Final
Annual Report
Former Fort Ord Site 39
Habitat Restoration
2014
Contract Nos.
W91238-10-D-0002 & W91238-14-D-0010

FORMER FORT ORD
Monterey County, California

Prepared for

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Acronyms and Abbreviations

BLM	Bureau of Land Management
Burleson	Burleson Consulting, Inc.
BMP	Best Management Practice
CDFW	California Department of Fish and Wildlife
CSUMB	California State University Monterey Bay
HA	Historic Area
HMP	Habitat Management Plan
HRP	Habitat Restoration Plan
km	kilometer
SSRP	Site Specific Restoration Plan
TO	Task Order
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
Watershed Institute	CSUMB Watershed Institute

Site 39 Habitat Restoration
2014 Annual Report

1.0 Introduction

Burleson Consulting, Inc. (Burleson) was issued ID/IQ Contract Numbers W91238-10-D-0002 and W91238-14-D-0010 by the U.S. Army Corps of Engineers (USACE) to complete habitat restoration at Site 39 Remedial Action Areas at Former Fort Ord, Monterey, CA. This annual report summarizes activities completed during 2014.

1.1 Purpose

Former military ranges are undergoing soil remediation and subsequent habitat restoration in areas that range in size from 0.05 to 14 acres and are scattered around the perimeter of the Site 39 Inland Ranges area (Site 39) of former Fort Ord. More than 61 acres of soil remediation areas may need restoration at Historic Areas (HA) 18, 19, 22, 23, 27, 27A, 28, 29, 33, 34, 36, 37, 38, 39/40, and 43, 44, 48 and Austin Road Stockpile. The contract objective is to provide seed/plant collection, propagation, planting and establishment services necessary to restore an area of Habitat Reserve containing primarily rare central maritime chaparral habitat with smaller inclusions of coastal scrub and vernal pool habitats to meet the requirements of the Site 39 Habitat Restoration Plan (HRP) (Shaw 2009).

Work performed during 2014 consisted of:

- Storage of previously collected plant materials;
- Propagation of the collected materials;
- Updating SSRPs for HAs 26, 28, 34, 37, 38, 44, and 48;
- Restoration activities at HAs 19, 34, 37, and 38;
- Storm water-related repairs at HAs 34 and 37; and
- Monitoring of restoration sites to evaluate vegetative establishment.

Burleson developed Site Specific Restoration Plans (SSRPs) for HAs 18, 19, 22, 23, 26, 27, 27A, 28, 29, 33, 34, 36, 37, 38, 39/40, 43, 44, 48 and Austin Road Stockpile (Burleson 2013) which provide detailed information (site conditions, baseline vegetation, target collection/propagation requirements) for each HA. Burleson prepared the Plant Material, Collection, Storage, and Propagation Protocols for Site Restoration at Site 39 (Burleson 2010). These documents provide the necessary information and guidance to conduct restoration activities at Site 39 Inland Ranges. Figure 1 presents the restoration status of HAs within Site 39 Inland Ranges.

1.2 General Site Conditions

Site 39 is dominated by central maritime chaparral which is a regionally rare, fire-dependent plant community found within the coastal fog zone on sandy to rocky soils. Chaparral habitats are dominated by drought-deciduous or evergreen sclerophyllous shrubs. This unique species-rich plant community varies in species composition from the western edges of the Site 39 Inland Ranges (frequently foggy and cool), to the eastern edges (less foggy, warmer, and drier).

2.0 Methods

The Site 39 protocols include detailed information on salvage and propagation techniques and the SSRPs provide site specific collection and propagation requirements. Burleson teamed with Rana Creek and California State University Monterey Bay (CSUMB) Watershed Institute (Watershed Institute) to complete these habitat restoration activities. Additionally, Hedgerow Farms supported Burleson with seed production (further discussed in Section 2.2.1).

2.1 Site Specific Restoration Plans

Burleson updated SSRPs for HAs 26, 28, 34, 37, 38, 44, and 48 to reflect changes in the planting recommendations for each site. Specifically, seed collection and propagation quantities were revised to reflect the change in footprint. Final versions of updated SSRPs were submitted to the USACE in July 2014. Burleson is working closely with USACE personnel to verify that site conditions are correct and up-to-date.

2.2 Plant Salvage

Plant salvage refers to the collection of plant material (seeds/cuttings) that will be used in future restoration activities. Burleson biologists worked with the USACE to coordinate salvage and scouting activities with other Site 39 activities. In accordance with the protocols (Burleson 2010), crews collected Habitat Management Plan (HMP) species within a 1-kilometer (km) radius centered on each HA. For common, non-HMP species, crews collected material within a ten-mile radius of each HA.

HMP and common species collection totals are shown in Table A-1 in Appendix A. All HMP and common species collection target goals were met for 2014, with the exception of silver bush lupine. Yellow bush lupine was collected to make up for this deficiency.

Burleson staff entered GPS data, collection quantities, and types of plants salvaged into the plant inventory database (additional collection notes included as necessary) so that species collected could be tracked and compared with collection requirements.

