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CH2MHILL

DOCKET
07-AFC-5
DATE June 17 2009
RECD. June 17 2009

June 17, 2009
File No.: 04.02.16.02
Project No. 357891

Mr. John Kessler, Project Manager
California Energy Commission
Systems Assessment and Facilities Siting Division
1516 9th Street, MS 15
Sacramento, CA 95814-5504

RE: Data Response, Set 2J
Ivanpah Solar Electric Generating System (07-AFC-5)

Dear Mr. Kessler:

On behalf of Solar Partners I, LLC, Solar Partners II, LLC, Solar Partners IV, LLC, and Solar Partners VIII, LLC (Applicant), please find attached one original and four hard copies, plus five CD copies of Data Response, Set 2J.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

Enclosure
c: POS List
Project File

Ivanpah Solar Electric Generating System (ISEGS)

(07-AFC-5)

Data Response, Set 2J

(Response to: Project Description and Soil & Water Resources)

Submitted to the

California Energy Commission

Submitted by

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC

June 17, 2009

With Assistance from

CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

Contents

Section Page

Introduction

Attached are Solar Partners I, LLC, Solar Partners II, LLC, Solar Partners IV, LLC, and Solar Partners VIII, LLC (Applicant) responses to the California Energy Commission (CEC) Staff's data requests for the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Project (07-AFC-5). The CEC Staff served these data requests on May 8, 2008, as part of the discovery process for Ivanpah SEGS. The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as CEC Staff presented them and are keyed to the Data Request numbers. New graphics or tables are numbered in reference to the Data Request number. For example, the first attachment for Data Response 139 would be numbered Attachment DR139-1A.

Additional tables, figures, or documents submitted in response to a data request (supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of a discipline-specific section and may not be sequentially page-numbered consistently with the remainder of the document, though they may have their own internal page numbering system.

The Applicant looks forward to working cooperatively with the CEC and BLM staff as the Ivanpah SEGS Project proceeds through the siting process. We trust that these responses address the Staff's questions and remain available to have any additional dialogue the Staff may require.

Project Description (131)

BACKGROUND

Data Requests #1-3 asked for justification for requesting the 7,040 acre footprint in the BLM ROW applications when 3,400 acres were identified for plant construction and operations in the AFC. The requests also asked for identification of detailed construction, ground disturbance and reclamation measures on the other 3,640 acre footprint. Responses from the applicant did not answer the questions and asserted the lands could be utilized for unforeseen circumstances that may arise during licensing. This answer does not satisfy BLM. Only lands proposed for use by project facilities will be carried forward in the joint analysis. Other lands need to be dropped from the BLM ROW application.

DATA REQUEST

131. Adjust all acreage calculations and legal land descriptions for the area required for the project.

Response: In Data Response Set 2A, the Applicant submitted two attachments. Attachment DR130-1 provided a legal land description (i.e., township and range) of the various project elements. That data (Tables 1-4) has been revised resulting from the selection of a single site for the SCE Substation, and the design of a stormwater diversion berm and channel around it. A current legal description is provided below.

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Legal Description	Acres
San Bernardino Principal Meridian	
Ivanpah 1 Site T. 16 N. R.14 E., Sec. 2: Lots 2, 3, 4, and SW¼NE¼, S½NW¼, SW¼, W½SE¼ Sec. 3: Lots 1, 2, and S½NE¼, SE¼NW¼, S½SW¼, SE¼ Sec. 10: NE¼, E½NW¼ Sec. 11: W½NE¼, NW¼	913.50
Ivanpah 2 Site T. 17 N., R. 14 E., Sec. 27: SW¼SE¼, SW¼ Sec. 28: SE¼SW¼, SE¼ Sec. 33: E½, E½W½ Sec. 34: W½E½, W½	920.74
Ivanpah 3 Site T. 17 N., R.14 E., Sec. 20: E½, E½W½ Sec. 21: All Sec. 22: W½W½ Sec. 27:W½NW¼, NW¼SW¼ Sec. 28: N½, SW¼, N½SE¼, SW¼SE¼ Sec. 29: E½, SE¼NW¼, E½SW¼	1,836.27
Administrative Site and Substation (including stormwater diversion) T. 16 N., R. 14 E., Sec. 3: W½NE¼, W½NW¼ Sec. 4: E½NE¼	33.28
Total Affected Acreage	3,703.80

TUP (Temp construction area)

T. 16 N., R. 14 E.,
Sec. 3: W½NE¼, NE¼, N½SW¼
Sec. 4: NE¼, NE¼SE¼

T. 17 N., R. 14 E.,
Sec. 33: SE¼SW¼, S½SE¼
Sec. 34: S½SW¼, SW¼SE¼

Soil and Water Resources (139)

BACKGROUND

In the Mojave Desert, rainfall usually occurs during brief but intense storms. An average of three inches per year of rainfall can be expected at the project site. The water that does not infiltrate into the ground or evapotranspire flows as surface runoff and at times can result in flash flood conditions. Conditions at the site indicate past surface flows have had enough energy to transport gravel and cobbles across the project site. The plants on the grade of the bajada (coalescing alluvial fans), on which the project is proposed, help retain sediment and reduce erosion potential from runoff. Removing all the vegetation to the root system would dramatically alter the surface runoff pattern that has naturally developed and likely allow transport and deposition of coarser material on distal portions of the fan and ultimately the Ivanpah Dry Lake bed. At such a large scale, up to 3,400 acres of vegetation removal and ground disturbance, management of the surface water flows will require extensive engineering. The project applicant has already stated they would supply a final grading plan.

DATA REQUEST

139. As part of the final grading plan, please describe in detail, using illustrations and written descriptions as necessary, the following:

    a. How sheet and channel flow across the project site, over roads, around the heliostats, and off the site would be managed through engineering controls.

    b. Calculations showing the stormwater engineered controls have sufficient capacity for a 100-year, 24-hour storm event.

    c. Erosion and deposition predictions on the up-slope and down-slope sides of the projects.

    d. Please describe the engineering controls in the event of a hazardous or nonhazardous spill.

    e. Please explain in writing and with illustrations how the principles of Low Impact Development would be integrated into the final grading plan.

Response: The Applicant has revised its approach to stormwater management to better apply the principles of low impact development (LID). Attachment DR139-1A (Data Response Set 2I) was a response to comments on Applicant's stormwater plan. Response BSE-4 stated that Dr. David Groeneveld, a desert vegetation ecologist, was performing research on the impacts of desert mowing. The preliminary results of his research are provided as Attachment DR139-2A.

ATTACHMENT DR139-2A

Preliminary Results, Vegetation Response to Simulated Mowing

JUNE 17, 2009

HydroBio
Advanced Remote Sensing

June 15, 2009

Mr. Tom Reagan
Bright Source Energy
[Transmitted Electronically]

RE: Attached "Preliminary Results, Vegetation Response to Simulated Mowing, Ivanpah Valley, California"

Dear Tom:

The attached report provides a preliminary look at plant survival and resprouting for the clipped plants in Ivanpah Valley. Multiple examples of seven perennial plant species were clipped to between 20 and 25 cm of the ground surface to mimic the effects of mowing within the land planned for the Ivanpah heliostat field.

The majority, but not all, of the test plants were relocated for this preliminary reporting. No mortality was observed and nearly all plants responded to the clipping with vigorous sprouting. Yucca, that grows relatively slowly had not shown signs of resprouting. The general vigorous regrowth occurred despite two factors that would be expected to lessen the vigor of this response: (1) relatively dry antecedent rainfall within Ivanpah Valley and (2) competitive effects from surrounding plants that were not clipped.

Noting the importance of vegetation cover to successful land management at the Ivanpah Site, two additional test cuttings to mimic mowing are proposed in September 2009 and again in January 2010. Final evaluation of plant regrowth would then take place in April 2010. Due to intensive interest and the importance of plant survival after mowing, these activities are proposed as a cooperative study with BLM and CEC participation.

Sincerely,

David P. Groeneveld, Ph.D.

1220 Cerro Gordo Road • Santa Fe • New Mexico • 87501 • 505-992-0234 • http://www.hydrobio.org

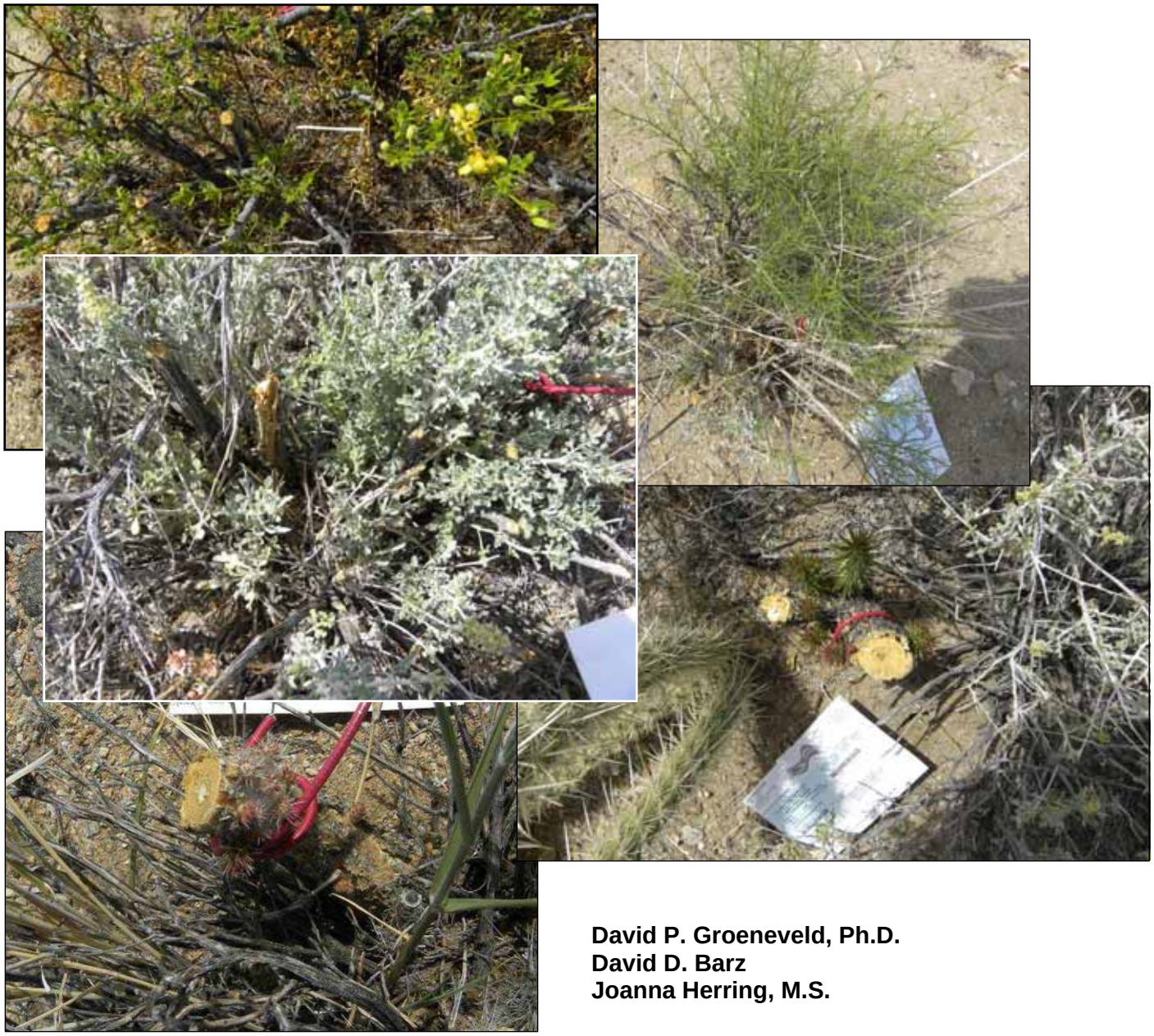
HydroBio
Advanced Remote Sensing

Preliminary Results

Vegetation Response to Simulated Mowing
Ivanpah Valley, California

for Bright Source Energy

June 15, 2009



David P. Groeneveld, Ph.D.
David D. Barz
Joanna Herring, M.S.

1220 Cerro Gordo Rd., Santa Fe, NM, 87501 Voice: 505-992-0234, Fax: 505-992-2947

Executive Summary

Individuals of seven perennial native species were cut off at 20-25 cm above ground level on March 18, 2009 to simulate the effects of mowing on a site within the proposed Ivanpah Solar Energy Generating Station (ISEGS) location. The seven species are common-to-dominant on the bajada environment and achieve a stature sufficient to be affected by mowing. The site was revisited 41 days following cutting on April 28th. Twenty nine of the clipped sites were relocated and the cut plants photographed for later evaluation in the office. With the exception of Mojave yucca, known to grow quite slowly, all species showed vigorous regrowth. Confirmation of yucca survivorship will take place after one year (April 2010) at the termination of these investigations. Annotated photographs are attached that show each of the plants found on the April 28th revisit.

Rainfall records from three stations around Ivanpah Valley indicated that rainfall was below average. Test plants cut to simulate mowing were surrounded by uncut plants and it appears that this may have induced competitive advantage to the surrounding vegetation for limited resources of soil water and nutrients. This condition would not exist for actual mowing of the site during construction. Given dryer-than-normal rainfall and the competitive disadvantage of selective cutting, it is hypothesized that recovery of individual plants will be better under operational mowing during a normal rainfall regime.

A future cooperative program is suggested to test the seasonality of plant survival for mowing for three annual time periods: during spring greenup (this present test), after summer diapause (in September) and in mid-winter diapause (January). Final evaluation of survivorship for all three test cuttings is proposed for April, 2010.

1. Introduction, Problem and Purpose

Development of the proposed ISEGS would include mowing of the vegetation to a height of 20-25 cm (8-10 in) using a rotary flail device. Concern has been expressed that this may induce widespread mortality of the affected perennial vegetation. This is a problem because no information exists in the literature on which to respond to these concerns. The purpose of this preliminary report is to provide initial feedback for the survival of native species following mowing.

An experimental design to address this question was developed for Bright Source Energy. The experimental design is to test clip select vegetation species to a height of 20-25 cm to simulate the effects of mowing. Simulated mowing is planned for three points in time to test recovery during the important annual stages: (1) during early spring onset of new growth (the test reported here), (2) during late summer following summer diapause (perennial plant species are mostly inactive during late summer due to depleted soil water) and (3) during mid-winter diapause prior to spring growth. These three points in time (March, September and January) provide tests of shrub regrowth from mowing at three very different annual cycle stages. In recognition that the cover of Ivanpah perennial plants is an important factor for controlling soil erosion on the developed site, these three points in time will be evaluated for mowing impacts on vegetation survivorship.

This report provides preliminary results for the first of the three test clipping events, conducted on March 18, 2009. During this field work, seven common-to-dominant species were selected for test clipping: burrobush, cheesebush, creosote bush, Nevada Mormon tea, pencil cactus, silver cholla and Mojave yucca. The clipped plants and the average height of their tallest stems are listed in Table 1. Table 2 provides the scientific names and authorities for each of the species examined.

