
BIOLOGICAL MONITORING COMPLETION REPORT

FOR THE

FORT ORD NATURAL RESERVE (FONR)

AT THE

PER- AND POLYFLUOROALKYL SUBSTANCES
(PFAS) SITE INSPECTION

FORMER FORT ORD, CALIFORNIA

March 14, 2023

Prepared for

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1 PROJECT INITIATION AND BASELINE SURVEY

Denise Duffy and Associates, Inc. (DD&A) was contracted by Ahtna Global, LLC (Ahtna) to conduct baseline surveys and provide construction phase biological monitoring within the University of California Fort Ord Natural Reserve (FONR). This task required part-time and on-call environmental monitoring of construction activities to advise the Ahtna Field Supervisor on avoidance of special-status plant and wildlife species and provide guidance on minimizing habitat impacts in response to requests from the construction field staff. Construction-related activities for the project include the installation of two new monitoring wells and the use of one soil boring location for Per- and Polyfluoroalkyl Substances (PFAS) Site Inspection fieldwork.

1.1 PROJECT INITIATION

DD&A coordinated with Ahtna, U.S. Army Corps of Engineers (USACE), U.S. Army Base Realignment and Closure (BRAC) Fort Ord Field Office, and FONR staff to finalize the scope and project path, as well as identify project boundaries, project footprint, and site access. The following monitoring wells and soil boring locations, including associated access routes, were included in the 2022 baseline rare plant survey and biological monitoring effort:

- MW-BW-96-A (New Monitoring Well)
- MW-BW-97-A (New Monitoring Well)
- MW-BW-95-A (Existing Monitoring Well)
- SB-FDA-01 (Soil Boring)

The monitoring well and soil boring locations listed above were monitored for federally-listed Installation-Wide Multispecies Habitat Management Plan (HMP) species (USACE, 1997) in the 2020 Annual Rare Plant Survey (Burlerson Consulting Inc. [Burlerson], 2020), the 2017 FONR Impact Assessment and Habitat and Rare Plant Survey Results (HydroGeoLogic, Inc. [HGL], 2018), and the 2015 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results (HGL, 2016). In 2020, 2005, and 1998 Monterey spineflower was found within 50 feet of the existing MW-BW-95-A monitoring well (Burlerson 2020, HGL 2018, and 2016). No Monterey gilia was identified in previous survey efforts within 50 feet of MW-BW-96-A, MW-BW-97-A, or SB-FDA-01. Monterey spineflower was found within 50 feet of location of MW-BW-97-A in 2007 and 2019 (HGL 2008, and Burlerson 2019).

1.2 SITE DESCRIPTION

This report describes activities that have occurred within FONR. FONR is approximately 605 acres in size. The habitats present within FONR include coast live oak woodland, maritime chaparral, coastal scrub, disturbed/developed land, and annual grassland. The 2022 baseline survey included portions of coast live oak woodland, maritime chaparral, annual grassland, and disturbed/developed land on FONR.

1.3 BASELINE SURVEY METHODOLOGY

The Scope of Work (SOW) provided by Ahtna to DD&A was intended to comply with the HMP for Former Fort Ord, California (USACE, 1997), and the Programmatic Biological Opinion (PBO; USFWS, 2017). The SOW required that baseline biological surveys be conducted to establish whether protected species are present prior to work operations, and to avoid and minimize impacts during work operations. DD&A conducted baseline surveys for federally listed HMP species, including the federally Threatened Monterey spineflower (*Chorizanthe pungens* var. *pungens*), federally Endangered Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*), and federally Endangered Yadon's piperia (*Piperia yadonii*). These are annual plant species that must be blooming to make a positive identification. DD&A monitored several known reference populations and conferred with other local experts to ensure that surveys for these species were conducted within the appropriate blooming period¹. Baseline survey efforts began April 13, 2022 and were concluded May 12, 2022.

The baseline survey area included two well installation locations, one existing well, one soil boring location and a 50-foot buffer area, as well as the main access route. In accordance with USFWS's Revisions of Monitoring Plan for Federally Listed Plants in Portions of OU-1, surveys of the main access route past well MW-BW-95A are not required (USFWS, 2013), but were conducted to provide supplemental information. The survey area also included secondary access routes and a 20-foot buffer area from the centerline of the secondary access routes. DD&A, in coordination with Ahtna, determined that the 20-foot and 50-foot buffer areas were sufficient to encompass all areas of potential impacts associated with the project. These areas were surveyed for the three HMP plant species (Monterey spineflower, Monterey gilia, and Yadon's piperia) during two survey efforts. Baseline rare plant survey methods were based on methods DD&A used previously for vegetation surveys at FONR (HGL, 2008, 2009, 2010, 2011, 2012, 2013, 2014a, 2014b, 2015, 2017, and 2018).

Where found, the locations of the three rare plant species were mapped using a Trimble® Geo 7 Series global positioning system (GPS) with an external Zephyr Model 2 antenna. When either Monterey spineflower, Monterey gilia, or Yadon's piperia was identified, the survey in that area was extended to the boundary of the population encountered. Large areas of Monterey spineflower and Monterey gilia were mapped as polygons, with attributes to identify the number of individuals for Monterey gilia or percent absolute cover for Monterey spineflower. Smaller groups and individuals were mapped as points with attributes to identify the number of individuals at each location.

No basal rosettes for piperia species were observed during surveys efforts. Individual counts were made for all Monterey gilia populations whether they were mapped using points (population ≤ 5) or polygons (population ≥ 6). However, Monterey spineflower were only counted as individuals when groups of five or less were mapped. Monterey spineflower populations consisting of greater than five individuals were

¹ Surveys did not occur during the appropriate blooming period for Yadon's piperia because it does not coincide with the blooming period for Monterey spineflower or Monterey gilia. For this species, DD&A documented potential piperia basal rosettes and relayed their location information to the BRAC Biologist so that follow-up surveys during the appropriate blooming period may be conducted, if necessary. Since no potential piperia basal rosettes were identified during the baseline survey effort, no follow-up surveys were conducted.

mapped as polygons and characterized according to the percent of cover. The density classes used for percent cover were:

- Very Sparse (corresponding to an absolute cover of less than 3 percent),
- Sparse (3-25 percent absolute cover),
- Medium Low (26-50 percent absolute cover),
- Medium (51-75 percent absolute cover),
- Medium High (76-97 percent absolute cover), and
- Very High (>97-100 percent absolute cover).