2.2.1 Seed Production/Purchase

Burleson provided Hedgerow Farms with Fort Ord-specific *Elymus glaucus* (blue wildrye) seed. As per Hedgerow Farms' contract, they provided the full 200 pounds of Fort Ord-specific blue wildrye seed in 2014. Burleson also purchased an additional 100 pounds as surplus seed totaling 300 pounds of blue wildrye seed for use at restoration sites within Site 39 Inland Ranges.

LEGEND

- Roads
- Impact Area

Restoration Progress

- Restoration Complete/ Monitoring
- Restoration In Progress
- Future Restoration

FIGURE 1 - Restoration Progress

Site 39 Inland Ranges
Historic Areas Location Map
Former Fort Ord

Source: U.S. Army Corps of Engineers Former Fort Ord
Aerial and Restoration data provided by Fort Ord GIS website

Burleson Consulting, Inc.

Path: S:\GIS\Projects\Fort Ord\TO-4\01-21-2014 Site 39 Historic Areas -Restoration Progress.mxd

2.3 Plant Storage, Processing, and Propagation and Data Management

The plant material collected during 2014 was stored in the Watershed Institute's greenhouse, Burleson's office, and in a storage unit located next to the greenhouse. Information was tracked in an electronic plant inventory database for data management. Plant material was stored in cool, dry locations until crews were ready to process seeds. Labeling and tracking of all plant material followed the protocol (Burleson 2010) and included at a minimum:

- Scientific name and common name
- Container size (if applicable)
- Quantity (in nursery)
- Quantity (delivered)
- Seed/cutting origin
- Client
- Batch name and date sown
- Experimental treatments used during propagation (if applicable)

Collected seeds were processed to remove residual hull, stems, leaves, and chaff, as much as possible. Seed weight totals were entered into the plant inventory database after seed processing was completed. Table A-1, Appendix A, shows processed seed quantities for common species and HMP species collected in relation to 2014 target goals.

Plant propagation was implemented at the Watershed Institute's greenhouse in accordance with the protocols (Burleson 2010) on twenty different common and HMP species used in active restoration. The Watershed Institute staff focused on propagating common species, while Burleson staff focused on the "hard to grow" species. Hard to grow species refer to manzanita and chamise shrubs associated with maritime chaparral.

Approximately 2,878 plants were required for active restoration sites. Table A-2, Appendix A, shows the HMP species plant inventory for HAs 28, 37, and 38. Table A-3 shows the common species plant inventory for all HAs. Burleson met 2014 targets goals for HMP-propagated species with the exception of sandmat manzanita for HAs 37 and 38 and Eastwood's golden fleece for HA 28. Sandmat manzanita and Eastwood's golden fleece collected material did not perform as well in the greenhouse (germination or root development) as it had in previous years. Sandmat manzanita is propagated through cuttings and additional propagation trays have been started to reach the target quantities. Eastwood's golden fleece is propagated through seeds and additional seed has been collected to continue propagation efforts. Cuttings of Eastwood's golden fleece may be used if the plant continues to struggle through seed propagation. Burleson will continue to propagate these two species until the target quantities have been reached.

Burleson met 2014 target goals for all common species with the exception of coast silk tassel. This is the first year Burleson biologists propagated coast silk tassel and it has shown propagation characteristics of some "hard to grow" species. Burleson will continue to propagate this species using techniques for the "hard to grow" species until target quantities have been reached.

2.4 Restoration Activities

The objective of restoration activities is to return the area to a natural landscape that conforms to the adjacent habitat communities in accordance with the SSRPs. Restoration activities completed in 2014 included passive restoration (seed broadcast) at HAs 34, 37, and 38 and active restoration (live plant installation) at HAs 19, 37, and 38.

2.4.1 Passive Restoration

Burleson performed passive restoration at HAs 34, 37, and 38. Table A-4, Appendix A, provides 2014 seed targets, 2014 seed applied, SSRP seed targets, and total seed applied. Passive restoration activities occurred in January, February, March, and December 2014. Each site is described individually below.

- HA 34 – Surplus seed to support hydroseeding activities (January 2014) for 5 acres Passive restoration for 1.7 acres did not occur in 2014 due to poor soil conditions
- HA 37 – 2.0 acres of passive restoration
- HA 38 – 1.0 acres of passive restoration

HA 34

In January 2014, Burleson provided approximately 86.1 pounds of surplus seed to ITSI/Gilbane to support erosion control hydroseeding activities at HA 34. The seed was added to the hydroseed slurry and applied on site. Burleson provided oversight during the hydroseeding activities. The surplus seed added to the site does not count to target quantities because it was used for erosion control.

HA 34 was to receive passive restoration for 1.7 acres shown on Table A-4. However, during initial seed broadcast activities in December 2014, site conditions were not suitable to receive seed. A minor amount of seed was applied to the site, but the ground was too hard to rake seed into the soil. Seeds do not germinate without adequate soil contact and the restoration team decided to wait until site conditions improve. Burleson will complete the seed broadcast of 1.7 acres at HA 34 when site conditions improve in 2015.

HA 37

HA 37 received seed to complete one acre of passive restoration in February 2014. Burleson returned to the site in December 2014 and completed seeding for one additional acre, totaling 2.0 acres of passive restoration. Table A-4, Appendix A, shows the total pounds of seed broadcast per species.