In the region of the test clipping, more species were identified than were clipped (13), so Table 2 contains three common shrub species in addition to the clipped species: spiny menodora, California buckwheat and bud sagebrush were both of such low stature (<<25 cm for bud sagebrush, and generally less than 30 cm for the buckwheat) that they were not clipped. For these low-statured plants,

it is expected that the mower will not impact the plant canopies. Only two each of bladdersage and black banded rabbitbrush were located in the area chosen for the test shown on Figure 1. Both bladdersage and black-banded rabbitbrush are often thought of as disturbance species since they are found almost exclusively in washes in the Ivanpah region. These species are not expected to be impacted to a great degree by mowing since, as disturbance species, they should rebound from any such cutting rapidly. These species will be tested during the two clipping events that will follow at the end of summer and during mid winter. Lower-statured species (generally below the 20-25 cm height of the mower) are not expected to be impacted by the mowing operation other than by occasional vehicle runover. This mowing-unaffected group also includes a flat-pad species of *Opuntia*, beavertail cactus, also listed in Table 2 and in other locations (but not this test location), "prickly pear" (*O. engelmannii).*

Table 1. Location and information regarding each clipped plant.

Point #	Plant_Code	Height (cm)	Long.	Lat.	Comment
1	EPNE,AMDU	59;52	-115.4716176	35.56756	Nevada mormon tea/burrrobush
2	LATR	125	-115.4716487	35.56762	creosote bush
3	LATR	75	-115.4715929	35.56766	creosote bush
4	AMDU	47	-115.4716009	35.56763	burrobush
5	HYSA	59	-115.471623	35.56762	cheese bush
6	HYSA	53	-115.4717156	35.56765	cheese bush
7	LATR	75	-115.471711	35.56767	creosote bush (10 stem bases in clone)
8	AMDU	46	-115.4717715	35.56776	burrobush
9	AMDU	38	-115.4717726	35.56775	burrobush
10	AMDU	27	-115.471772	35.56776	burrobush
11	LATR	82	-115.4717279	35.56784	creosote
12	AMDU	73	-115.4717146	35.56783	burrobush
13	LATR	159;103;128;140;122;152	-115.4717069	35.56786	creosote bush (6 stem bases in clone)
14	HYSA	49	-115.4718179	35.56779	cheesebush
15	HYSA	49	-115.4718114	35.56773	cheesebush
16	HYSA	58	-115.4718094	35.56771	cheesebush
17	HYSA	53	-115.4718493	35.56773	cheesebush
18	HYSA	58;50	-115.4717365	35.56765	cheesebush 2 bushes
19	HYSA	44	-115.471754	35.56764	cheesebush
20	OPRA	126	-115.4718224	35.56778	pencil cactus
21	OPRA	104	-115.4718148	35.56785	pencil cactus
22	OPRA	109	-115.4718605	35.56785	pencil cactus
23	OPRA	91	-115.4718649	35.56784	pencil cactus
24	OPRA	114	-115.4718853	35.56788	pencil cactus
25	YUSH	148;88;50;30;28	-115.4720357	35.56759	yucca w/5 shoots
26	YUSH	59;51;54;63;79	-115.4721819	35.56763	yucca w/5 shoots
27	YUSH	130	-115.4722436	35.56742	yucca w/ single shoot
28	OPEC	85	-115.4721848	35.56747	silver cholla
29	OPEC	113	-115.4723542	35.56745	silver cholla
30	OPEC		-115.4723063	35.56739	silver cholla
31	OPEC	88	-115.4722873	35.56737	silver cholla
32	OPEC	143	-115.472455	35.56729	silver cholla
33	YUSH	130;42	-115.4721617	35.56734	yucca w/ 2 shoots
34	EPNE	85	-115.4719811	35.56769	Nevada mormon tea
35	EPNE	53	-115.4719904	35.5677	Nevada mormon tea
36	EPNE	50	-115.4720048	35.56766	Nevada mormon tea
37	EPNE	36	-115.4719806	35.56764	Nevada mormon tea

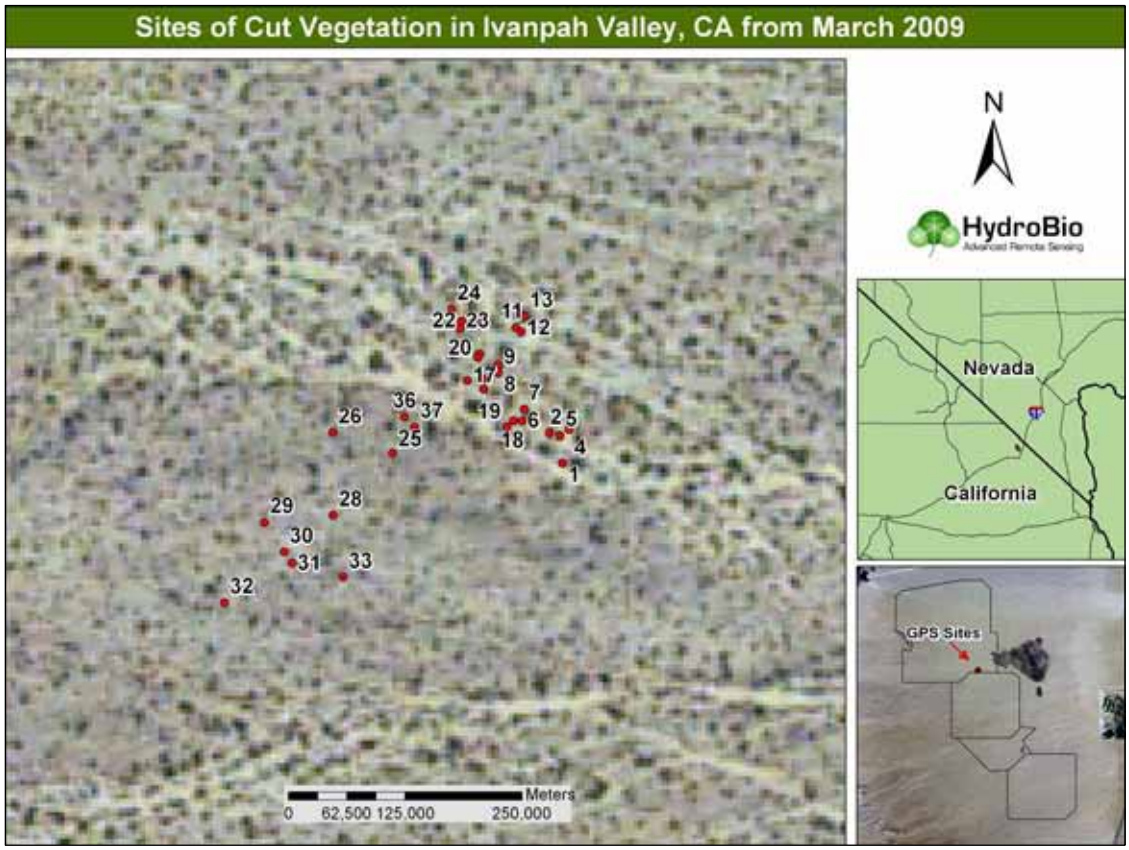
In addition to the *Opuntia* sp. Cactus, two species of barrel cactus were located in and around the test clipping location. These cacti were not cut because current planning at Bright Source is to avoid mowing these plants, and to avoid disturbing them, where possible, during construction. Where barrel

cactus will be impacted during site development the current plan is to relocate these species for use in landscaping around the generating facilities.

Table 2. Species information and total number of clipped plants.

Genus	Species	Authority	Common Name	# Clipped
Artemisia	*spinescens*	D.C Eaton	bud sagebrush	0
Ambrosia	*dumosa*	(A.Gray) Payne	burrobush	6
Chrysothamnus	*paniculatus*	(A.Gray) H.M. Hall	black banded rabbitbrush	0
Ephedra	*nevadensis*	S.Wats	Nevada Mormon tea	5
Eriogonum	*fasciulatum*	(Benth.)Torrey & A.Gray	California buckwheat	0
Hymenoclea	*salsola*	Gray	cheese bush	6
Larrea	*tridentata*	(DC.)Coville	creosote bush	10
Menodora	*spinescens*	A. Gray	spiny menodora	0
Opuntia	*echinocarpa*	Engelm. & J. Bigelow	silver cholla	5
Opuntia	*basilaris*	Engelm. & J. Bigelow	beavertail cactus	0
Opuntia	*ramosissima*	Engelm	pencil cactus	5
Salazaria	*mexicana*	Torrey	bladdersage	0
Yucca	*schidigera*	K.E. Ortgies	Mojave yucca	5

Figure 1. Location map for the first test clipping of March 18, 2009



2. Methods

The test location was selected to have representation of the dominant species on the site and includes a wash (Figure 1) . The wash environment enabled inclusion of species typically found in these environments that are often absent in the nearby creosote/burrobush-dominated shrub cover.

Plants selected for clipping were located to 0.1m accuracy using a hand-held GPS unit. Each plant was clipped, cut or sawed to approximately 20-25cm above the ground. Cacti were cut using a machete or lopping shears, yucca were cut using a pruning saw and all other species were cut using a hedge-trimming shears Recumbent stems, for example the lateral branches of creosote, often were not cut because their parts did not exceed 8-10 inches from the ground surface. After clipping each plant, a piece of red pvc-coated wire was wrapped around a cut stem to positively identify that the plant had received treatment. This step will ensure that each clipped plant is positively identified during future revaluation, since many of the plants are expected to eventually produce sufficient growth to appear roughly the same as adjacent plants that were not left intact.

For this preliminary evaluation the site of the clipping test was revisited by Tracie Wheaton, Environmental Compliance Manager of BrightSource Energy, 41 days later on April 28. Tracie relocated most of the clipped vegetation using a GPS and documented the existence of new growth through photography. This analysis uses the images taken by Tracie to identify new growth in the clipped vegetation. The GPS unit used by Ms. Wheaton did not have the accuracy used to locate the plants during March 2009 clipping and a number of plants were not relocated. Sites 1 – 7, and 33 (22%) were not found and so are omitted from this preliminary analysis.

High resolution digital photographs were taken of the plants (12 megapixel) in order that the photographs could be enlarged to inspect the new growth. The photographs were viewed on the computer in various degrees of magnification to determine the degree of response. A rating system was created to identify the level of growth for all species of vegetation. This system is numeric, ranging from 0 – 4, where regrowth is categorized from dead (0), to very vigorous (4) (Table 3). A 4.25x 6 inch card is shown in most of the photographs in order to establish scale.

Table 3. Rating system for regrowth of the clipped plants.

Scale	Description
0	dead
1	not dead with no growth
2	little growth
3	vigorous growth
4	very vigorous growth

3. Results

Rainfall data available from nearby stations was consulted to place into context the degree of regrowth observed for the clipped plants. This is an important step in our understanding because if the antecedent precipitation is low or high has a direct bearing on the performance of regrowth. A rain gage is currently being added to the weather station operated in Ivanpah Valley, so surrogate regional weather. Weather stations with records that were complete through April include Dagget-Barstow, McCarran Airport and Mid Hills. These stations are visible on Figure 2. The data are presented in Table 4.

Rainfall at all three stations was below average and the closest station, Mid Hills, had the lowest recorded rainfall of the three, 69%. Thus, as indicated by these data, regrowth of the test plants was less than would be expected were average rainfall conditions present. Average to above average rainfall is expected to produce even more vigorous recovery than was noted.

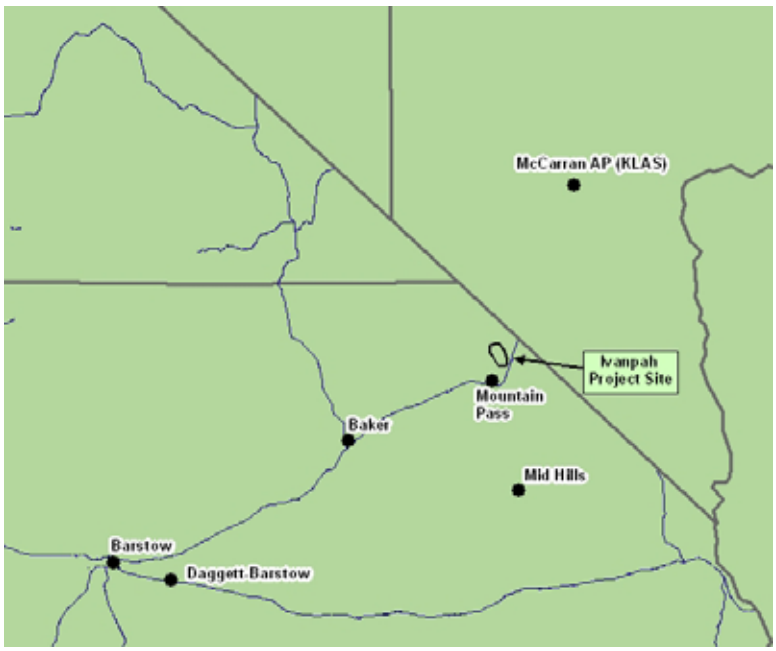


Figure 2. Precipitation stations near the ISEGS project site.

Table 4. Water year rainfall (Oct-September) in mm at three stations around Ivanpah Valley.

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct-Apr	% of Avg
Dagget/Barstow	Averages	4.4	8.0	13.1	23.7	19.3	18.1	10.6	4.7	4.1	10.8	10.9	6.4	97.3	
	WY 2009	0.0	27.7	44.7	0.8	18.5	0.0	0.0						91.7	94%
McCarran AP	Average	7.2	9.7	11.4	12.1	22.5	13.6	6.0	4.3	1.9	10.4	9.0	7.2	82.4	
	WY 2009	0.3	11.9	29.2	1.0	19.8	0.0	1.3						63.5	77%
Mid Hills	Average	13.1	16.5	14.4	20.2	32.4	20.6	11.7	4.0	2.0	16.5	24.3	12.2	128.8	
	WY 2009	0.3	47.2	7.1	0.5	22.6	2.0	8.9						88.6	69%

Photographs of the 29 reoccupied sites are shown on the pages that follow with ratings, illustrations and descriptions of the results. These results are summarized in Table 5 providing a weighted average rating for each species. Peak performers were burrobush, cheesebush and pencil cactus, however, with the exception of the Mojave yucca, there was visible regrowth on all species.

Mojave yucca are known to be relatively slow growing. On two of the three relocated individual yuccas, there was recognizably green leaf tissue on two. For the single-stem yucca that was sawn off, no green tissue remained, however, judging from the appearance of the other yucca this plant was given a rating of “1”, alive but with no new growth evident. The survivorship for “mown” yucca will await reevaluation in April, 2010, since this species is expected to take up to a year to initiate new buds and leaf growth.

Creosote bush showed vigorous growth, however, the six individuals arrayed in a clone were given a “3” (vigorous, but not very vigorous) simply because they were not as vigorous as several of the other test species—for example, they were not actively flowering and the new growth hardly exceeded the cut stem surfaces as was seen for cheesebush and burrobush. The vigor rating of “3” or “4” could be debated, however, since the new growth was highly verdant.

Though it will need to be confirmed, individual plants that did not perform well (other than yucca that are acknowledged to be slow growing) may be showing the effects of competition from the uncut plants surrounding them. Considerable evidence exists for this interpretation in these photographs (see Sites 11, 13, 29, 30, 36). Evaluating the effects of competition will await more detailed analysis when the site is revisited later. It should be noted that by not clipping the adjacent plants, the test plants may have been given a significant competitive disadvantage that would be greatly lessened were the entire site mowed. Thus, this experiment can be thought of as a vigorous test for plant survivorship, both from the perspective of competition and also the suspected below-average rainfall. In other words, under actual conditions, the plants are expected to recover more vigorously than the clipped plants in this test.