GPS data, defining the population boundaries and/or point location(s), were exported to shapefile format. Shapefiles were then imported into the Geographic Information System (GIS) ESRI® ArcGIS 10.4 software platform and overlaid on high-resolution aerial photography/satellite imagery.

2 RESULTS

As part of the survey effort, a rare plant survey is conducted in a reference site each year. In 2022, the baseline survey was conducted for two well installation locations, one existing well, and a soil boring location and a 50-foot buffer area (survey area; Attachment A-1). In addition, the main access route and a 20 foot buffer was also surveyed.

2.1 REFERENCE SITE SURVEY RESULTS 2022

Two DD&A reference sites were surveyed for Monterey spineflower and Monterey gilia on April 13, 2022 and May 12, 2022. Fencing and irrigation observed at the reference site located on FONR suggested that Monterey gilia at this site were actively managed for research and restoration purposes by FONR staff and University of California, Santa Cruz students. Conditions at this site no longer align with the conditions at the survey locations due to the installation of fencing to reduce herbivory and the augmentation of hydrology through irrigation; therefore, the site will no longer meet the requirements of a reference site. Attachment A and Tables 1 and 2 include data from the reference site located southeast of FONR and exclude the reference site located on FONR.

2.1.1 MONTEREY SPINEFLOWER

In 2022, Monterey spineflower occupied 117 square feet at the reference site (Table 1 and Attachment A-2).

Table 1. Monterey Spineflower at DD&A Reference Site

Year	# of Populations	# of Points	# of Polygons	<u>Polygons per Density Class</u>		Total Area of Polygons (ft ²)
				Very Sparse	Sparse	
2022	10	7	3	2	1	117

2.1.2 MONTEREY GILIA

In 2022, a total of 40 individual Monterey gilia plants were observed at the reference site (Table 2 and Attachment A-2)

Table 2. Monterey Gilia at DD&A Reference Site

Year	# of Populations	Individual Plants	# of Points	# of Polygons	Total Area of Polygons (ft ²)
2022	4	40	0	4	60

2.2 BASELINE SURVEY RESULTS

2.2.1 MONTEREY SPINEFLOWER SURVEY AREA RESULTS

In 2022, DD&A surveyed for Monterey spineflower within the designated survey area (Attachment A-3). Monterey spineflower was found (within 50 feet) at the soil boring location (SB-FDA-01) and the existing well (MW-BW-95-A) (Table 3 and Attachment A-3).

Table 3. Monterey Spineflower Baseline Survey Area Results

Year	# of Populations	# of Points	# of Polygons	<u>Polygons per Density Class</u>		Total Area of Polygons (ft ²)
				Very Sparse	Sparse	
2022	4	2	2	1	1	242

2.2.2 MONTEREY GILIA SURVEY AREA RESULTS

In 2022, DD&A surveyed for Monterey gilia within the designated survey area (Attachment A-3), which included two well installation locations, one soil boring location, and one existing well at FONR. Monterey gilia was not found within 50 feet of any monitoring well or soil boring locations (Attachment A-3).

2.3 ACCESS ROUTE SURVEY RESULTS

The access route within FONR to the well locations and the soil boring location was surveyed for Monterey spineflower and Monterey gilia on April 13, 2022, and May 12, 2022. As indicated above, the main access route past well MW-BW-95A was surveyed in the 2022 baseline survey to provide supplemental information, but is not required per USFWS' Revisions of Monitoring Plan for Federally Listed Plants in Portions of OU-1 (USFWS, 2013).

2.3.1 MONTEREY SPINEFLOWER 2022 SURVEY RESULTS WITHIN THE ACCESS ROUTES

In 2022, Monterey spineflower occupied 1,375 square feet within the access routes at FONR (Table 4 and Attachment A-3).

Table 4. Monterey Spineflower Survey Results Within the Access Routes

Year	# of Populations	# of Points	# of Polygons	Polygons per Density Class		Total Area of Polygons (ft ²)
				Very Sparse	Sparse	
2022	29	15	14	7	7	1,375

2.3.2 MONTEREY GILIA 2022 SURVEY RESULTS WITHIN THE ACCESS ROUTES

In 2022, DD&A surveyed for Monterey gilia within the potential access routes at FONR. In 2022, one population of Monterey gilia with 17 individual plants was found along the access routes at FONR (Table 5 and Attachment A-3).

Table 5. Monterey Gilia Survey Results Within the Access Routes

Year	# of Populations	Individual Plants	# of Points	# of Polygons	Total Area of Polygons (ft ²)
2022	1	17	0	1	65

Based on the baseline survey data, modifications to the well, soil boring, or staging locations were not necessary to minimize impacts to HMP plant species. One California state Endangered Seaside bird's beak (*Cordylanthus rigidus*) plant was identified and flagged for avoidance adjacent to the soil boring location SB-FDA-01. Modifications to the soil boring location were not necessary to ensure avoidance of the flagged plant. DD&A biologists coordinated with the Ahtna Field Supervisor and drilling personnel on appropriate access route and turn around locations in order to avoid HMP species to the greatest extent feasible. Discussion with the on-site DD&A biologist and drilling personnel prior to mobilization at each well and soil boring location ensured that drilling equipment was placed to avoid HMP species to the greatest extent possible.

3 CONSTRUCTION PHASE BIOLOGICAL MONITORING

A Habitat Checklist (HCL) was prepared by Ahtna, in coordination with DD&A, prior to construction (Ahtna, 2022; Attachment D). The HCL outlined specific avoidance and minimization measures, as required by the HMP (USACE, 1997) and PBO (USFWS, 2017), which were implemented during project activities to reduce impacts to HMP species. The HCL was signed by the DD&A Project Biologist, the BRAC Biologist, Ahtna Project Manager, and the Ahtna Field Supervisor prior to work initiation. As required by the HMP, existing roads were used to the greatest extent feasible. Access roads, staging areas, and other appurtenant facilities were sited to minimize impacts to HMP plant and wildlife species. Matting was not necessary to reduce the level of disturbance to access the well installation or soil boring locations since all locations were along existing access routes. Equipment coming from off-site was dry-brushed prior to entering FONR to reduce the potential to spread non-native invasive plant species.