HA 38

At HA 38, only 0.2 acres of the total 1.0 acres received seed during the initial broadcast in March 2014 on the portions of the site requiring passive restoration. The site was revisited in December 2014 to complete passive restoration on the remaining 0.8 acres in the active restoration area. Table A-4, Appendix A, shows the total pounds of seed broadcast per species. HA 38 has received 100% of the passive restoration and is now in a monitoring phase.

2.4.2 Active Restoration

Burleson installed 4,870 plants at HA 37, 1,351 plants at HA 38, and 2,930 at HA 19 in 2014. Table A-5, Appendix A, provides the breakdown of quantity of species planted at HAs 19, 37 and 38.

- HA 19 - 1.1 acres of active restoration/ 2,930 plants
- HA 37 - 2.3 acres of active restoration / 4,870 plants
- HA 38 - 0.7 acres of active restoration / 1,351 plants

HA 19
Burleson completed active restoration to meet species goals by installing 2,930 plants at HA 19 in February 2014. Table A-5, Appendix A, shows the total number of plants installed per species at HA 19. The SSRP target for HA 19 is 2,487 plants, and final planting inventory was live plants installed. HA 19 has received 100% of the active restoration and is now in a monitoring phase.

HA 37
HA 37 received 4,870 plants to restore approximately 2.3 acres in 2014. Installation activities took place between February and March 2014. Table A-5, Appendix A, shows the total number of plants installed per species at HA 37. Approximately six additional acres of active restoration is required to complete live planting at HA 37 in accordance with the SSRP.

HA 38
HA 38 received 1,351 plants to restore approximately 0.7 acre in 2014. Installation activities took place between February and March 2014. Table A-5, Appendix A, shows the total number of plants installed per species at HA 38. Remaining species to install at HA 38 include sandmat manzanita (327 plants), yellow bush lupine (82 plants), and coast silk tassel (82 plants) to reach the SSRP total of 1,842 plants.

An unknown plant pathogen was identified on sandmat manzanita at the greenhouse and the entire lot of this species has been culled until final testing results are available. If the species is cleared, Burleson will plant the remaining species in 2015. Suitable alternative plants will be identified and used in place if the test results indicate the plants need to be destroyed. Yellow bush lupine and coast silk tassel are currently being propagated in the greenhouse and will be installed at the site when ready in 2015.

2.5 Monitoring
Monitoring activities conducted in 2014 included the following:

- Year 1 HMP annual density monitoring surveys at HAs 19 and 39/40 (sand gilia);
- Year 1 HMP annual density monitoring surveys at HA 19 (Monterey spineflower);
- Photo point documentation of restoration progress at all HAs;
- Year 1 survivorship monitoring at HAs 37 and 38; and
- Year 2 survivorship monitoring at HAs 19 and 29.

HMP annuals surveys for Monterey spineflower and sand gilia were conducted at HA 19. Monterey spineflower was observed in all eight of its broadcast plots and sand gilia was observed two of its five plots (Tables B-1 & B-2, see Figure 2 in Appendix B). HA 39/40 density monitoring consisted of Year 1 monitoring for sand gilia only. Sand gilia was observed at both monitored plots (Table B-3, see Figure 3 in Appendix B).

Overall survivorship has indicated that the majority of plants were surviving at monitored HAs (Tables B-4 & B-5). Improvement of survivorship at HAs 19 and 29 was observed from Year 1 (2013) to Year 2 (2014). This increase was attributed to dormant plants during the first year that exhibited growth during Year 2. Year 1 monitoring at HAs 37 and 38 showed a greater than 75% survivorship at both sites.

2.6 Erosion Control Activities

Burleson installed erosion control Best Management Practices (BMPs) for minor storm water-related damage at HAs 34 and 37. Activities included repairing rill erosion, installing 2,000 linear feet of straw fiber rolls, and installing 3,000 square feet of coir fabric.

At HA 34, the following work was performed in 2014:

- Installed 400 linear feet of straw rolls
- Collapsed 100 feet of rills
- Provided barley and blue-wild rye seed to stabilize 0.5 acre

At HA 37, the following work was performed in 2014:

- Installed 1,600 linear feet of straw rolls
- Collapsed 450 feet of rills
- Installed 3,000 square feet or coir fabric
- Provided barley and blue-wild rye seed to stabilize 0.5 acre

Erosion and sediment control BMPs and seeding were installed according to documentation provided by the USACE. Photographs of erosion control activities are provided in Appendix C.

2.7 Community Involvement Workshop /Open House and Bus Tour

In addition to general restoration activities, Burleson participated in the Fort Ord Clean-Up Open House and Bus Tour on March 1, 2014, and August 23, 2014, located at the Shaw Building on former Fort Ord. The open house provided an opportunity to inform members of the community of the cleanup efforts on former Fort Ord. Burleson personnel provided a poster board highlighting the restoration efforts within Site 39 Inland Ranges following remediation activities, along with a display of examples of seeds and plants.