Table 5. Summary of regrowth for simulated mowing by species. This list is not complete because some plants were not relocated on April 28th.

	Number	Rating					Average
	Relocated	0	1	2	3	4	Rating
burrobush	5				1	4	3.8
creosote bush	7				6	1	3.1
cheese bush	6				1	5	3.8
pencil cactus	5				1	4	3.8
silver cholla	5		1		1	3	3.2
Nevada Mormon tea	4		2		1	1	2.3
Mojave yucca	3		3				1.0

One of the more competitive shrub species is spiny menodora, that was judged to be too short to be affected by test cutting. Spiny menodora are visible growing around cut plants in two locations protected by cholla (Sites 29 and 30). Despite its formidable spiny branch tips, spiny menodora is a palatable species for browsers, including cattle and feral burros. Its confinement within the crowns other non-palatable or spiny species is an indicator of intensive herbivore pressure on the Ivanpah site.

4. Future Assessments of the Effects of Mowing

Two more test cuttings are proposed to determine if there is a temporal component to the survivorship of the perennial species on the Ivanpah site. These test cuttings would take place in September and again in January. Approximately the same number of test subjects would be cut for these additional test cutting. The schedule for the entire suite of testing for the effects of mowing is shown in Table 6.

Table 6. Schedule of activities to evaluate the effects of mowing at ISEGS.

Date for Clipping	Reason for Test	Evaluation Date	Suite of Species
March 19,2009	test for the effect of mowing during peak annual plant growth	April 28,2009 re-evaluate in April 2010	7 species
September 2009	test for the effect of mowing at the end of summer diapause	April 2010	Original 7 species + bladdersage and black-banded rabbitbrush
January 2010	test for the effect of mowing during winter diapause	April 2010	same species as in Early October test

Final evaluation of the survivorship and regrowth of all test cuttings would take place in one final visit. The ideal time for this revisit is in April, 2010, a time that would give a sufficient elapsed period to encourage regrowth from all of the test cuttings. This visit would provide a final report of greater detail than is provided in this preliminary report. The clipped plants have been geolocated to submeter accuracy, enabling positive identification of each test plant. Photographs will be taken from a vertical perspective in order to permit judging the effects of competition from adjacent plants. Competition for available water and soil nutrients is expected to be a considerable influence on the cut plants and should be evaluated. This is especially important for placing the results into context with antecedent precipitation because a relatively dry year, such as spring 2009, may actually favor the growth of the competing uncut plants over the regrowth of test plants. Vertical photographs with distance and cover estimation for competing plants should provide sufficient data for this evaluation. Such competition will be greatly relaxed under actual site-wide mowing and judging from these very positive preliminary results, all plants should show vigorous recovery following the mowing.

Given the intense interest on the part of regulatory agencies, Bureau of Land Management and California Energy Commission, and the desire for everyone to learn from this important testing, all future field work concerning simulated mowing will be carried out in a cooperative manner with scheduling well in advance of the testing. This present test can be regarded as an initial effort that was rapidly deployed to provide a demonstration of the capability of the native species to regenerate following mowing. Future work is designed to fine tune this understanding and open the communication so that we all can learn.

5. Conclusions

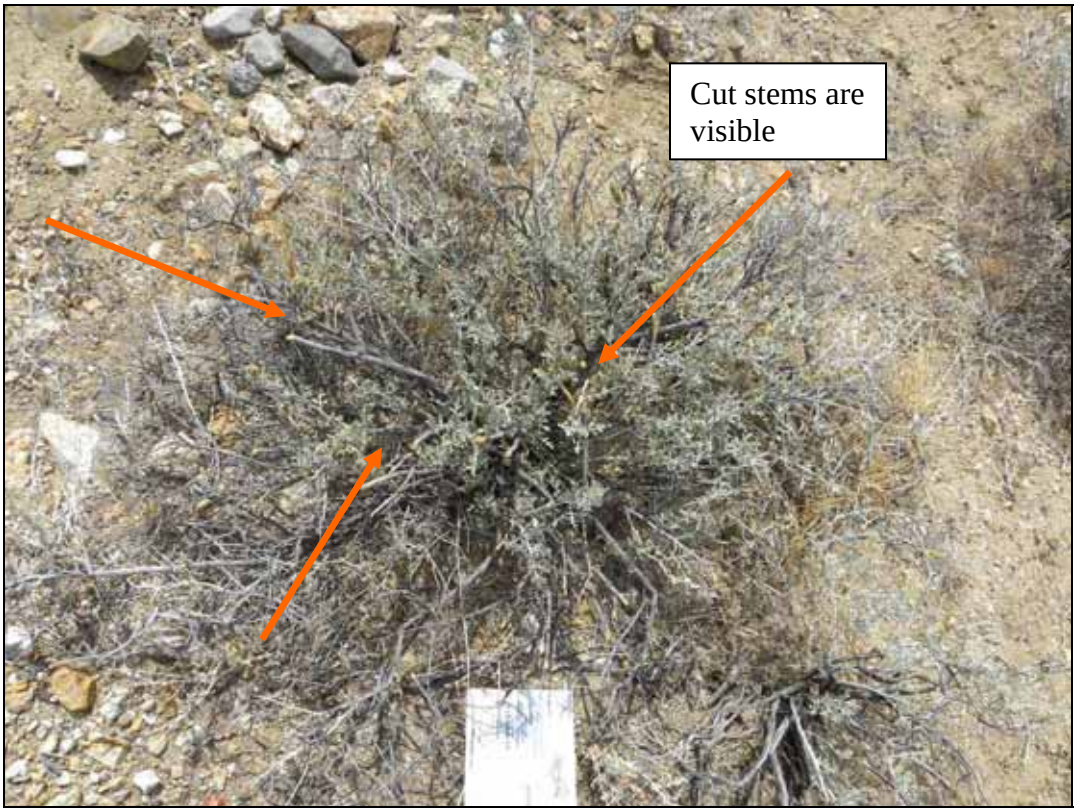
The results of 2009 test cutting during March as evaluated the following April show that the seven species treated have the capability of vigorous resprouting following mowing. The suite of seven species will be expanded to nine species in future test cutting. Perennial species may not be evaluated during this work because their short stature will protect them the effects of mowing. This scheme will be reevaluated prior to the two future test cuttings.

Though very encouraging, these results are preliminary because they represent only the short-term response. Long term survival will be determined with a final evaluation made in April 2010 of the March 2009 test plants reported here plus additional test cutting proposed for September 2009 and January 2010. In combination, these three test cuttings evaluated in April 2010 should provide a good understanding of the survival of the Ivanpah Valley plants after mowing. Since the timing of the three test cuttings corresponds to the timing of the three stages in the perennial plants of Ivanpah Valley—(1) Spring growth, (2) summer diapause, and (3) winter diapause—this understanding will provide guidance for whether mowing should be restricted to any particular season or whether it can be conducted safely at any time of the year. It is suggested that further cutting and evaluation is conducted as a cooperative study with the Bureau of Land Management and California Energy Commission.

Site 8 **(Sites 1-7 were not relocated during the April 28th, 2009 revisit)**

Rating: 4

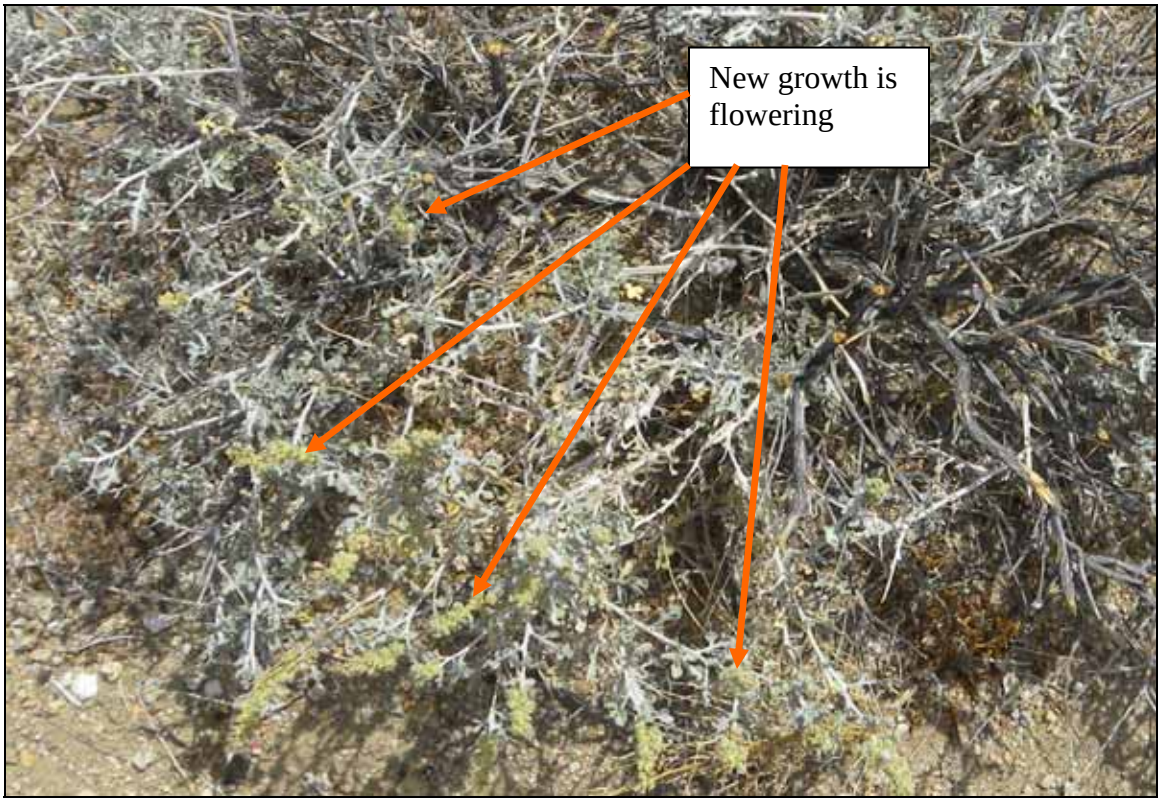
Burrobush: Most pale green growth is new. Buds are starting to flower.



Site 9

Rating: 4

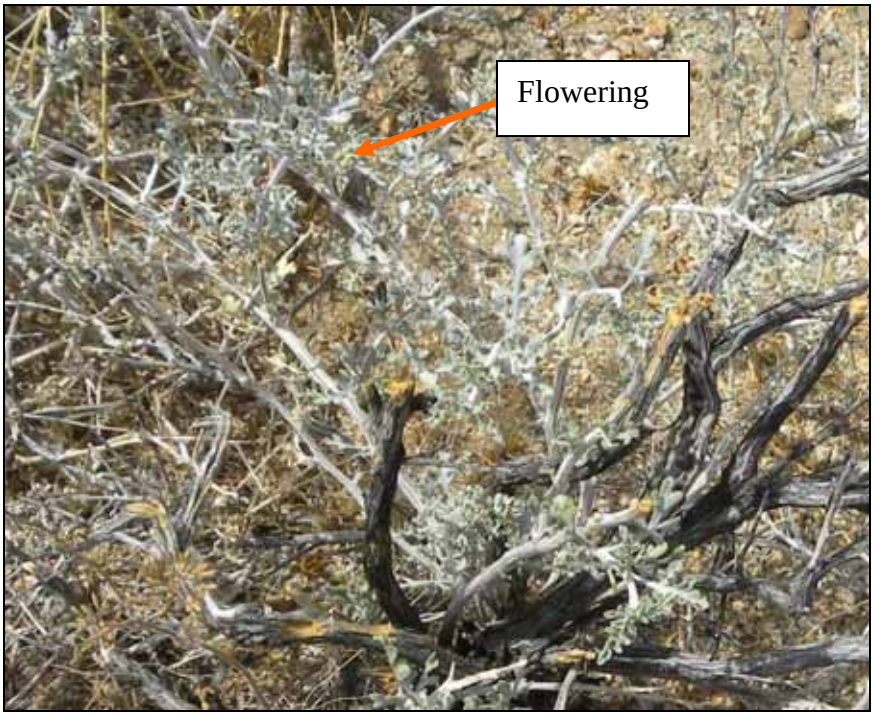
Burrobush: A small bush with very vigorous growth.



Site 10

Rating: 3

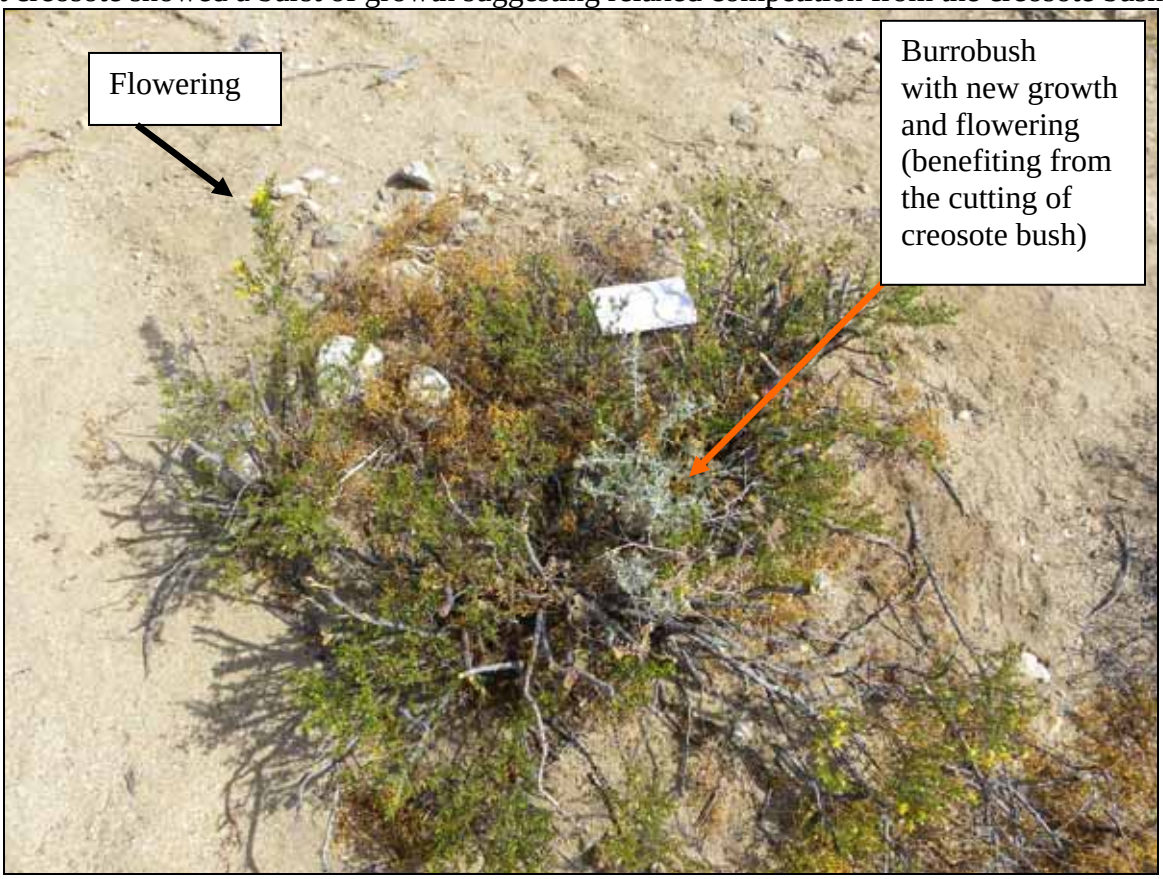
Burrobush: A very small bush with new growth and flowers present.

