarpa	1-5		H	Rumex crispus	1-5%	
T	Olenus agrifolia	1-5					
S	Rosa californica.	5-15					
S	Artemisca douglasiana	5-15					
H	Cynodon dactylon	5-15					
H	Plantago lanceolata	15-25					
H	Plantago coronopus	25-50					
H	grasses - mowed	25-50					
H	Leymus triticoides	15-25					

Unusual species: _____

III. INTERPRETATION OF STAND

Field-assessed vegetation alliance name: _____

Field-assessed association name (optional): _____

Adjacent alliances: _____

Confidence in alliance identification: L M H Explain: _____

Phenology (E,P,L): Herb ___ Shrub ___ Tree ___ Other identification or mapping information: _____