2.8 Annual Meeting

In accordance with the HRP, annual meetings are held with regulatory agencies and the Army to review restoration site data and discuss restoration activities, annual monitoring results, and proposed adaptive management strategies to improve restoration success. These meetings also evaluate weed management, sampling protocols, “passive” versus “active” approaches, the need to implement corrective measures, and assessment of the 13-year monitoring end point proposed in the HRP.

The third Annual Site 39 Restoration Meeting was held at the Base Realignment and Closure (BRAC) conference room on January 27, 2014, at former Fort Ord, California. Participants included Burleson, the Army, USACE, California Department of Fish and Wildlife (CDFW), BLM, U. S. Fish and Wildlife Service (USFWS), HydroGeologic Inc., Arcadis, Ecosystems West, Tetra Tech, and ITSI/Gilbane.

Burleson presented information on seed collection, seed storage and processing, restoration progress, and propagation activities.

3.0 References

Burleson 2010. Site 39 Plant Material Collection, Storage, and Propagation Protocols for Former Fort Ord, California.

Burleson 2013. Site Specific Restoration Plan Historic Areas 18, 19, 22, 23, 26, 27, 27A, 28, 29, 33, 34, 36, 37, 38, 39/40, 43, 44, 48, and Austin Road Stockpile. Former Fort Ord, California

Shaw Environmental 2009. Final Habitat Restoration Plan Site 39 Inland Ranges Former Fort Ord, California.

Appendix A- Tables

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Table A-1
Former Fort Ord Species Seed Collected in Pounds

Species	2014 Target	2014 Collected
Achillea millefolium **(Common yarrow)**	4.2	4.2
Baccharis pilularis **(Coyote brush)**	0.65	0.65
Ceanothus cuneatus var. rigidus **(Monterey ceanothus)***	3.35	3.35
Chorizanthe pungens var. pungens **(Monterey spineflower)***	0.36	0.36
Ericameria fasciculata (**Eastwood's golden fleece)***	0.84	0.84
Eriophyllum confertiflorum **(Golden yarrow)**	5.26	5.26
Helianthemum scoparium **(Rush-rose)**	3.16	3.16
Horkelia cuneata **(Wedge leaf horkelia)**	8.38	8.38
Lotus scoparius **(Deerweed)**	8.38	8.38
Lupinus albifrons **(Silver bush lupine)**	1.9	0.23
Lupinus arboreus **(Yellow bush lupine)**[1]	2.78	5.84
Mimulus aurantiacus **(Sticky monkey flower)**	0.65	0.65
Salvia mellifera **(Black sage)**	8.38	8.38
TOTAL	**48.29**	**49.68**

*Indicates HMP Species
[1] Yellow bush lupine was collected as an alternative to make up for a poor collection year for Silver bush lupine.

Table A-2
Former Fort Ord 2014 HMP Species Plant Inventory
Historic Areas 28, 37, & 38

Species	HA 28			HAs 37 & 38		
	2014 Target	**2014 Inventory**	**Pot Size**	**2014 Target**	**2014 Inventory**	**Pot Size**
Arctostaphylos hookeri **(Hooker's manzanita)**	237	238	134 GAL, 104 1.5 GTP	199	339	339 GAL
Arctostaphylos montereyensis (**Toro manzanita)**	237	265	211 GAL, 54 1.5 GTP	149	394	341 GAL, 53 1.5 GTP
Arctostaphylos pumila **(Sandmat manzanita)**	947	1,005	770 GAL, 235 1.5 GTP	427	306	261 GAL, 45 1.5 GTP
Ceanothus cuneatus var. rigidus **(Monterey ceanothus)**	237	1,046	83 GAL, 963 CN	208	1,437	65 GAL, 1372 CN
Ericameria fasciculata **(Eastwood's golden fleece)**	237	47	47 MDP	-	-	-
TOTAL	**1,895**	**2,601**	**-**	**983**	**2,476**	**-**

Pot Sizes	
Gallon Can 6.5"x7.25"	GAL
Band 2.4"x5"	B
Seed Tray	ST
Rose Pot 2"x2"	RP
1.5 Gallon Tree Pot 4.5"x10"4"	1.5 GTP
Tree Pot	TP
Deepot	DP

Table A-3
Former Fort Ord 2014 Common Species Plant Inventory

Species	2014 Target	2014 Inventory	Pot Size
Achillea millefolium (**Common yarrow)**	182	200	
Adenostoma fasciculata (**Chamise)**	836	779	660 GAL, 119 1.5 GTP
Arctostaphylos tomentosa ssp. tomentosa **(Shaggy-bark manzanita)**	1,146	1,884	1119 GAL, 523 B, 242 1.5 GTP
Baccharis pilularis (**Coyote brush)**	419	440	440 GAL
Eriophyllum confertiflorum **(Golden yarrow)**	419	435	
Garrya elliptica **(Coast silk tassel)**	182	88	49 GAL, 18 B, 21 1.5 GTP
Helianthemum scoparium **(Rush-rose)**	445	454	
Horkelia cuneata **(Wedge-leaved horkelia)**	445	449	
Lotus scoparius **(Deerweed)**	445	460	
Lupinus arborius **(Yellow bush lupine)**	126	220	138 TP, 82 DP
Lupinus chamissonis **(Sliver bush lupine)**	126	220	
Mimulus aurantiacus **(Sticky monkey flower)**	208	220	
Salvia mellifera **(Black sage)**	469	480	343 DP, 137 GAL
TOTAL	**5,448**	**6,329**	