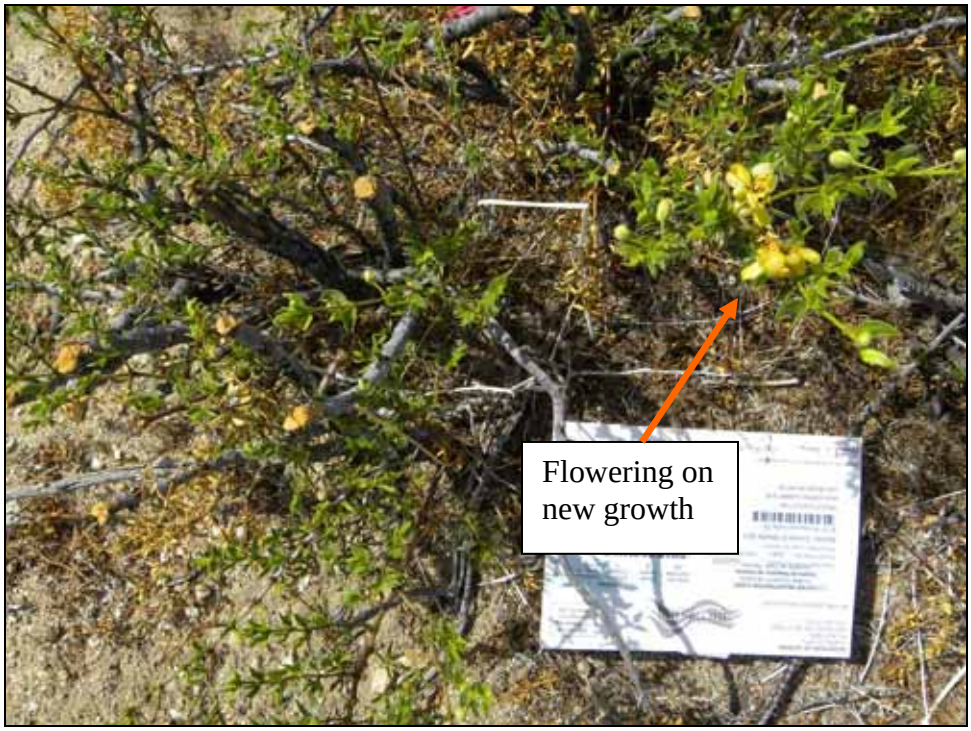


Site 11

Rating: 4

Creosote bush and burrobush: Bright green new growth with flowering. The burrobush located within the cut creosote showed a burst of growth suggesting relaxed competition from the creosote bush.

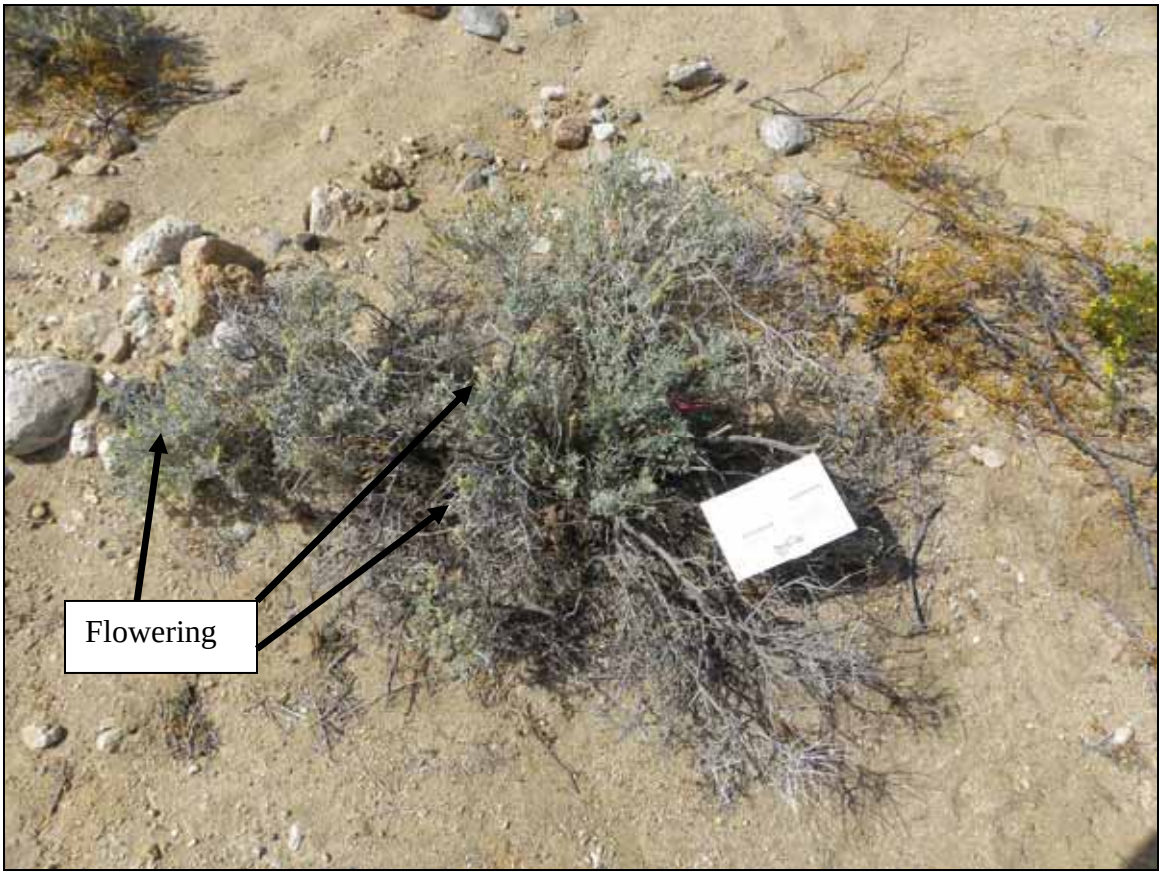




Site 12

Rating: 4

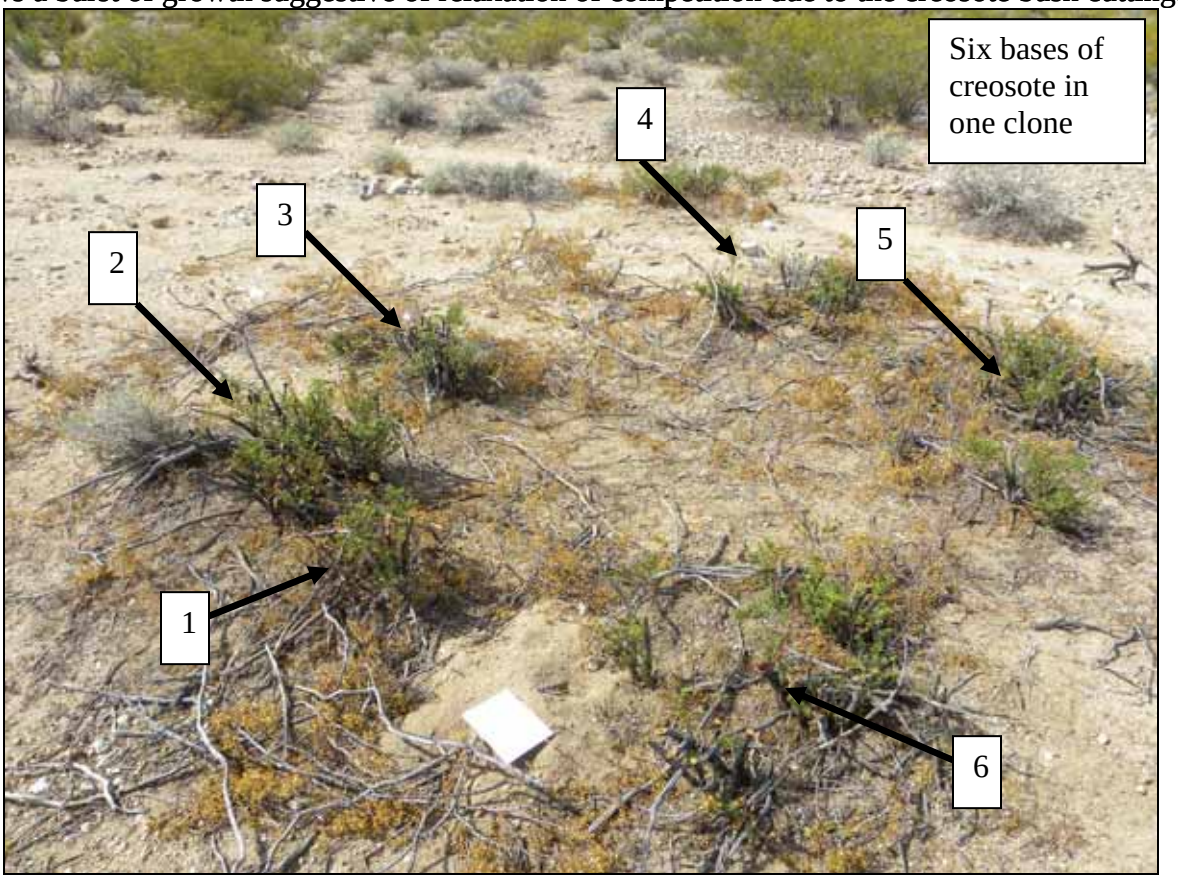
Burrobush: Large bush with vigorous growth and flowering.

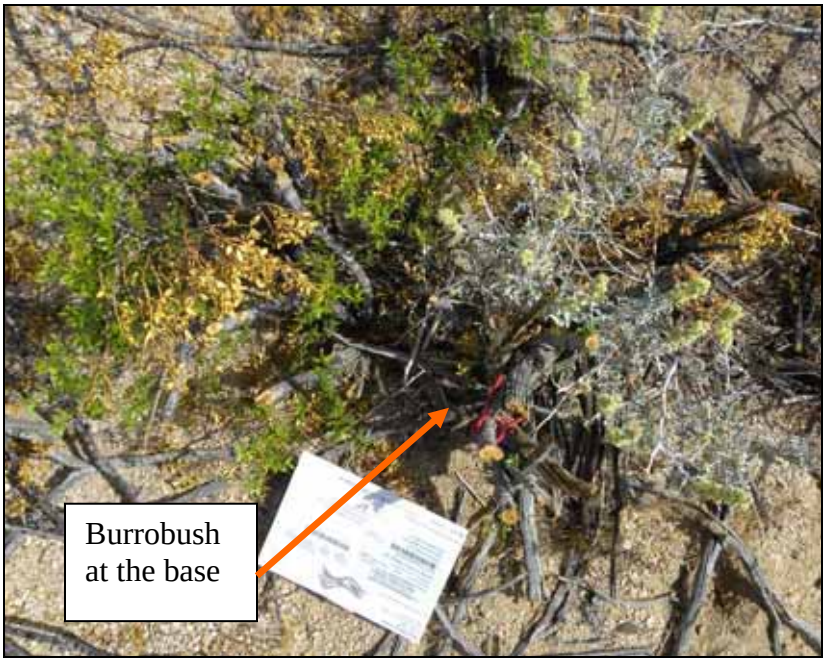


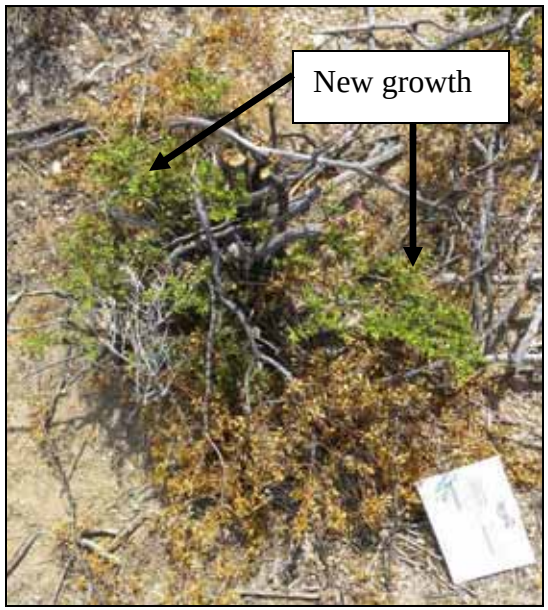
Site 13

Rating: 3

Creosote bush: Six bases in the clone are evaluated separately. The burrobush located in creosote bush 4 shows a burst of growth suggestive of relaxation of competition due to the creosote bush cutting.