Construction activities, which included soil boring and the installation of two wells within FONR, were initiated on October 19, 2022 and were completed on November 16, 2022. DD&A biologists conducted the initial Environmental Awareness Training for all supervisors and field personnel on October 18, 2022. All site personnel who were not at the initial Environmental Awareness Training session received Environmental Awareness Training, at a subsequent training event, prior to working on the site. DD&A biologists were available during all phases of work to monitor activity and ensure compliance with all relevant mitigation measures.

Attachment B details the specific monitoring events and communication by DD&A personnel after the initiation of soil boring, well installation, and well development activities at FONR. Attachment B also documents communication and meetings with staff from Ahtna and BC2 Environmental (the drilling subcontractor) as well as construction oversight by DD&A biologists. DD&A staff was present on-site daily for most of the well installation activities and discussed the daily well installation activities with Ahtna and BC2 Environmental staff prior to any daily monitoring activities. DD&A staff took photographs before, during, and after work to document well installation and development impact. Before² and after photographs are included in Attachment C.

4 ANNUAL FOLLOW-UP SURVEYS

Annual follow-up surveys (annual surveys) are required to be performed for up to 3 years following the installation and development of the wells in accordance with the project's PBO (USFWS, 2017). The first annual survey will be conducted in 2023, employing the same methodology used for the baseline survey. The surveying biologists should communicate with all relevant parties prior to conducting annual surveys. The 2017 PBO states that in FONR:

“Monitoring will be suspended at sites where HMP annuals have not been documented during baseline surveys nor in the first year of follow up surveys. Additionally, surveys for HMP annuals will not be conducted in areas considered low quality habitat for these species” (USFWS, 2017).

During the 2022 Baseline surveys, four Monterey spineflower plants were found within secondary access route to SB-FDA-01, and this location will be monitored for three years. No HMP plants have been detected within the 50-foot radius of MW-BW-97-A and MW-BW-96-A, nor their secondary access routes. If the first annual follow-up survey results show no HMP annuals in these areas, these wells and their secondary access routes will be removed from the monitoring schedule. Well MW-BW-95-A will not be monitored in the follow-up surveys because only non-ground disturbing activities took place at that location (groundwater sampling in the existing well). Main access route past well MW-BW-95A will not be surveyed in the follow-up surveys, per USFWS' Revisions of Monitoring Plan for Federally Listed Plants in Portions of OU-1 (USFWS, 2013). The surveying biologist should provide a report for each annual survey summarizing survey activities and results, including photographic documentation, survey results, cartographic materials, and recommendations for mitigation measures, if necessary.

² Vegetation clearance was performed by the UC FONR Steward prior to the start of construction; therefore, “before” pictures were taken before drilling operations commenced but after vegetation had been cleared at each well site.

5 REFERENCES

- Ahtna Global LLC. (Ahtna). 2022. Fort Ord Natural Reserve Site Habitat Checklist (HCL). September 9.
- U.S. Army Corps of Engineers (USACE). 1997. Installation-Wide Multispecies Habitat Management Plan (HMP) for Former Fort Ord, California. April. AR# BW-1787.
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- Burleson Consulting Inc. (Burleson). 2020. Annual Rare Plant Survey, Former Fort Ord, California. October. AR# BW-2897.
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- HGL. 2012. 2011 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results, Fritzsche Army Airfield Fire Drill Area, Former Fort Ord, California. January. AR# BW-2614.
- HGL. 2013. 2012 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results, Operable Unit 1, Former Fort Ord, California. February. AR# OU1-600.
- HGL. 2014a. 2013 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results, Operable Unit 1, Former Fort Ord, California. December. AR# OU1-605.
- HGL. 2014b. 2014 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results, Operable Unit 1, Former Fort Ord, California. December. AR# OU1-612.
- HGL. 2015. 2015 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results, Operable Unit 1, Former Fort Ord, California. December. AR# OU1-622.
- HGL. 2016. 2015 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results, Operable Unit 1, Former Fort Ord, California. September. AR# OU1-622.2.
- HGL. 2017. 2016 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results, Operable Unit 1, Former Fort Ord, California. December. AR# OU1-628.

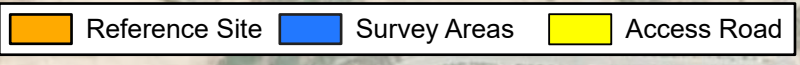
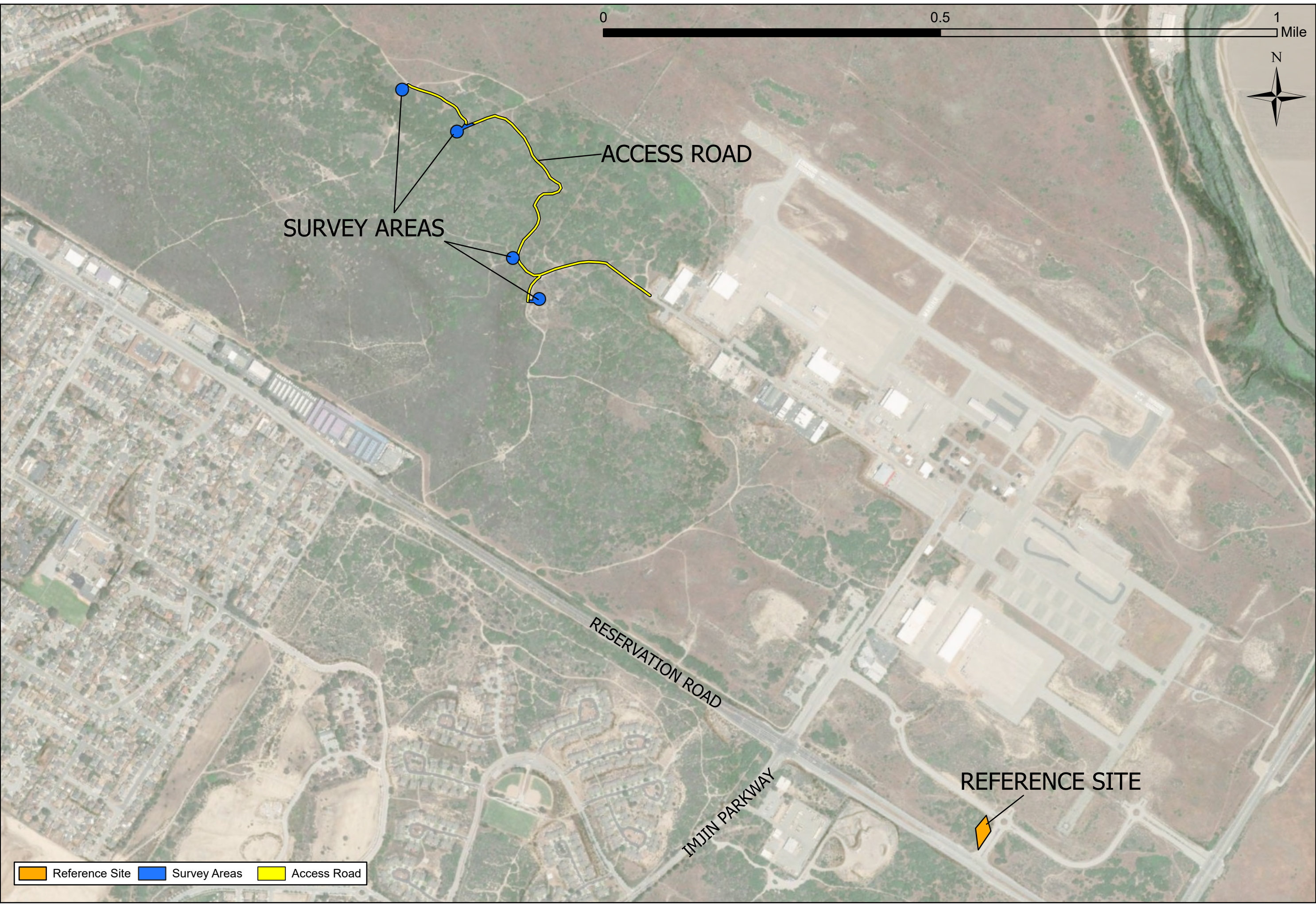
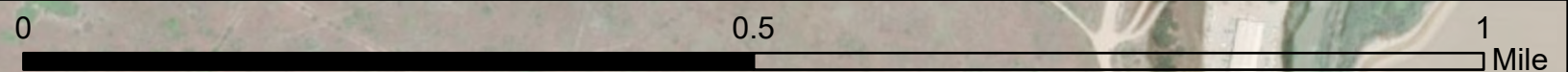
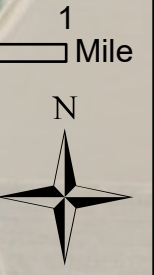
HGL. 2018. 2017 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results, Operable Unit 1, Former Fort Ord, California. December. AR# OU1-632.