Pot Sizes	
Gallon Can 6.5"x7.25"	GAL
Band 2.4"x5"	B
Seed Tray	ST
Rose Pot 2"x2"	RP
1.5 Gallon Tree Pot 4.5"x10"4"	1.5 GTP
Tree Pot	TP
Deepot inevitably	DP

Table A-4
Former Fort Ord 2014 Seed Broadcast at Site 39 Historic Areas

Species	HA 34[2]				HA 37				HA 38			
	2014 Target (lbs)[2,7]	2014 Applied (lbs)[3]	SSRP Target (lbs)	Total Applied[4] (lbs)	2014 Target (lbs)[7]	2014 Applied (lbs)[5]	SSRP Target (lbs)	Total Applied (lbs)	2014 Target (lbs)[7]	2014 Applied (lbs)[5]	SSRP Target (lbs)	Total Applied (lbs)
Achillea millefolium **(Common yarrow)**	1.69	-	9.5	9.5	2.0	6.8	9.4	6.8	0.51	0.71	1.01	1.01
Adenostoma fasciculata **(Chamise)**	-	-	9.5	9.5	-	3.3	-	3.3	-	-	-	-
Arctostaphylos pumila[1] **(Sandmat manzanita)**	-	-	-	-	-	-	-	-	-	-	-	-
Artemisia californica **(California sagebrush)**	-	-	9.5	9.5	-	-	-	-	-	-	-	-
Baccharis pilularis **(Coyote brush)**	0.25	-	1.4	1.4	0.32	1.72	1.4	1.72	0.08	0.08	0.15	0.15
Ceanothus cuneatus var. rigidus[1] **(Monterey ceanothus)**	-	-	9.5	9.5	-	-	9.4	-	0.51	0.51	1.01	1.01
Elymus glaucus **(Blue wildrye)**	6.74	-	85.5	85.5	6.0	105.0	28.1	105.0	1.52	6.6	4.04	4.04
Eriophyllum confertiflorum **(Golden yarrow)**	2.11	-	9.5	9.5	1.44	6.44	11.7	6.44	0.63	0.93	1.26	1.26
Ericameria ericoides **(Mock heather)**	-	-	-	-	-	4.2	-	4.2	-	-	-	-
Ericameria fasciculata[1] **(Eastwood's golden fleece)**	-	-	-	-	0.40	1.4	1.9	1.4	0.10	0.10	0.20	0.20
Helianthemum scorparius **(Rush-rose)**	1.26	-	9.5	9.5	1.52	6.72	7.0	6.72	0.38	0.58	0.76	0.76
Hordeum sp. **(Common barley)**	33.7	-	85.5	85.5	20.00	20.00	93.5	20.00	5.05	12.00	10.10	12.00
Horkelia cuneata **(Wedge-leaved horkelia)**	3.37	-	19.0	19.0	4.0	20.1	18.7	20.1	1.01	1.41	2.02	2.02
Lotus scoparius **(Deerweed)**	3.37	-	19.0	19.0	4.0	12.7	18.7	12.7	1.01	1.41	2.02	2.02

Table A-4
Former Fort Ord 2014 Seed Broadcast at Site 39 Historic Areas

Species	HA 34[2]				HA 37				HA 38			
	2014 Target (lbs)[2,7]	2014 Applied (lbs)[3]	SSRP Target (lbs)	Total Applied[4] (lbs)	2014 Target (lbs)[7]	2014 Applied (lbs)[5]	SSRP Target (lbs)	Total Applied (lbs)	2014 Target (lbs)[7]	2014 Applied (lbs)[5]	SSRP Target (lbs)	Total Applied (lbs)
Lupinus arboreus **(Yellow bush lupine)[6]**	-	-	9.5	9.5	1.52	1.52	-	1.52	0.38	0.58	0.76	0.76
Mimulus auraticus **(Sticky monkey flower)**	0.25	-	1.0	1.0	0.32	0.33	1.4	0.33	0.08	0.28	0.15	0.28
Salvia mellifera **(Black sage)**	3.37	-	9.5	9.5	4.0	11.2	18.7	11.2	1.01	1.41	2.02	2.02
TOTAL	**56.1**	**-**	**287.4**	**287.4**	**47.5**	**203.5**	**221.3**	**203.5**	**12.3**	**26.6**	**26.51**	**27.53**

[1]HMP species
[2] 2014 targets shown for HA 34 were originally for HA 28 and were provided by USACE.
[3]HA 34 did not receive hand broadcast seed in 2014 due to poor site conditions.
[4]HA 34 received passive restoration in 2012, however the site was subject to a major rain event and almost all seed was washed off site.
[5]Surplus seed was used when available.
[6]Yellow bush lupine collected and broadcast in place of silver bush lupine.
[7]2014 target quantities provided by USACE.