New growth


New growth


New growth

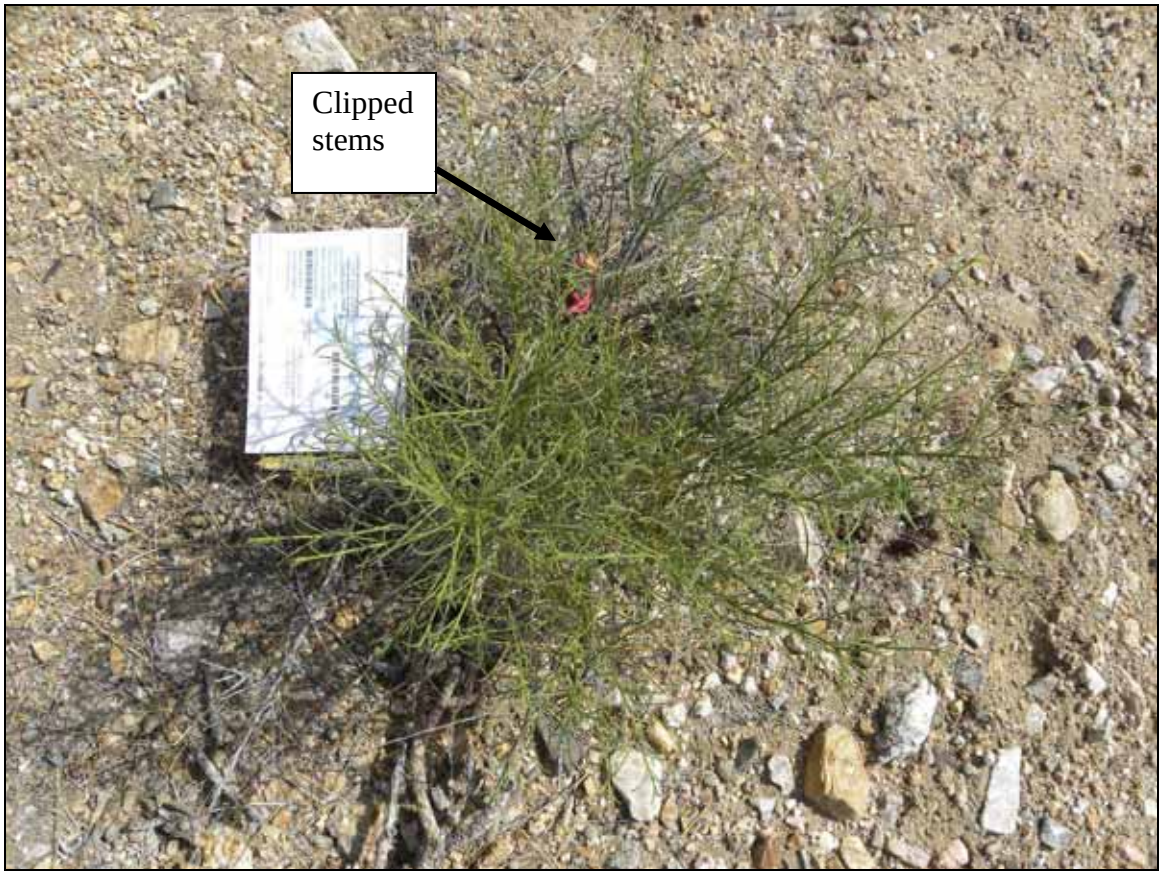

New growth

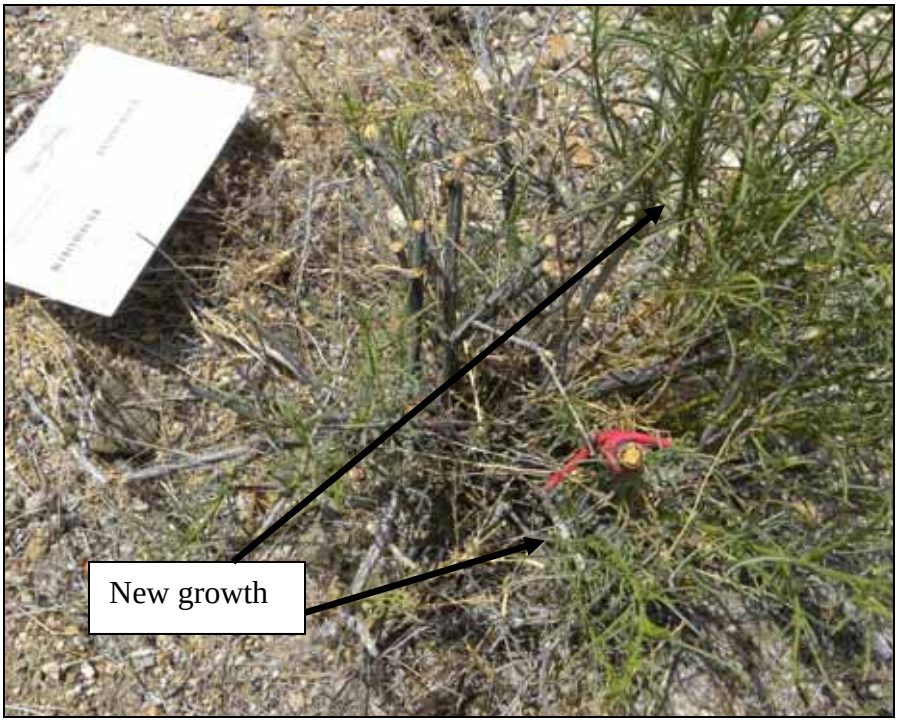

New growth

Site 14

Rating: 4

Cheese bush: Small bush with vigorous new growth.





Site 15

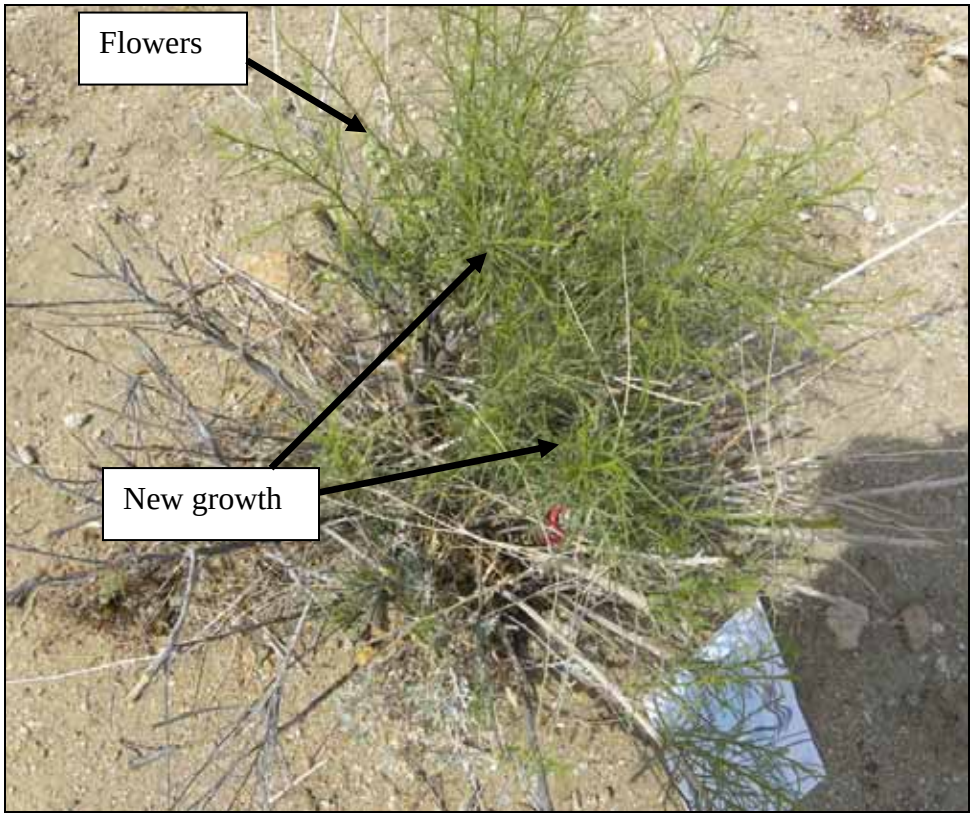
Rating: 3

Cheese bush: Small bush with somewhat chlorotic new growth and some new branching has died.

Site 16

Rating: 4

Cheese bush: Vigorous new growth with flowers.



Site 17

Rating: 4

Cheese bush: Small bush with new growth.

Site 18

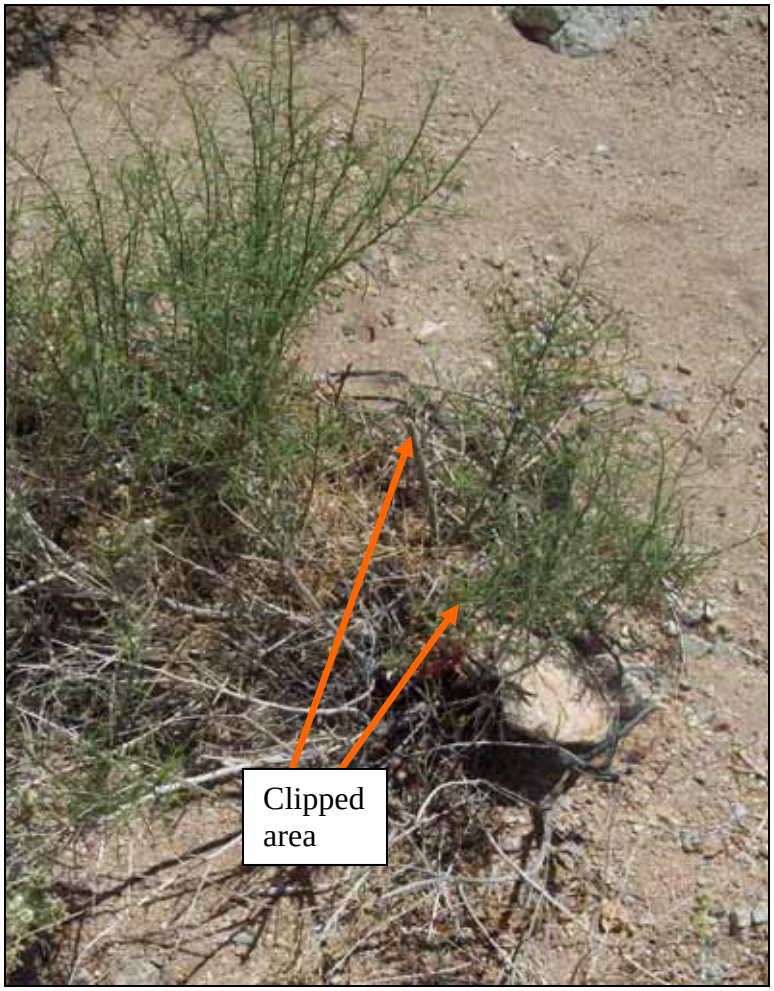
Rating: 4

Cheese bush: Very vigorous bright green new growth and flowering on uncut decumbent stem.

Site 19

Rating: 4

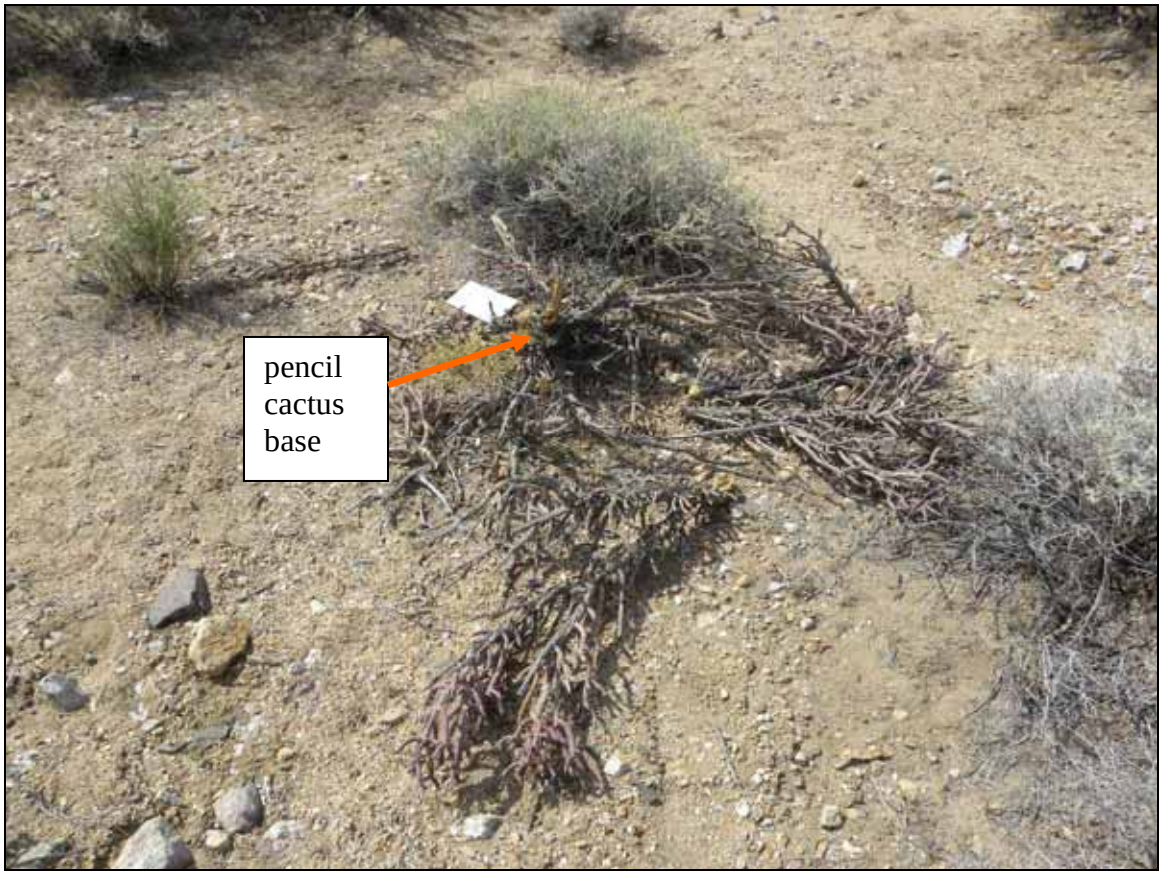
Cheese bush: Very vigorous growth easily exceeds lengths of cut stems.



Site 20

Rating:3

Pencil Cactus: New growth is starting from stem base.



Site 21

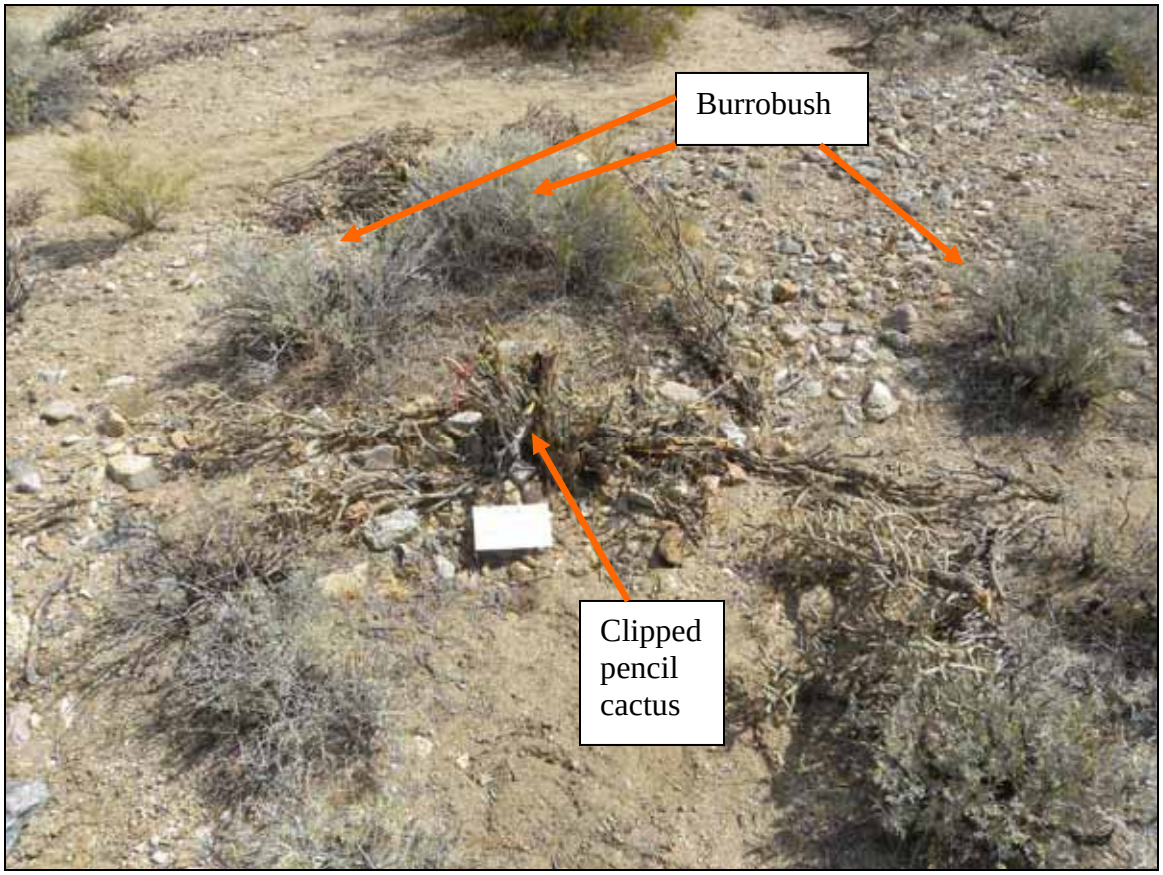
Rating: 4

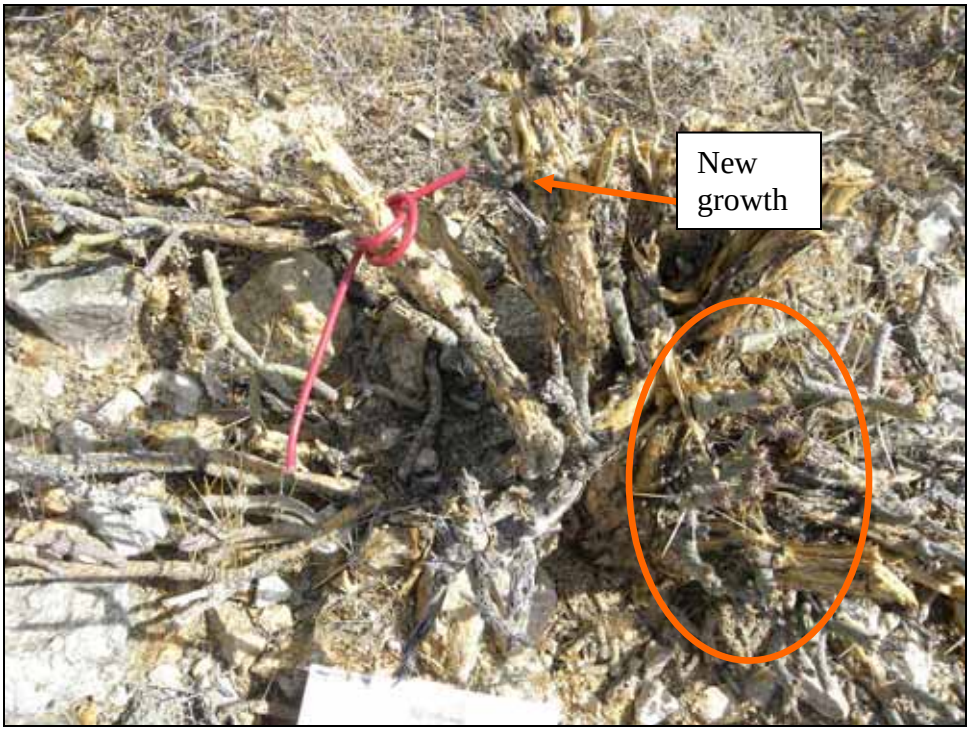
Pencil Cactus: Vigorous new growth from remaining stem bases.