U.S. Fish and Wildlife Service (USFWS). 2013. Revision of Monitoring Plan for Federally Listed Plants in Portions of Operable Unit-1 at Former Fort Ord, Monterey County, California. April 24. AR# BW-2657.

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USFWS. 2017. Reinitiation of Formal Consultation for Cleanup and property Transfer Actions Conducted at the Former Fort Ord, Monterey County, California (Original Consultation #8-8-09-F-74, 81440-2009-F-0334). June 7. AR# BW-2747A.

ATTACHMENT A
2022 BASELINE SURVEY RESULTS



Attachment A-1. 2022
Rare Plant Survey Results Overview and Details Map

Scale:
1:8,000

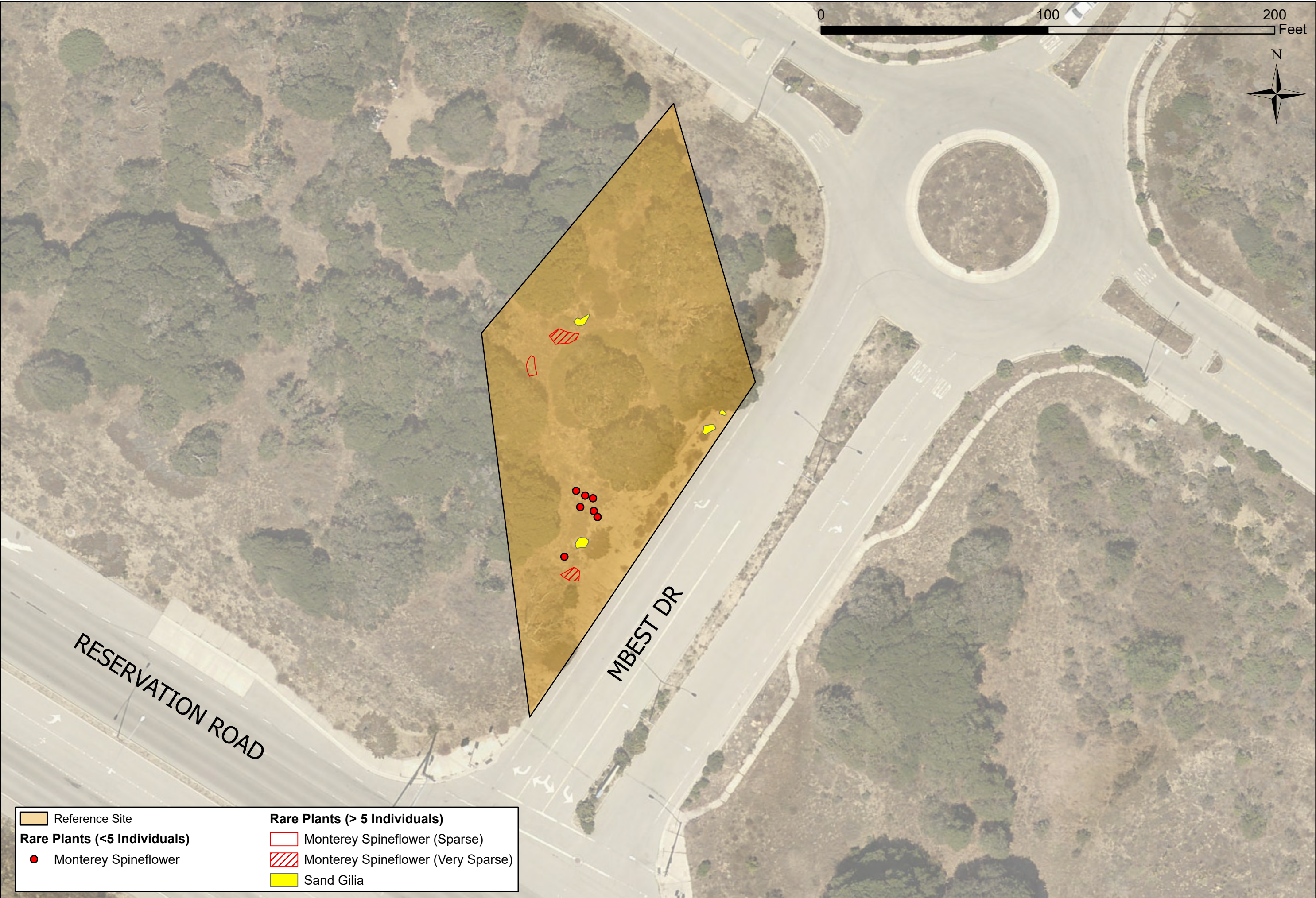
Denise Duffy & Associates, Inc.
Planning and Environmental Services