Table A-5
Quantity of Species Planted at Site 39 Historic Areas

Species	HA 19				HA 37				HA 38			
	2014 Target	2014 Installed	SSRP Target	Total Planted	2014 Target	2014 Installed	SSRP Target	Total Planted	2014 Target	2014 Installed	SSRP Target	Total Planted
Achillea millefolium **(Common yarrow)**	75	117	75	117	100	13	800	13	82	82	82	82
Adenostoma fasciculata **(Chamise)**	100	100	100	100	200	636	1,700	636	163	163	163	163
Arctostaphylos hookeri **(Hooker's manzanita)**	--	--	--	--	76	234	700	234	123	123	123	123
Arctostaphylos montereyensis **(Monterey manzanita)**	--	--	--	--	126	389	1,000	389	123	123	123	123
Arctostaphylos pumila **(Sandmat manzanita)**	80	255	80	255	100	--	--	--	--	--	327	--
Arctostaphylos tomentosa **(Shaggy-bark manzanita)**	150	150	150	150	350	621	2,500	621	204	204	204	204
Artemisia californica **(California sagebrush)**	52	68	52	68	--	--	--	--	--	--	--	--
Baccharis pilularis **(Coyote brush)**	150	150	150	150	100	234	800	234	82	82	82	82
Ceanothus rigidus **(Monterey ceanothus)**	50	119	50	119	126	315	1,000	315	82	82	82	82
Ericameria ericoides **(Mock Heather)**	50	58	50	58	--	--	--	--	--	--	--	--
Ericameria fasciculate	50	97	50	97	--	--	--	--	--	--	--	--

Table A-5
Quantity of Species Planted at Site 39 Historic Areas

Species	HA 19				HA 37				HA 38			
	2014 Target	**2014 Installed**	**SSRP Target**	**Total Planted**	**2014 Target**	**2014 Installed**	**SSRP Target**	**Total Planted**	**2014 Target**	**2014 Installed**	**SSRP Target**	**Total Planted**
(Eastwood's gold fleece)												
Eriophyllum confertiflorum **(Golden yarrow)**	--	--	--	--	100	311	500	311	82	82	82	82
Garrya elliptica **(Coast silk tassel)**	--	--	--	--	--	--	--	--	--	--	82	--
Helianthemum scoparium **(Rush-rose)**	250	255	250	255	126	389	1,000	389	82	82	82	82
Horkelia cuneata **(Wedge-leaved horkelia)**	250	250	250	250	126	389	1,000	389	82	82	82	82
Lotus scoparius **(Deerweed)**	250	250	250	250	126	380	1,000	380	82	82	82	82
Lupinus albifron **(Silver bush lupine)**[1]	--	9	--	9	126	--	--	--	--	--	--	--
Lupinus arboreus **(Yellow bush lupine)**	--	--	--	--	126	208	1,000	208	82	--	82	--
Mimulus aurantiacus **(Sticky monkey flower)**	250	262	250	262	126	389	800	389	82	82	82	82
Nasella cernua **(Nodding Needlegrass)**	200	200	200	200	--	--	--	--	--	--	--	--
Salvia mellifera **(Black sage)**	250	252	250	252	150	362	1,000	362	82	82	82	82
TOTAL	**2,462**	**2,930**	**2,462**	**2,930**	**2,184**	**4,870**	**14,800**	**4,870**	**1,433**	**1,351**	**1,842**	**1,351**

[1]Poor propagation year for silver bush lupine. Yellow bush lupine use in place.

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Appendix B- Monitoring Results

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Table B- 1
Year One Monterey Spineflower Density Survey
Per Historic Area 19

Polygon	Area (ft^2)	# Individuals / 20m^2 circle plot	# Individuals / 100 ft^2	Density Class	Notes
HA19CHPUP01	2,196	596	235	High	~85% Suitable Habitat within HMP plot
HA19CHPUP02	4,683	54	23	Low	~90% Suitable habitat within HMP plot
HA19CHPUP03	3,860	6	3	Low	~90% Suitable habitat within HMP plot
HA19CHPUP04	2,400	1	1	Low	~80% Suitable habitat within HMP plot
HA19CHPUP05	5,188	100	46	Medium	~100% Suitable habitat within HMP plot
HA19CHPUP06	4,734	87	40	Medium	~100% Suitable habitat within HMP plot
HA19CHPUP07	1,872	7	3	Low	~97% Suitbale habitat within HMP plot
HA19CHPUP08	3,793	4	1	Low	~80% Suitable habitat within HMP plot
HA19CHPUP09	2,560	25	9	Low	~80% Suitable habitat within HMP plot

Density Key Outlined by the Habitat Restoration Plan	
Number of Individuals per 100ft²	*Density Class*
0	Not Present
1 - 50	Low
51 - 100	Medium
101 - 500	High
> 500	Very High

Table B-2
Year One Sand Gilia Density Survey
Per Historic Area 19

Polygon	Area (ft^2)	# Individuals / HMP plot	# Individuals / 100 ft^2	Density Class	Notes
HA19GITEA_A	200	0	0	Not present	100% Suitable habitat within HMP plot
HA19GITEA_B	500	0	0	Not present	100% Suitable habitat within HMP plot
HA19GITEA_C	500	1	1	Low	100% Suitable habitat within HMP plot
HA19GITEA_D	500	0	0	Not present	100% Suitable habitat within HMP plot
HA19GITEA_E	500	24	5	Low	100% Suitable habitat within HMP plot