Site 22

Rating: 4

Pencil Cactus: Vigorous new growth from the remaining stem base.

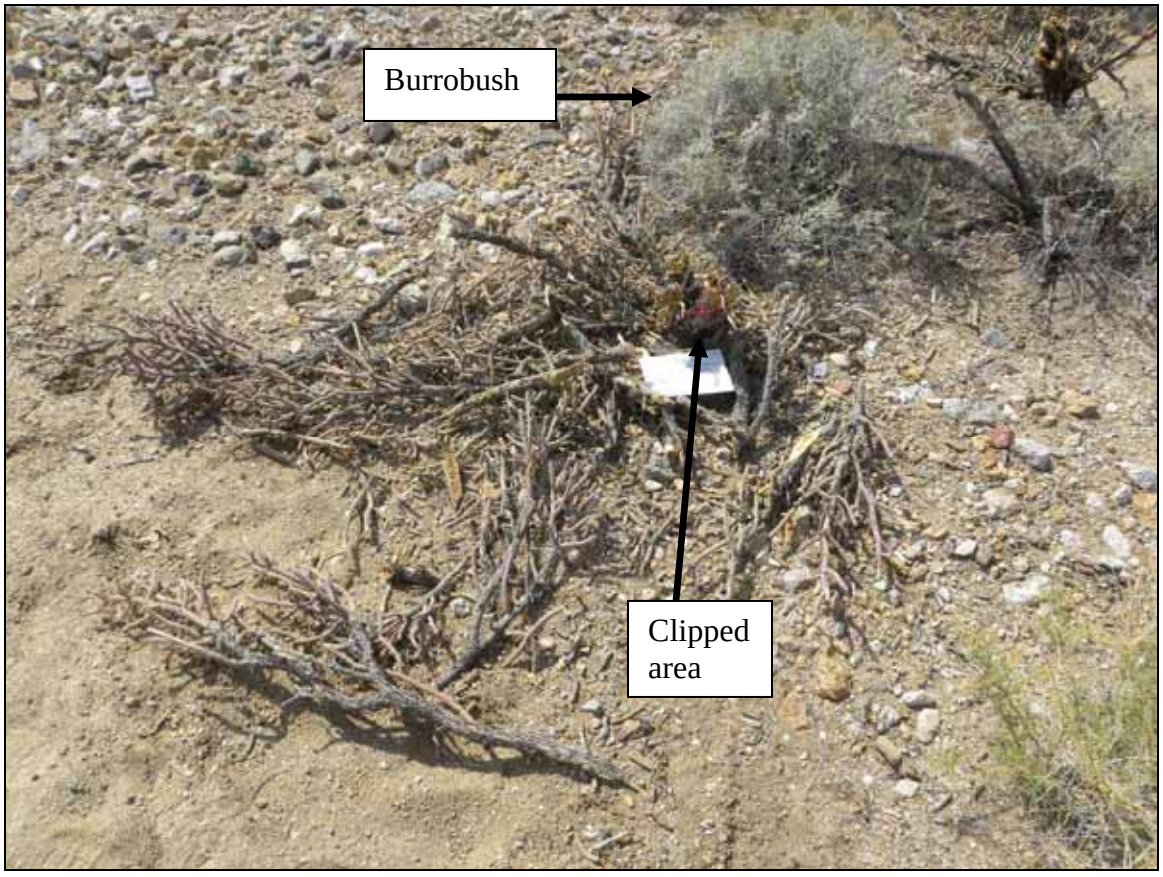




Site 23

Rating: 4

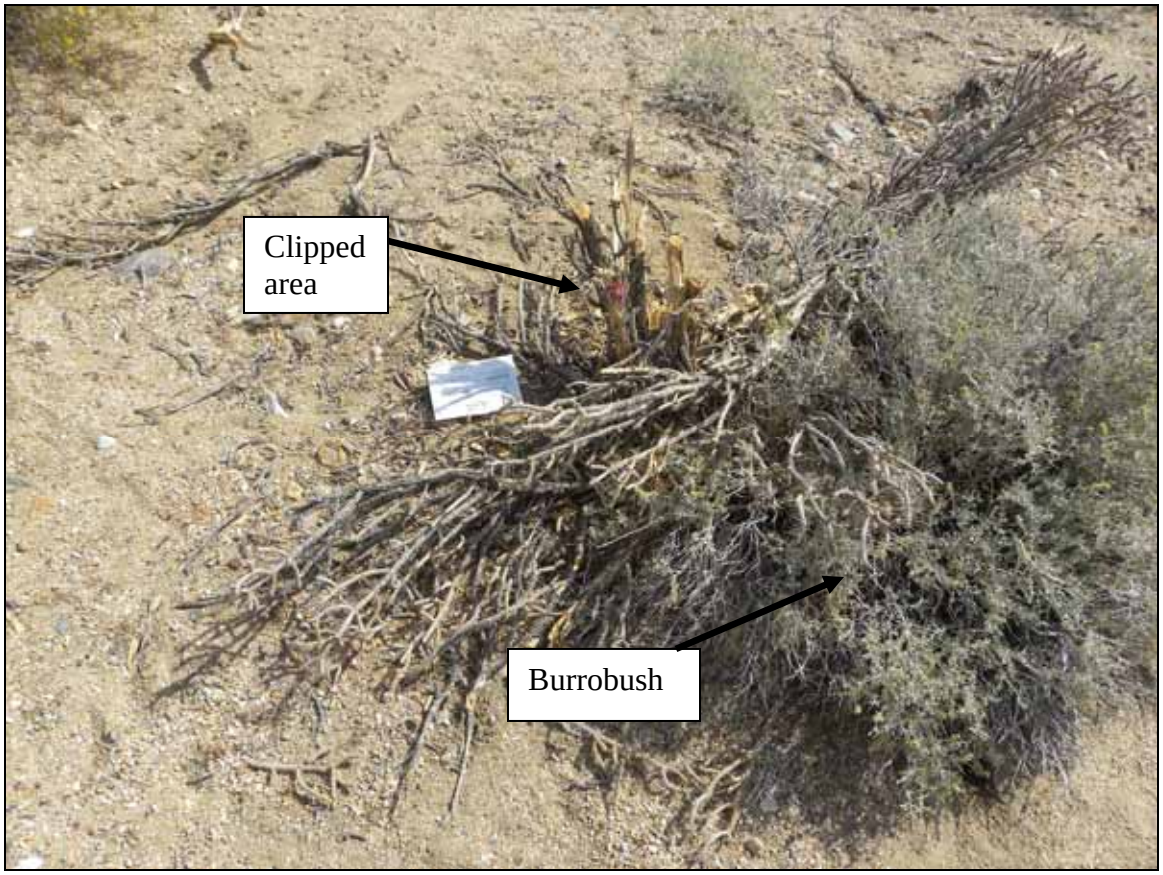
Pencil Cactus: New growth around the base of the cut cactus.



Site 24

Rating: 4

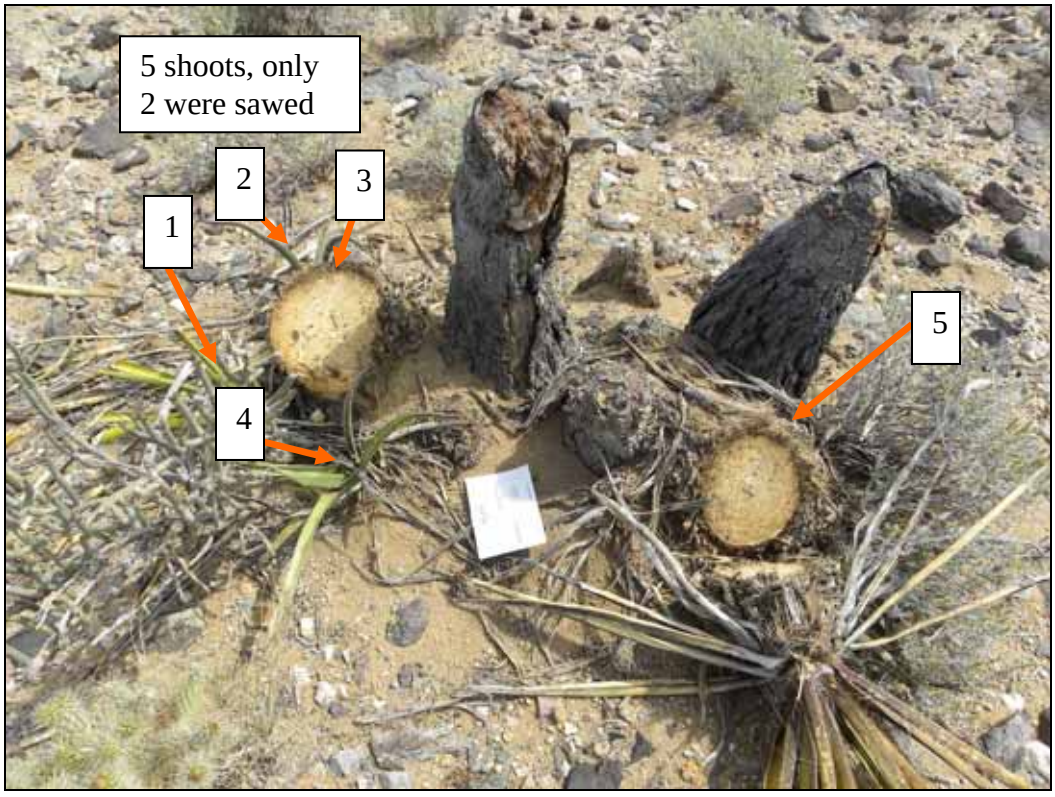
Pencil Cactus: Vigorous new growth at the stem base.



Site 25

Rating: 1

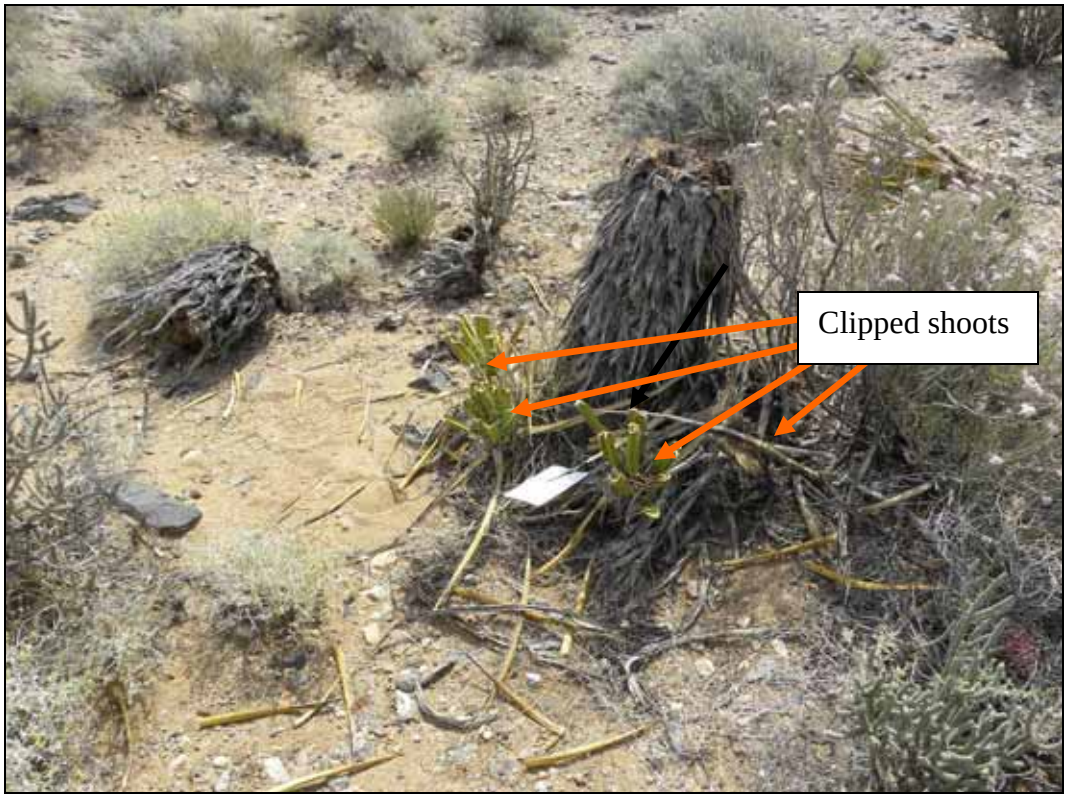
Mojave Yucca: No new growth on the 5 shoots.