Date: 2/13/2023

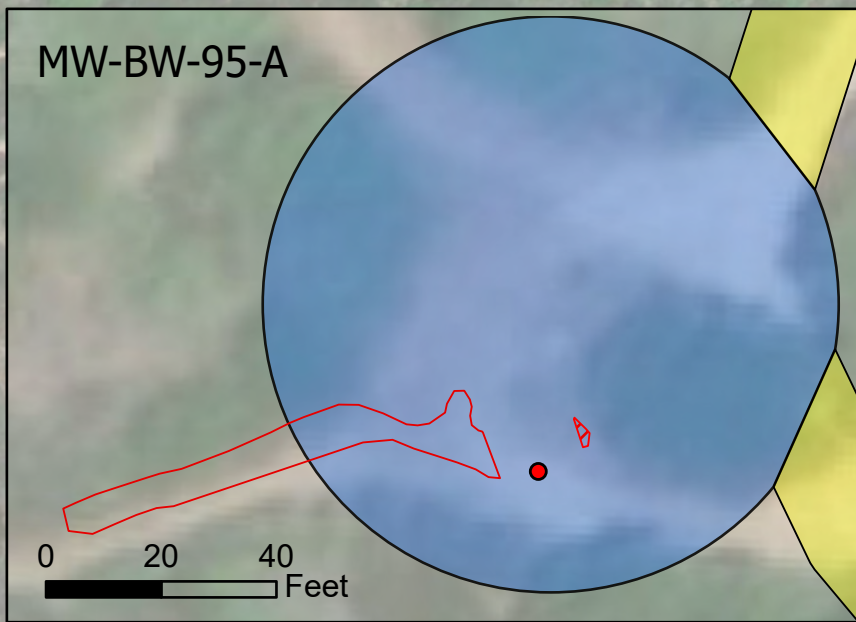
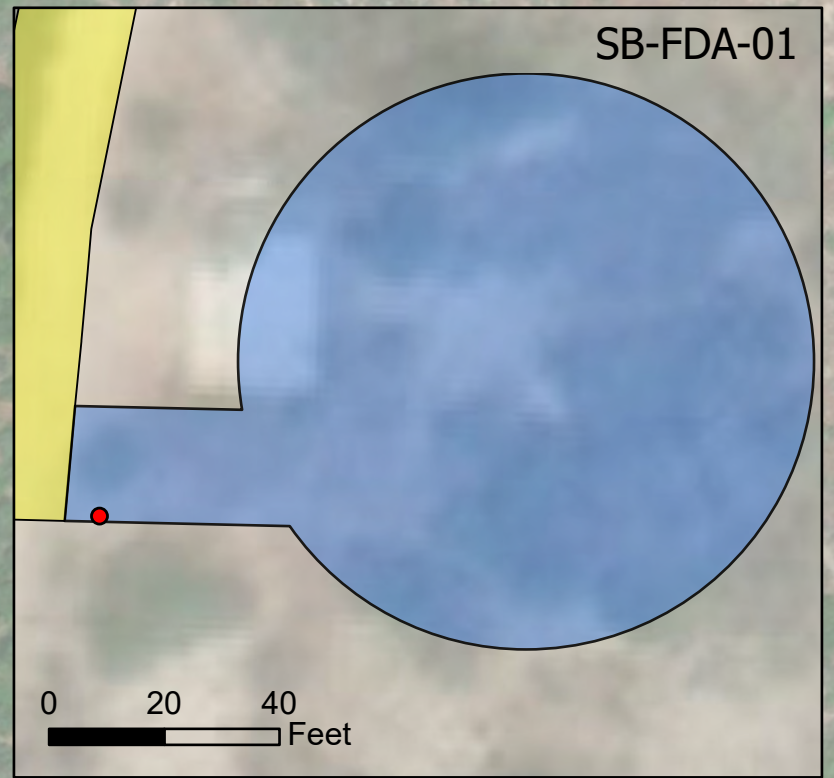
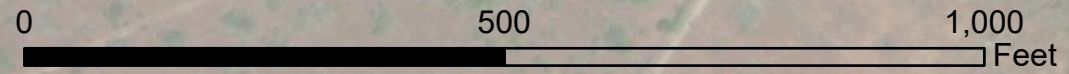
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0 100 200 Feet



Reference Site	Rare Plants (> 5 Individuals)
Rare Plants (<5 Individuals)	Monterey Spineflower (Sparse)
Monterey Spineflower	Monterey Spineflower (Very Sparse)
	Sand Gillia



Survey Area	Rare Plants (> 5 Individuals)
Access Road	Monterey gilia (Sparse)
Rare Plants (<5 Individuals)	Monterey spineflower (Sparse)
Monterey Spineflower	Monterey spineflower (Very Sparse)