Density Key Outlined by the Habitat Restoration Plan	
Number of Individuals per 100ft²	*Density Class*
0	Not Present
1 - 50	Low
51 - 100	Medium
101 - 500	High
> 500	Very High

LEGEND

Monterey Spineflower
Density
- Low
- Medium
- High

Sand Gilia
Density
- Not Present
- Low

- HA19 boundary
- Impact Area

Path: S:\GIS\Projects\Fort Ord\TO-5\Annual_Report\Fig 2_HA19_HMP_Monitoring.mxd

FIGURE 2
Year 1 2014 HA19 HMP Annual Monitoring

Site 39 Inland Ranges
Historic Areas Location Map
Former Fort Ord

Source: U.S. Army Corps of Engineers Former Fort Ord
Aerial and Restoration data provided by Fort Ord GIS website

Burleson Consulting, Inc.

Table B-3
Year One Sand Gilia Density Survey
Per Historic Area 39/40

Polygon	Area (ft^2)	# Individuals / HMP plot	# Individuals / 100 ft^2	Density Class	Notes
HA3940GITEA_P2	2,300	33	1	Low	100% Suitable habitat within HMP plot
HA3940GITEA_P5	500	50	10	Low	100% Suitable habitat within HMP plot

Density Key Outlined by the Habitat Restoration Plan	
Number of Individuals per 100ft²	*Density Class*
0	Not Present
1 - 50	Low
51 - 100	Medium
101 - 500	High
> 500	Very High

LEGEND

Sand Gilia
Density
Low

HA39/40 boundary
Impact Area
County boundary
MRS Range 43- 48

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FIGURE 3
Year 1 2014 HA39/40 HMP Annual Monitoring

Site 39 Inland Ranges
Historic Areas Location Map
Former Fort Ord

Source: U.S. Army Corps of Engineers Former Fort Ord
Aerial and Restoration data provided by Fort Ord GIS website

Burleson Consulting, Inc.

Table B-4
Year Two Overall Survivorship Monitoring
Per HAs 19 & 29

HA	2013	2014
19	46%	54%
29	84%	89%
Note: Survivorship percentages rose from Year 1 to Year 2 because a few individual plants from several species (ADFA, BAPI, CERI, ERER, SAME) went into dormancy during Year 1 but came back in Year 2.		

Table B-5
Year One Overall Survivorship Monitoring
Per Historic Areas 37 & 38

HA	2014
37	77%
38	95%

Appendix C- Photograph Log of Activities

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
2014 Annual Report

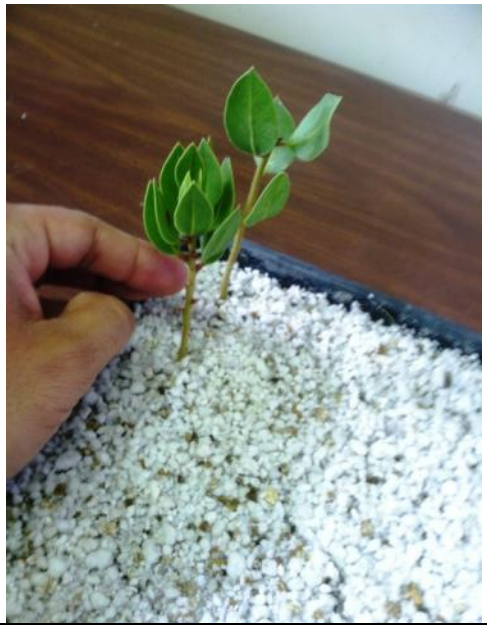
Photo Log Section Guide	
Task	**Photo Section**
Plant Salvage	A
Plant Material Storage, Processing, and Propagation	B
Restoration Activities	C
Erosion Control Activities	D
Monitoring Activities	E
USACE Open House	F

Photo Description	Photo
Plant Salvage Burleson crew collecting *Mimulus aurantiacus (*Sticky monkey flower*)* seed on the MRA. **A-1**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
2014 Annual Report

Photo Description	Photo
Plant Salvage Collecting *Arctostaphylos tomentosa* (Shaggy-bark manzanita) cuttings on BLM land **A-2**	
Plant Material Storage, Processing, and Propagation Individual Shaggy-bark manzanita cuttings during processing. **B-1**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
2014 Annual Report

Photo Description	Photo
Plant Material Storage, Processing, and Propagation *Arctostaphylos montereyensis* (Monterey manzanita)cutting processing. **B-2**	
Plant Material Storage, Processing, and Propagation Burleson greenhouse filled with *Arctostaphylos* cutting trays. **B-3**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
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Photo Description	Photo
Plant Material Storage, Processing, and Propagation *Arctostaphylos tomentosa* and *Arctostaphylos montereyensis* plants ready to be installed at the Burleson greenhouse. **B-4**	
Plant Material Storage, Processing, and Propagation Propagation benches were built to support trays of growing plants. **B-5**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
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Photo Description	Photo
Plant Material Storage, Processing, and Propagation View of blooming Sand gilia grown at the greenhouse. The seed from these plants will be harvested and used for restoration. Photo taken May, 2014. **B-6**	
Plant Material Storage, Processing, and Propagation Treating HA 38 seed before broadcasting. **B-7**	