Site 26

Rating: 1

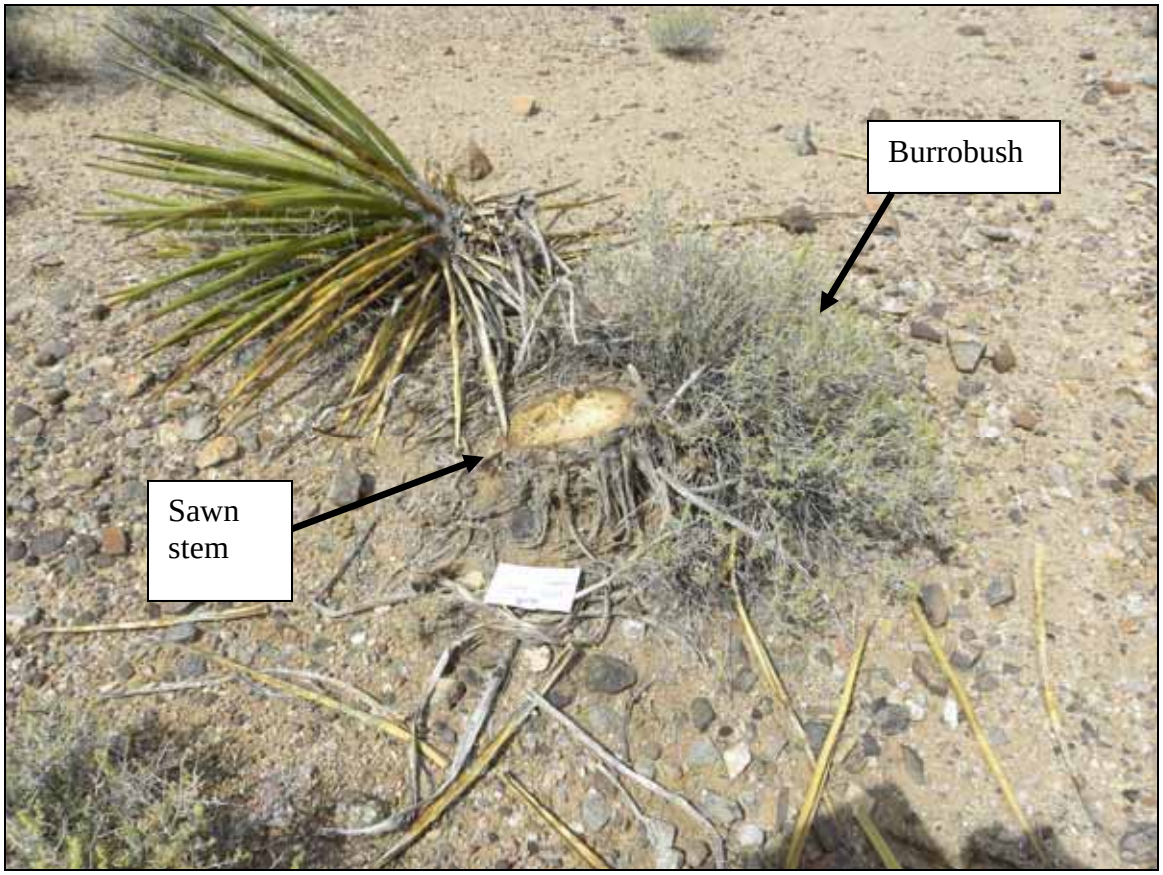
Mojave Yucca: No new growth has occurred.



Site 27

Rating: 1

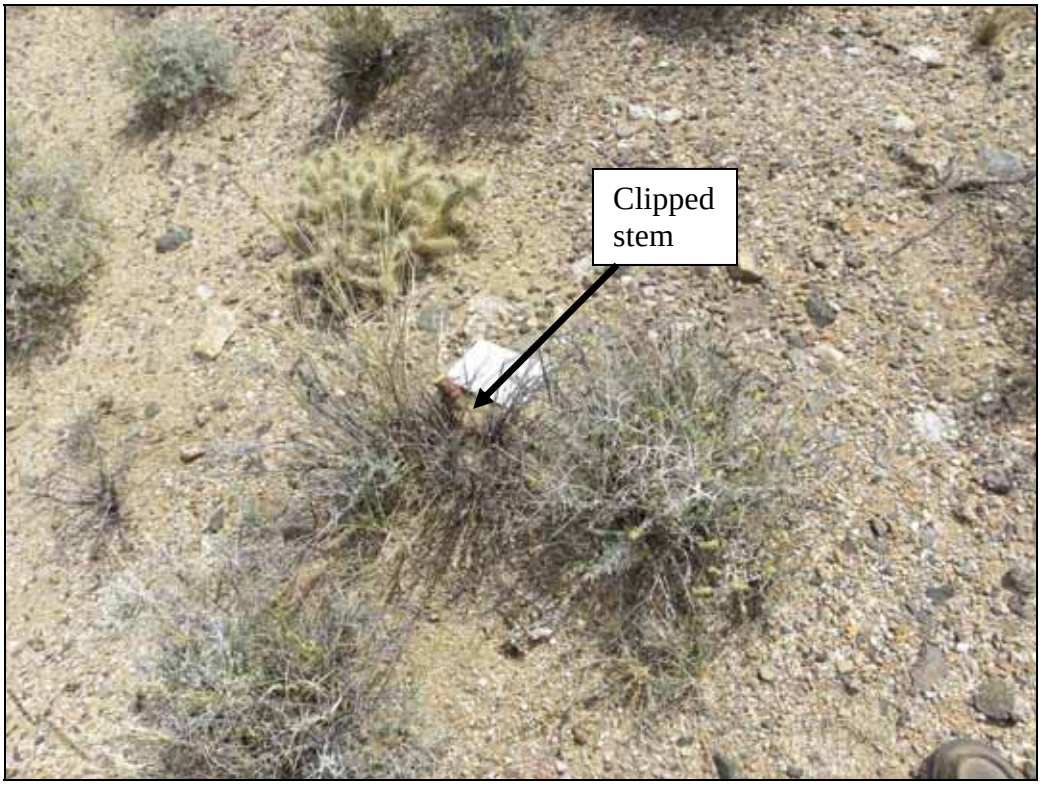
Mojave Yucca: No new growth has occurred.



Site 28

Rating: 4

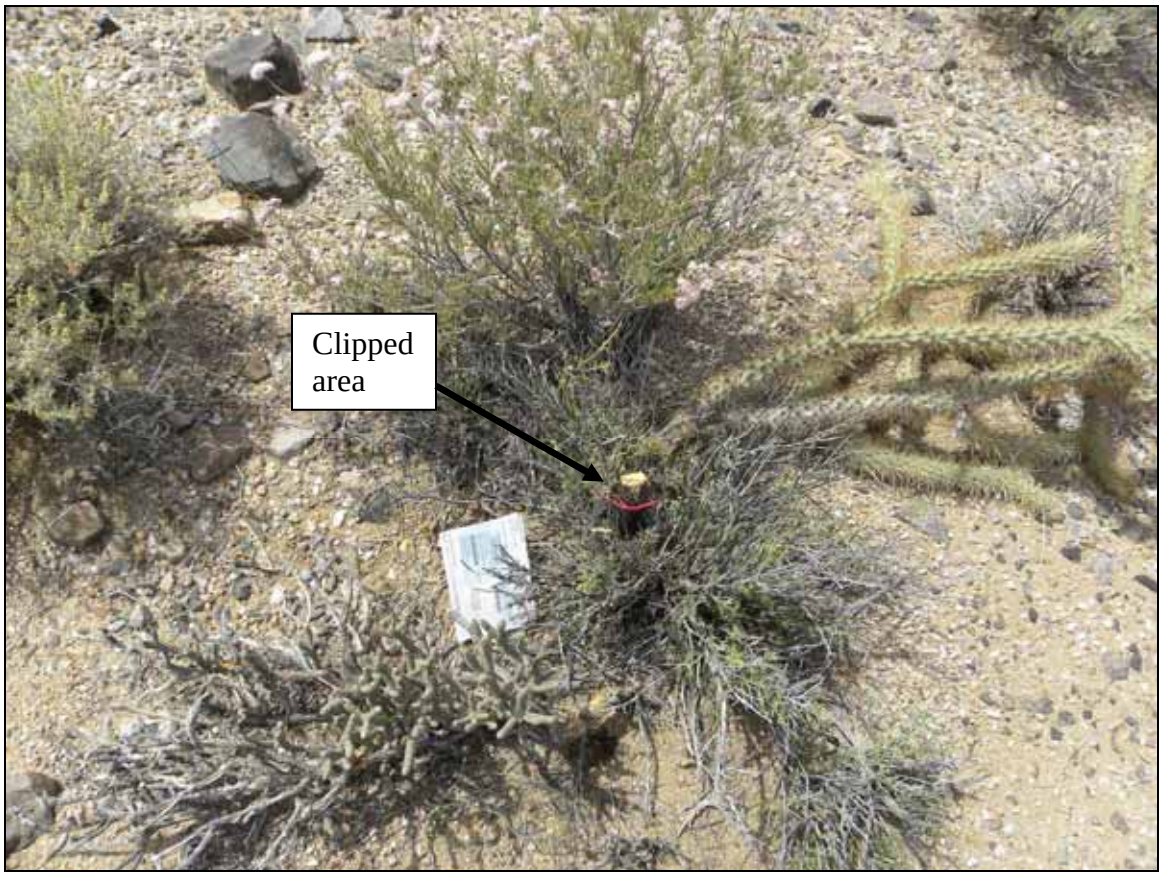
Silver Cholla: New growth around the cut stem base.

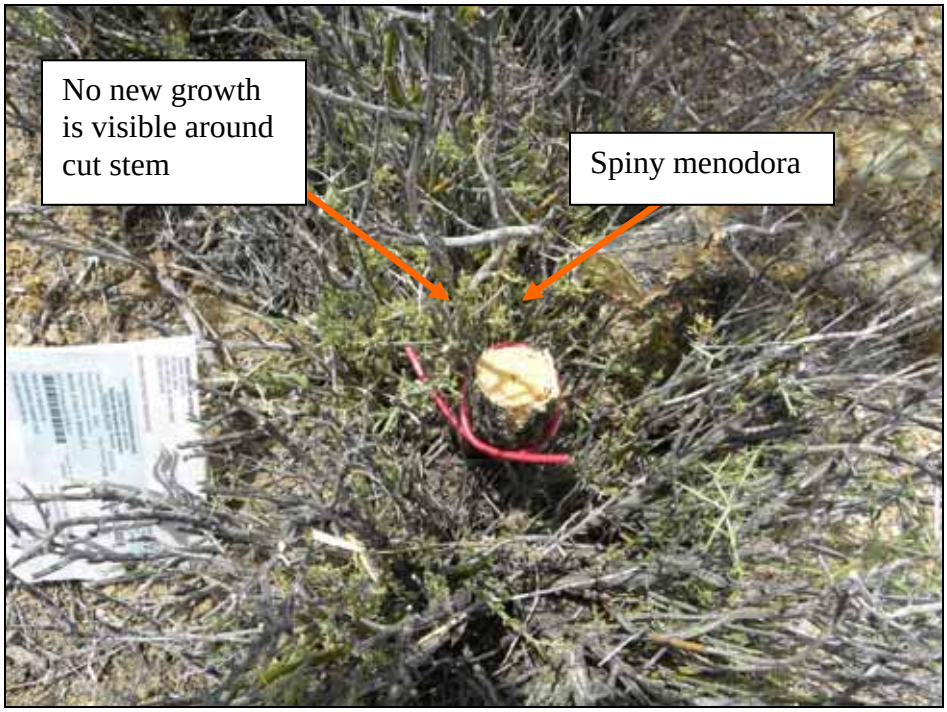


Site 29

Rating: 1

Silver Cholla: No growth is visible from cut stem. Poor growth may be due to competitive affects from the uncut spiny menodora.

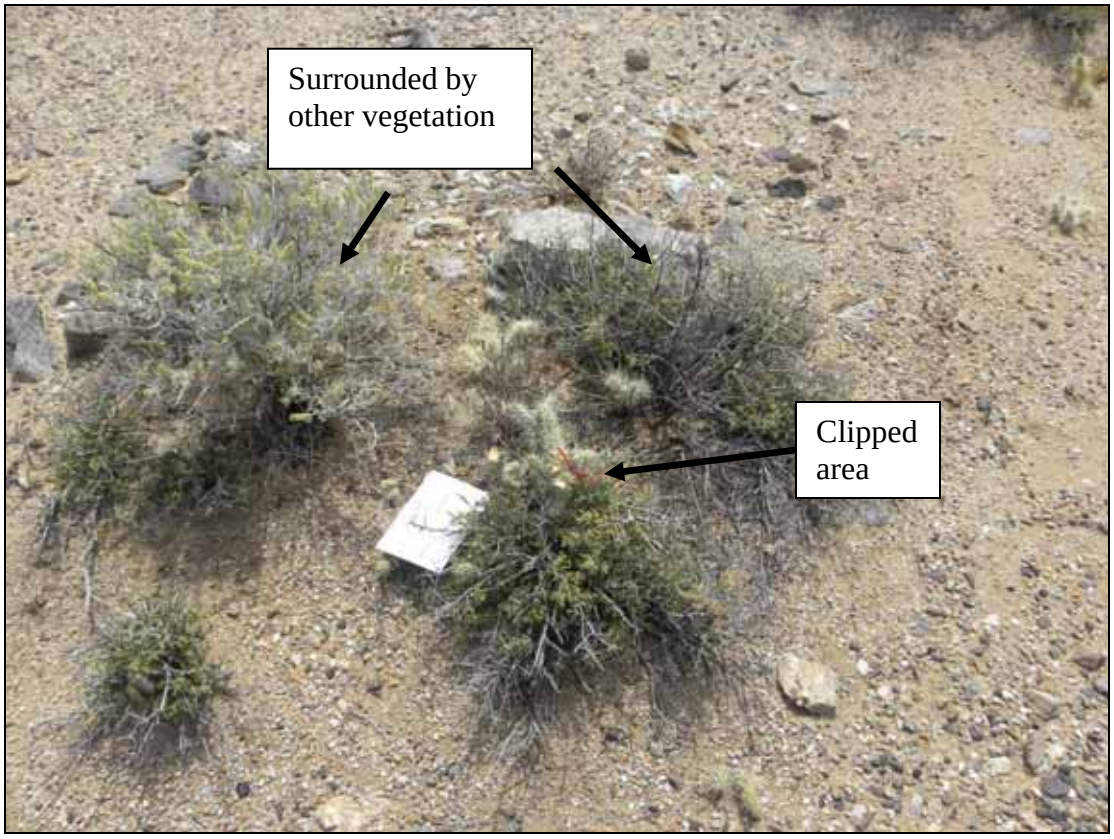




Site 30

Rating: 3

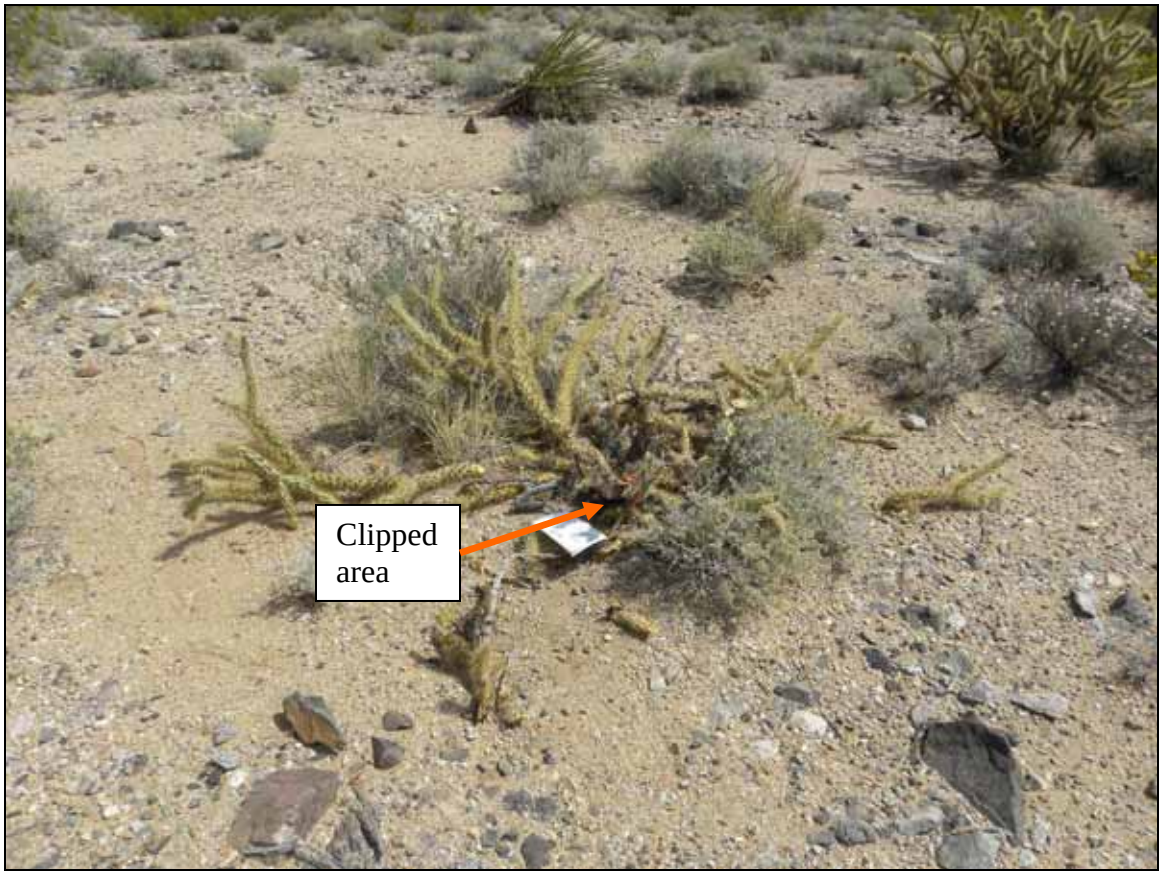
Silver Cholla: New growth has just initiated from the cut stem base. Competitive effects may exist from the spiny menodora and surrounding vegetation.