Attachment A-3. 2022
Rare Plant Survey Results Overview and Details Map

Scale:
1:2,400

Denise Duffy & Associates, Inc.
 Planning and Environmental Services

Date: 2/13/2023



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ATTACHMENT B
CONSTRUCTION PHASE BIOLOGICAL
MONITORING LOG

- ▶ October 18, 2022 — **Project Kick-Off Meeting**
 - DD&A conducted initial Environmental Awareness Training for Ahtna and BC2 Environmental.
- ▶ October 19, 2022 — **Well Installation Activities Begun**
 - DD&A confirmed location of proposed well installations using GPS and delineated access routes and well worksite buffer.
 - DD&A monitored material staging materials around the SB-FDA-01 soil boring location.
 - DD&A monitored mobilization of staging materials to SB-FDA-01 while avoiding coast horned lizards and while avoiding vegetation to the greatest extent feasible.
 - DD&A marked the sensitive Seaside bird's beak (*Cordylanthus rigidus*) plant with flagging tape for avoidance at soil boring location SB-FDA-01.
 - DD&A monitored installation of well MW-BW-97-A.
 - DD&A monitored mobilization to well site MW-BW-97-A while avoiding coast horned lizards and while avoiding vegetation to the greatest extent feasible.
 - DD&A monitor provided 50 ft buffer around well site and advice to drilling crew on how best to avoid impacting spineflower populations.
- ▶ October 20, 2022
 - DD&A monitored installation of well MW-BW-97-A.
 - DD&A monitored drilling activities at well site MW-BW-97-A.
- ▶ October 21, 2022
 - BC2 Environmental continued well drilling at MW-BW-97-A.
- ▶ October 22, 2022
 - DD&A monitored installation of well MW-BW-96-A.
 - DD&A monitored mobilization to well site MW-BW-96-A while avoiding coast horned lizards and while avoiding vegetation to the greatest extent feasible.
 - DD&A monitor provided 50 ft buffer around well site and advice to drilling crew on how best to avoid impacting spineflower populations
- ▶ October 23, 2022 — **Soil Boring Activities Begun**
 - DD&A monitored soil boring of SB-FDA-01.
 - DD&A monitored mobilization to soil boring location SB-FDA-01 while avoiding coast horned lizards and while avoiding vegetation to the greatest extent feasible.
 - DD&A monitor provided 50 ft buffer around the soil boring location and advice to drilling crew on how best to avoid impacting spineflower populations.
 - DD&A observed BC2 Environmental avoiding the sensitive Seaside bird's beak plant that was flagged at soil boring location SB-FDA-01.
- ▶ October 24, 2022 — **Well Installation and Soil Boring Activities Completed**
 - DD&A monitored well installation at MW-BW-96A and MW-BW-97-A.
 - DD&A monitored mobilization between soil boring location SB-FDA-01, well site MW-BW-96-A, and well site MW-BW-96-A while avoiding coast horned lizards and while avoiding vegetation to the greatest extent feasible.
 - DD&A monitored mobilization out of the project site while avoiding coast horned lizards and while avoiding vegetation to the greatest extent feasible.
 - DD&A checked site conditions and photographed completed well locations.

- ▶ November 16, 2022 — **Well Development Activities Begun and were Completed**
 - DD&A conducted initial Environmental Awareness Training for BC2 Environmental well development personnel.
 - DD&A assisted with mobilization of well development equipment to well sites MW-BW-96-A and MW-BW-97-A.
 - DD&A confirmed access routes and discussed methodology for moving between well installation locations (walking in front of equipment to avoid impacting coast horned lizard).

ATTACHMENT C
PHOTO JOURNAL



Photo 1. Well Installation Site MW-BW-97-A facing southwest, before installation.



Photo 1. Well Installation Site MW-BW-97-A facing southwest, after installation.



Photo 3. Well Installation Site MW-BW-96-A facing southwest, before installation.



Photo 4. Well Installation Site MW-BW-96-A facing southwest, after installation.



Photo 5. Soil Boring Location SB-FDA-01 facing east, before soil boring activities.



Photo 6. Soil Boring Location SB-FDA-01 facing east, after soil boring activities.

ATTACHMENT D
HABITAT CHECKLIST

FORT ORD NATURAL RESERVE SITE HABITAT CHECKLIST

The following are requirements to minimize biological disturbances to protected species and habitat.

Please notify Matthew Johnson, DD&A Biologist (831-917-3242), *before* proceeding if work tasks or work boundaries change, additional vegetation removal is necessary, vegetation cutting methods change, or any other conditions change. Field Supervisors must receive a copy of this checklist. Contact Number for the BRAC Biologist is (831) 242-7918.

SITE:	UC FONR PFAS Investigation	DATE:	9/6/2022
WORK TO BE CONDUCTED:	Well Installation and Soil Boring		

1. LAND USE:	<input checked="" type="checkbox"/> Habitat Reserve	<input type="checkbox"/> Development Area	<input type="checkbox"/> Other (specify):
2. LAND OWNER:	<input type="checkbox"/> Army	Location:	
	<input type="checkbox"/> BLM	Location:	
	Other: UC	Location:	Fort Ord Natural Reserve

3. ENDANGERED, THREATENED, RARE, OR HMP-LISTED SPECIES	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Flagged/Marked
Species:	<ul style="list-style-type: none"> ▪ Black legless lizard (<i>Anniella pulchra</i>) (CDFW SSC) (BLL) ▪ California tiger salamander (<i>Ambystoma californiense</i>; CTS) (FT, ST, CDFW SSC) ▪ Coast horned lizard (<i>Phrynosoma blainvillii</i>) (CDFW SSC) ▪ Coast wallflower (<i>Erysimum ammophilum</i>) (CNPS 1B) ▪ Eastwood's goldenbush (<i>Ericameria fasciculata</i>) (CNPS 1B) ▪ Monterey ceanothus (<i>Ceanothus rigidus</i>) (CNPS 4) ▪ Monterey dusky-footed woodrat (<i>Neotoma fuscipes luciana</i>) ▪ Monterey manzanita (<i>Arctostaphylos montereyensis</i>) (CNPS 1B) ▪ Monterey ornate shrew (<i>Sorex ornatus salarius</i>) (CDFW SSC) ▪ Monterey spineflower (<i>Chorizanthe pungens</i> var. <i>pungens</i>) (FE, CNPS 1B) ▪ Sand gilia (<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>) (FE, ST, CNPS 1B) ▪ Sandmat manzanita (<i>Arctostaphylos pumila</i>) (CNPS 1B) ▪ Seaside bird's-beak (<i>Cordylanthus rigidus</i> var. <i>littoralis</i>) (SE, CNPS 1B)
Location:	Monterey spineflower and sand gilia flagged for avoidance, when possible.
Grid Numbers:	3612167

Restrictions:

- Impacts to shrub species will be avoided to the greatest extent feasible.
- Remain on or within designated access routes and delineated well installation buffers at all times (see attached map).
- CTS encounters must be reported immediately to Field Supervisor and DD&A Biologist. CTS must only be handled by a Service-approved biologist. Contact Matthew Johnson (831-917-3242) to document, handle, or relocate CTS if encountered. Mr. Johnson will coordinate with the BRAC biologist (831-242-7918) during these processes. Work must stop until CTS can be relocated. CTS field observation form will be filled out by Service-approved biologist.
- BLL encounters should be reported immediately to Field Supervisor and DD&A Biologist. Field Supervisor or DD&A Biologist should complete the attached BLL Field Observation Form. BLL should be relocated by Field Supervisor or DD&A Biologist close to the original site (20-100 ft), under shade, and on the surface allowing the specimen to bury itself.
- Do not exceed 15 MPH within FONR.
- Do not litter. Remove trash from the job site on a daily basis.
- DD&A Biologists will escort drill rigs and support trucks as they traverse the FONR to clear the road for coast horned lizards.