Appendix C
Restoration of Site 39 Inland Ranges
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2014 Annual Report

Photo Description	Photo
Restoration Activities Burleson Horticultural Technicians casting and raking native seed at HA 19. **C-1**	
Restoration Activities Burleson Horticultural Technicians raking native seed in after broadcasting at HA 28. **C-2**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
2014 Annual Report

Photo Description	Photo
Restoration Activities View of upper portion of HA 34 following hydro-seeding activities. Burleson supplied the hydro-seeder with native seed used in the application at HA 34. Native seed should speed up the restoration process. **C-3**	
Restoration Activities Burleson Horticultural Technician conducting seed broadcast at HA 37 **C-4**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
2014 Annual Report

Photo Description	Photo
Restoration Activities Burleson crew spot casting and raking in HMP shrub *Ceanothus cuneatus var. rigidus* and *Ericameria fasciculata* seed at HA 28. **C-5**	
Restoration Activities HA 38 has several passive restoration areas. Here is one of these areas that has been casted with native seed and covered with straw. **C-6**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
2014 Annual Report

Photo Description	Photo
Restoration Activities Burleson Horticultural Technicians installing native plants at HA 37. **C-7**	
Restoration Activities Overall view of HA 37 plant installation. **C-8**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
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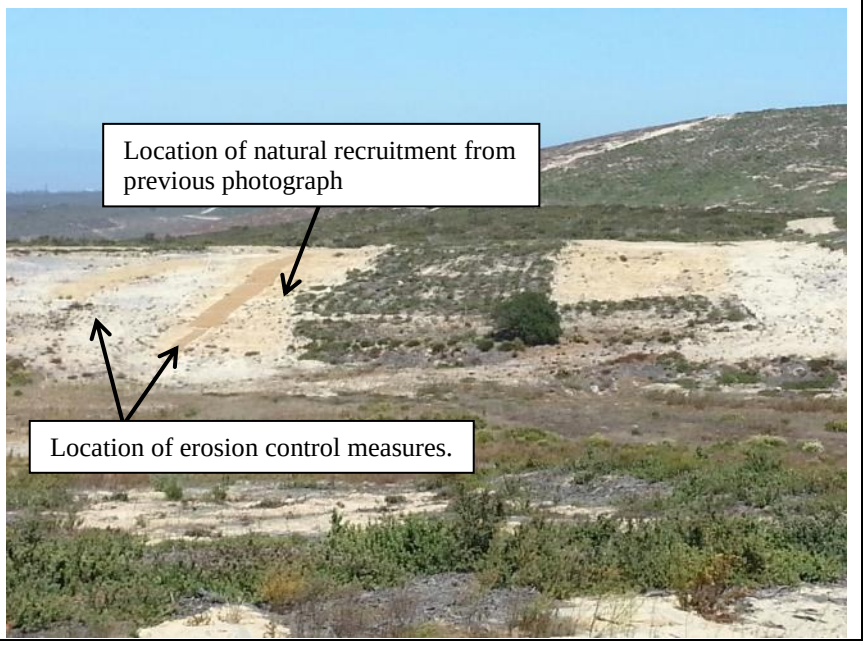
Photo Description	Photo
Restoration Activities Plants staged and ready to be installed at the HA 38 planting area. **C-9**	
Restoration Activities Plants staged next to their holes and ready to be installed at the HA 38 planting area. **C-10**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
2014 Annual Report

Photo Description	Photo
Erosion Control Activities Burleson Horticultural Technicians collapsing erosion gully at HA 28 using hand tools. Hand tools were used to keep site impacts at a minimum. **D-1**	
Erosion Control Activities Burleson Horticultural Technicians installing coir fabric and straw wattles at HA 28 for erosion control. **D-2**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
2014 Annual Report

Photo Description	Photo
Erosion Control Activities Burleson Horticultural Technicians broadcast straw mulch after erosion control activities were completed. Naturally recruited plant species can be seen in foreground. **D-3**	
Erosion Control Activities Overall view of HA 28 following erosion control activities. **D-4**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
2014 Annual Report

Photo Description	Photo
Erosion Control Activities Burleson Horticultural Technicians hammering stakes into the wattles at HA 28 after rains have softened the soil. **D-5**	
Erosion Control Activities Inspecting erosion features after heavy rain at HA 28 **D-6**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
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Photo Description	Photo
Monitoring Activities Burleson Horticultural Technician installing survivorship monitoring plots at HA 37. **E-1**	
Monitoring Activities Burleson Horticultural Technician conducting Monterey spineflower density surveys at HA 19. **E-2**	

Appendix C
Restoration of Site 39 Inland Ranges
Former Fort Ord
Photo Log of Activities
2014 Annual Report

Photo Description	Photo
USACE Open House Burleson Horticultural Technician at the USACE open house talking to the public about habitat restoration on For Ord. **F-1**