Site 31

Rating: 4

Silver Cholla: Vigorous new growth on the cut stem base.

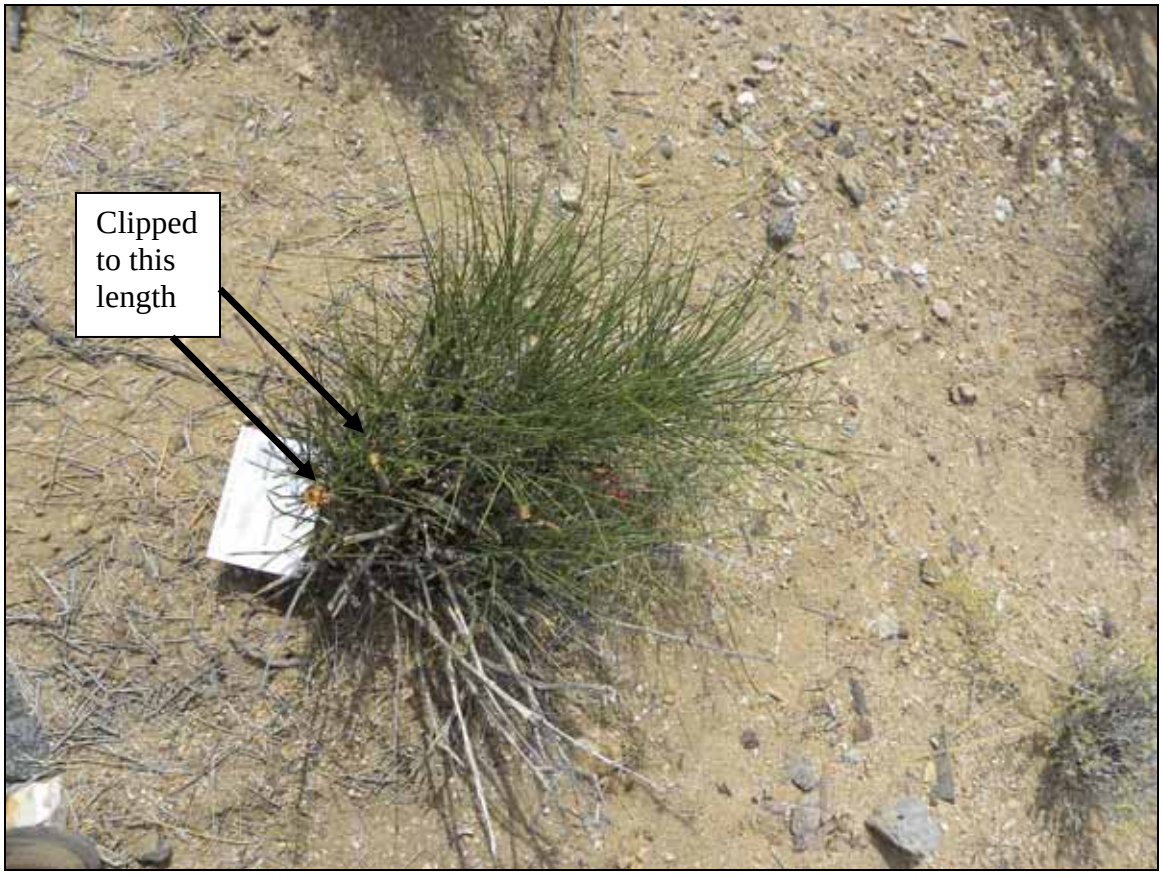


Site 32
Rating: 4
Silver Cholla: Vigorous new growth on the cut stem base.

Site 34

Rating: 4

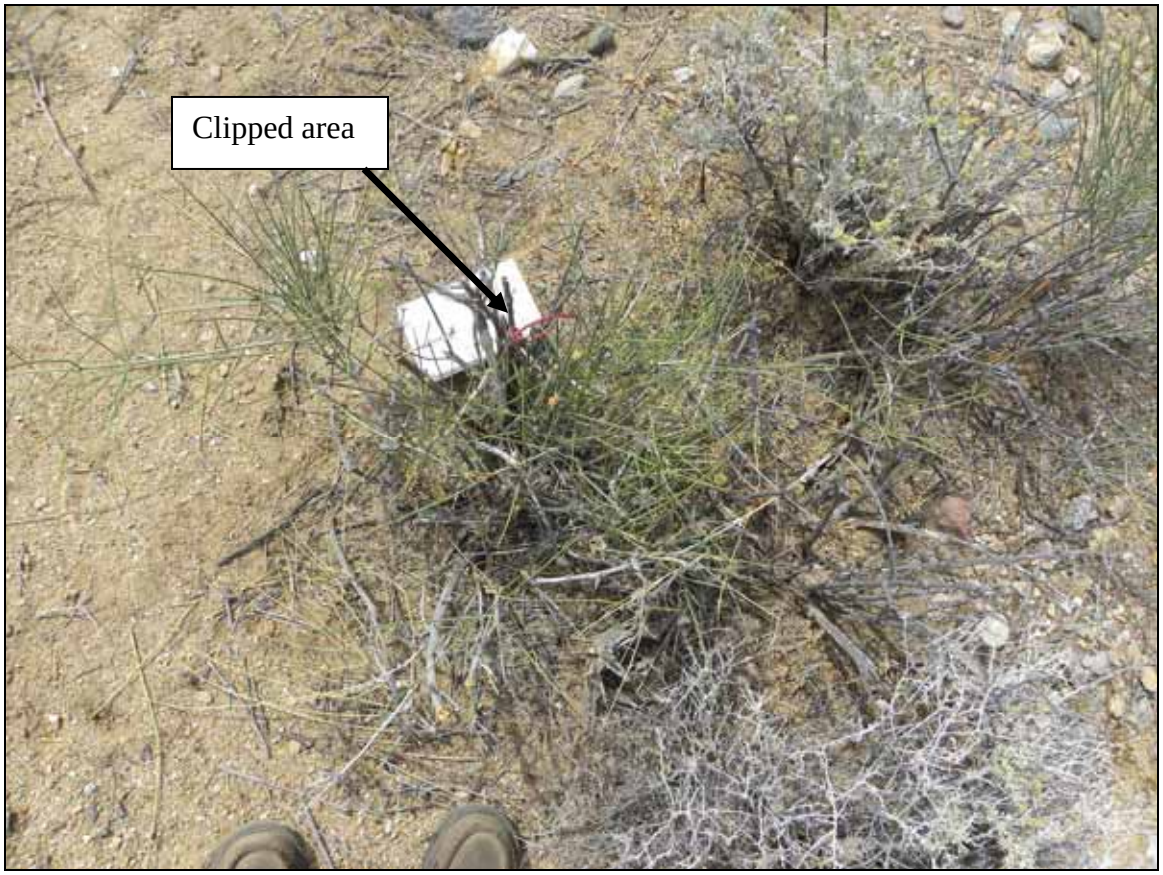
Nevada Mormon Tea: Vigorous growth from numerous cut stems.



Site 35

Rating: 3

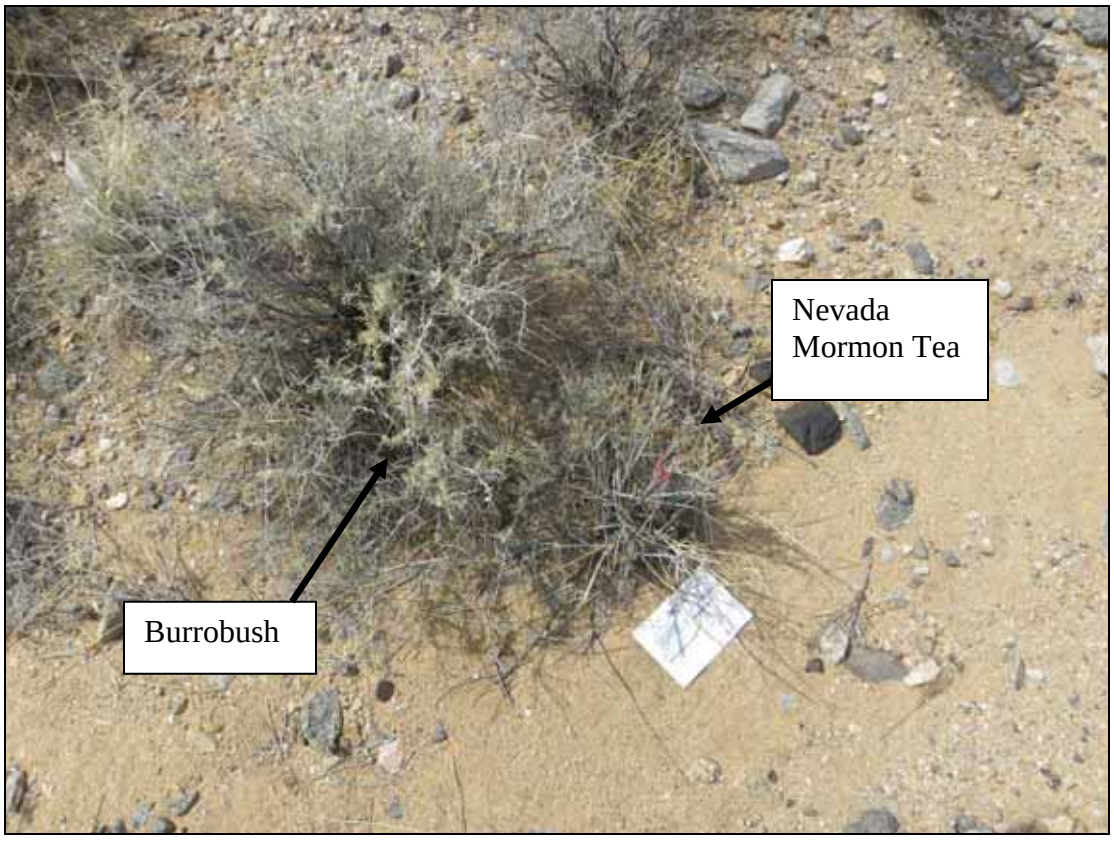
Nevada Mormon Tea: Small bush with growth from cut stems.



Site 36

Rating: 1

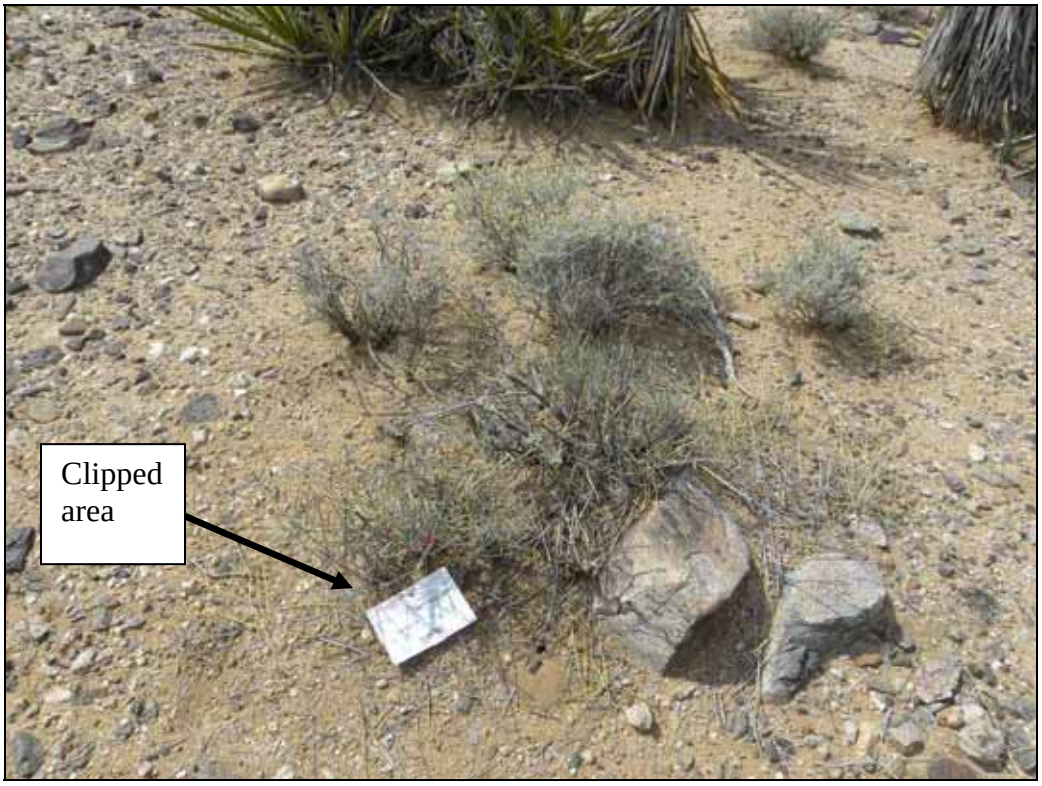
Nevada Mormon Tea: No new growth is evident. This plant is potentially affected by the adjacent burrobush.



Site 37

Rating: 1

Nevada Mormon Tea: New growth is not evident.



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
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APPLICATION FOR CERTIFICATION
FOR THE *IVANPAH SOLAR ELECTRIC GENERATING SYSTEM*

DOCKET NO. 07-AFC-5

PROOF OF SERVICE
(Revised 5/27/09)

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DECLARATION OF SERVICE

I, Mary Finn, declare that on June 17, 2009, I served and filed copies of the attached Data Response, 2J, dated June 17, 2009. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [www.energy.ca.gov/sitingcases/ivanpah]. The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

___x___ sent electronically to all email addresses on the Proof of Service list;

___x___ by personal delivery or by depositing in the United States mail* at Sacramento, CA with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses NOT marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

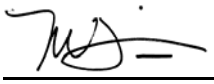
___x___ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

_____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. _____
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.



Mary Finn

*or by other delivery service: Fed Ex, UPS or courier, etc.