- No pets, firearms, or hunting are allowed.
- No fires are allowed. Report any smoke or open flame immediately to the Ahtna Field Supervisor. Keep firefighting equipment in good operating order and readily available.
- Clean up and report all hazardous material spills immediately.
- Do not discharge any water or drill cuttings into unapproved areas.
- Holes and trenches left at the end of each workday should be covered or escape ramps shall be built to allow wildlife to exit.
- Report trapped, injured, or dead wildlife to the DD&A Biologist.
- Keep all equipment either in approved work areas or travel corridors, or in approved staging/storage areas.
- Keep fluid spill containment and clean up materials readily available.

4. VERNAL POOLS/PONDS PRESENT		Yes	<input checked="" type="checkbox"/> No	Flagged/Marked
Location:				
Grid Numbers:				
Work Can Proceed in Pools/Ponds:		Yes		No
Restrictions:				

5. VEGETATION REMOVAL	
<input type="checkbox"/> No Removal Needed	Location:
<input type="checkbox"/> Manual Removal Needed	Location:
<input checked="" type="checkbox"/> Mechanical Removal Needed	Location: All secondary access routes and proposed well locations.
Vegetation Removal Restrictions:	
<ul style="list-style-type: none"> ▪ Keep trimming/removal of vegetation to the minimum necessary to complete well installation. ▪ Delineate area to be mowed prior to vegetation removal. 	

6. EROSION CONCERNS/SITE RESTORATION:
<ul style="list-style-type: none"> ▪ Following the well installation activities, disturbed land around the wells will be restored as closely as possible to its original condition by limited grading after coordination with the BRAC Biologist.

7. SITE ACCESS:
<ul style="list-style-type: none"> ▪ FONR access should be limited to the gate at the west end of Neeson Road. ▪ Access to work areas shall be along approved travel corridors.

8. INVASIVE SPECIES:
<ul style="list-style-type: none"> ▪ All equipment coming from off-site must be dry-brushed prior to entering FONR to reduce the potential to spread non-native invasive plant species.

9. ADDITIONAL SITE CONCERNS:
<ul style="list-style-type: none"> ▪ Matting to reduce the level of soil disturbance may be required to access some of the well installation locations.

This checklist has been read, approved, and signed by the following:

DD&A Biologist:  Date: 09/07/2022

Ahtna Project Manager:  Date: 09/07/2022

Ahtna Field Supervisor:  Date: 7/7/22

BRAC Biologist: KOWALSKI.BARTHOLOMEW.L.1387978115 Digitally signed by KOWALSKI.BARTHOLOMEW.L.1387978115 Date: 2022.09.07 11:34:32 -07'00' Date: _____

FIELD OBSERVATION FORM – CTS/BLL

If a California tiger salamander (CTS) or black legless lizard (BLL) is found, notify Matthew Johnson (831-917-3242) who will coordinate with Bart Kowalski, the BRAC biologist. Only service approved biologist should fill out the CTS field observation form, and only service approved biologist can handle and move CTS out of the way. If CTS is encountered all work needs to stop until service approved biologist gets to the location and relocates the CTS. After completing this form attach a photograph of the specimen (if possible) and a map showing the location of the sighting, and return to Matt Johnson, who will forward to BRAC:

Mr. Bart Kowalski
Building 4463, Gigling Rd, Rm 101
Monterey, CA 93944-5004
(831) 242-7918

Location UC FONR **Date/Time** _____
(OE site, Range # etc)

Grid # _____ **Northing/Easting or**
Approx. Coordinates (ft) _____

Type of Activity (check one or write in)

- Well Installation/Drilling
- Vegetation clearance
- Other _____

Weather: Air Temp. _____ Wind _____ Sunny/Cloudy _____

Depth if known _____

Habitat Description (e.g. Maritime chaparral, oak woodland, grassland, vegetation height, presence of surface litter/debris, soil type, plant species where specimen found, etc.):

Description of specimen (live/ injured/ dead, color, condition, behavior etc.):

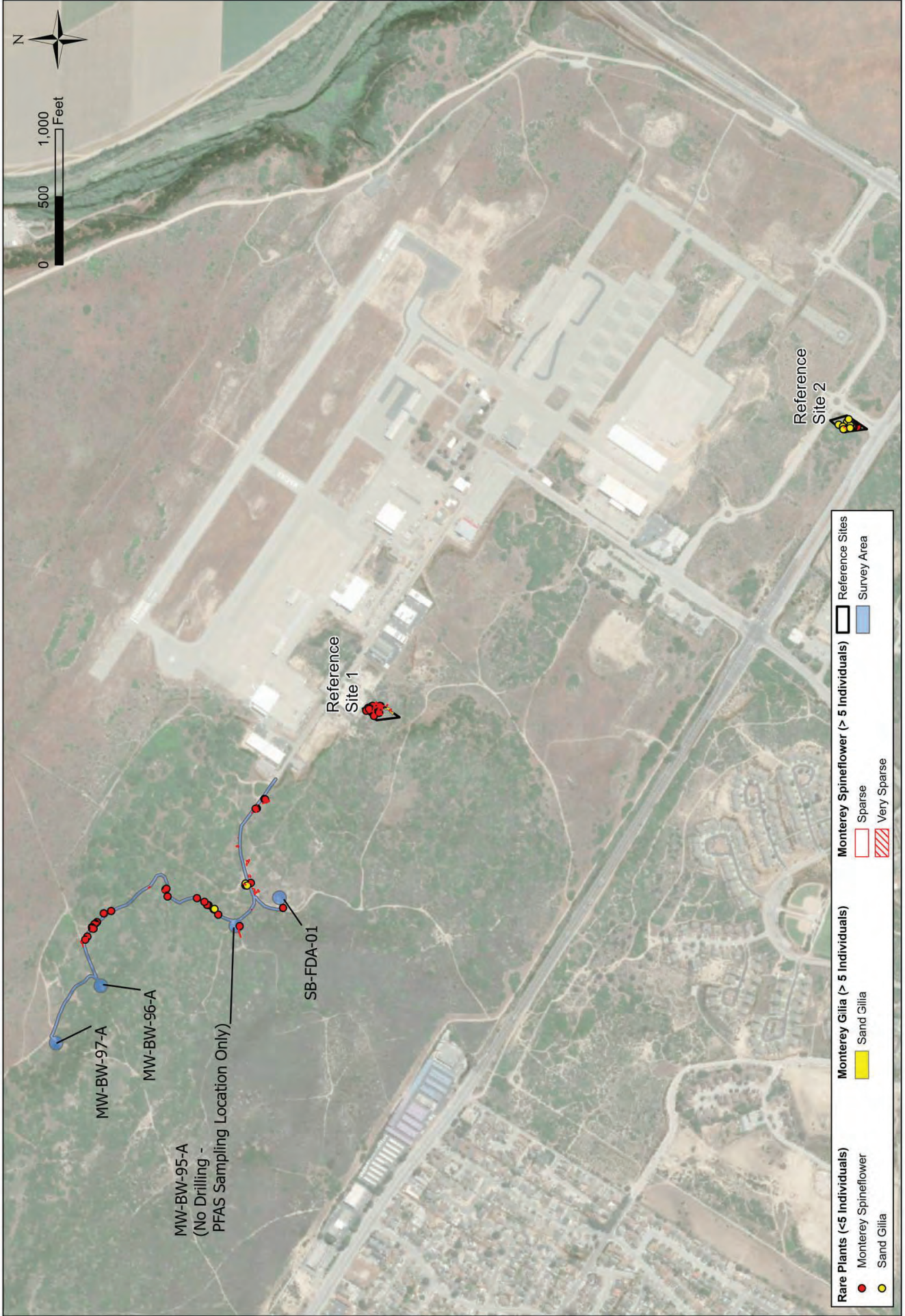
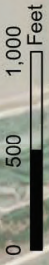
Length (inches): _____

Other Notes: _____

Disposition: Found by: _____

- Observed, released to same location or adjacent habitat
- Observation form completed By: _____
- Injured or killed (placed in a Ziploc or plastic bag, and refrigerated)
- Other _____

Attachments: Location map Photograph (specimen and habitat in which found)



Rare Plants (<5 Individuals)	Monterey Spineflower (> 5 Individuals)	Reference Sites
● Monterey Spineflower	■ Sparse	□ Reference Sites
● Sand Gilia	■ Very Sparse	■ Survey Area
Monterey Gilia (> 5 Individuals)		
■ Sand Gilia		

Document Path: E:\GIS\GIS_Projects\2022-22 Alhna FONR 2022 Well Installation\Final Products\AHTNA FONR 2022 Well Install.aprx







Rare Plants (<5 Individuals)	
●	Monterey Spineflower
●	Sand Gilia
Monterey Spineflower (> 5 Individuals)	
□	Sparse
▨	Very Sparse
Monterey Gilia (> 5 Individuals)	
■	Sand Gilia
Survey Area	
□	Survey Area





- Rare Plants (<5 Individuals)**
 - Monterey Spineflower
 - Sand Gilia
- Monterey Spineflower (> 5 Individuals)**
 - ▭ Sparse
 - ▨ Very Sparse
- Monterey Gilia (> 5 Individuals)**
 - ▭ Sand Gilia
- Survey Area**
 - ▭ Survey Area



- Rare Plants (<5 Individuals)**
- Monterey Spineflower
- Sand Gilia
- Monterey Spineflower (> 5 Individuals)**
- Sparse
- ▨ Very Sparse
- Monterey Gilia (> 5 Individuals)**
- Sand Gilia
- Survey Area**
- Survey Area





Rare Plants (<5 Individuals)	
●	Monterey Spineflower
●	Sand Gilia
Monterey Spineflower (> 5 Individuals)	
	Sparse
	Very Sparse
Monterey Gilia (> 5 Individuals)	
	Sand Gilia
Survey Area	
	Survey Area







Rare Plants (<5 Individuals)
● Monterey Spineflower
● Sand Gilia
Monterey Spineflower (> 5 Individuals)
▨ Sparse
▨ Very Sparse
Monterey Gilia (> 5 Individuals)
■ Sand Gilia
Survey Area
□ Survey Area





Rare Plants (<5 Individuals)	
●	Monterey Spineflower
●	Sand Gilia
Monterey Spineflower (> 5 Individuals)	
	Sparse
	Very Sparse
Monterey Gilia (> 5 Individuals)	
	Sand Gilia
Survey Area	
	Survey Area



- Rare Plants (<5 Individuals)**
 - Monterey Spineflower (Red dot)
 - Sand Gilia (Yellow dot)
- Monterey Spineflower (> 5 Individuals)**
 - Sparse (White box with diagonal lines)
 - Very Sparse (Red box with diagonal lines)
- Monterey Gilia (> 5 Individuals)**
 - Sand Gilia (Yellow box)
- Survey Area**
 - Survey Area (White box)







Rare Plants (<5 Individuals)

- Monterey Spineflower
- Sand Gilia

Monterey Spineflower (> 5 Individuals)

- Sparse
- Very Sparse

Monterey Gilia (> 5 Individuals)

- Sand Gilia

Survey Area

- Survey Area



- Rare Plants (<5 Individuals)**
 - Monterey Spineflower (Red circle)
 - Sand Gilia (Yellow circle)
- Monterey Spineflower (> 5 Individuals)**
 - Sparse (Red outline)
 - Very Sparse (Red hatched)
- Monterey Gilia (> 5 Individuals)**
 - Sand Gilia (Yellow fill)
- Survey Area**
 - Survey Area (White fill)



- Rare Plants (<5 Individuals)**
 - Monterey Spineflower
 - Sand Gilia
- Monterey Spineflower (> 5 Individuals)**
 - Sparse
 - ▨ Very Sparse
- Monterey Gilia (> 5 Individuals)**
 - Sand Gilia
- Survey Area**
 - Survey Area





Rare Plants (<5 Individuals)	
●	Monterey Spineflower
●	Sand Gilia
Monterey Spineflower (> 5 Individuals)	
	Sparse
	Very Sparse
Monterey Gilia (> 5 Individuals)	
	Sand Gilia
	Survey Area