



McCORMICK

BIOLOGICAL, INC.

Biological Sciences – Inventory, Permitting, and Planning

MEMORANDUM

Date: March 25, 2015

To: Jennifer Kaminsky

Of: Burns and McDonnell Engineering Company, Inc.

From: Randi McCormick, Principal Biologist

Subject: Evaluation of 40 Pools Identified on Panoche Valley Solar Footprint

Purpose

The purpose of this memorandum is to briefly document a field evaluation conducted by McCormick Biological, Inc. on the Panoche Solar Project Footprint (approximately 2,506 acres) located in San Benito County, California (Figure 1). Forty pool locations that were previously mapped within the Project Footprint by Live Oak Associates (LOA) were evaluated for characteristics that may indicate presence of vernal pools. A formal wetland delineation was not completed during this evaluation. Pools were determined to be possible vernal pools based on observation of appropriate evidence of hydrology and characteristic vernal pool or wetland vegetation. Even though rainfall conditions during the survey period were below average; vegetative species indicative of hydrophytic conditions typically present in ephemeral and vernal pools were identifiable. No soil sampling was conducted as part of this effort. Presence of hydrophytic vegetation was used as a proxy for determining possible presence of hydric soils. Pools were classified as road puddles, upland with overflowing water source, ephemeral pools with upland vegetation, or possible vernal pools. Standardized field forms were completed for each pool that included identification of predominant vegetation, comments regarding potential water source, and other pertinent information. Representative photographs were recorded for the majority of the pools. The field evaluation was conducted between March 12 and March 13, 2015.

None of the pools were inundated at the time of the evaluation. Of the 40 pool locations evaluated, two were determined to represent possible vernal pools (5 and 36) (Table 1, Figure 2). It should be noted that Pools 5 and 36 appeared to be connected hydrologically but were separated by an unpaved road. Based on dominance by upland plant species, 18 pools were classified as ephemeral pools. These pools were predominantly located adjacent to roads and had evidence of road runoff. Nine of the pools were classified as road puddles. Nine of the previously mapped pools by LOA were not pools, but locations where cattle troughs or tanks had overflowed, resulting in presence of dense upland vegetation. One of the pool locations appeared to be mapped within the Little Panoche right-of-way; however, no evidence of a pool was located (pool 46).

Findings

The possible vernal pools that were evaluated (5 and 36) are located near the proposed Las Aguilas switchyard (Figure 1). The impacts to these possible vernal pools have been accounted for in the Lake and Streambed Alteration Agreement (LSAA) submitted to the California Department of Fish and Wildlife (CDFW) in March 2015. The pools in this area have been delineated as a State water drainage and considered as a drainage impact that will be permitted through the project's LSAA with CDFW. The impact planned for this project is due to grading necessary for the proposed construction of the switching station. The grading will impact the State waters drainage in the center portion of the Project Footprint, west of Little Panoche Road. The ground disturbance caused by these planned impacts would result in approximately 5,409 ft² of impact to State waters.

Table 1: Results of Mapped Pool Evaluation – Panoche Valley Solar Project Footprint

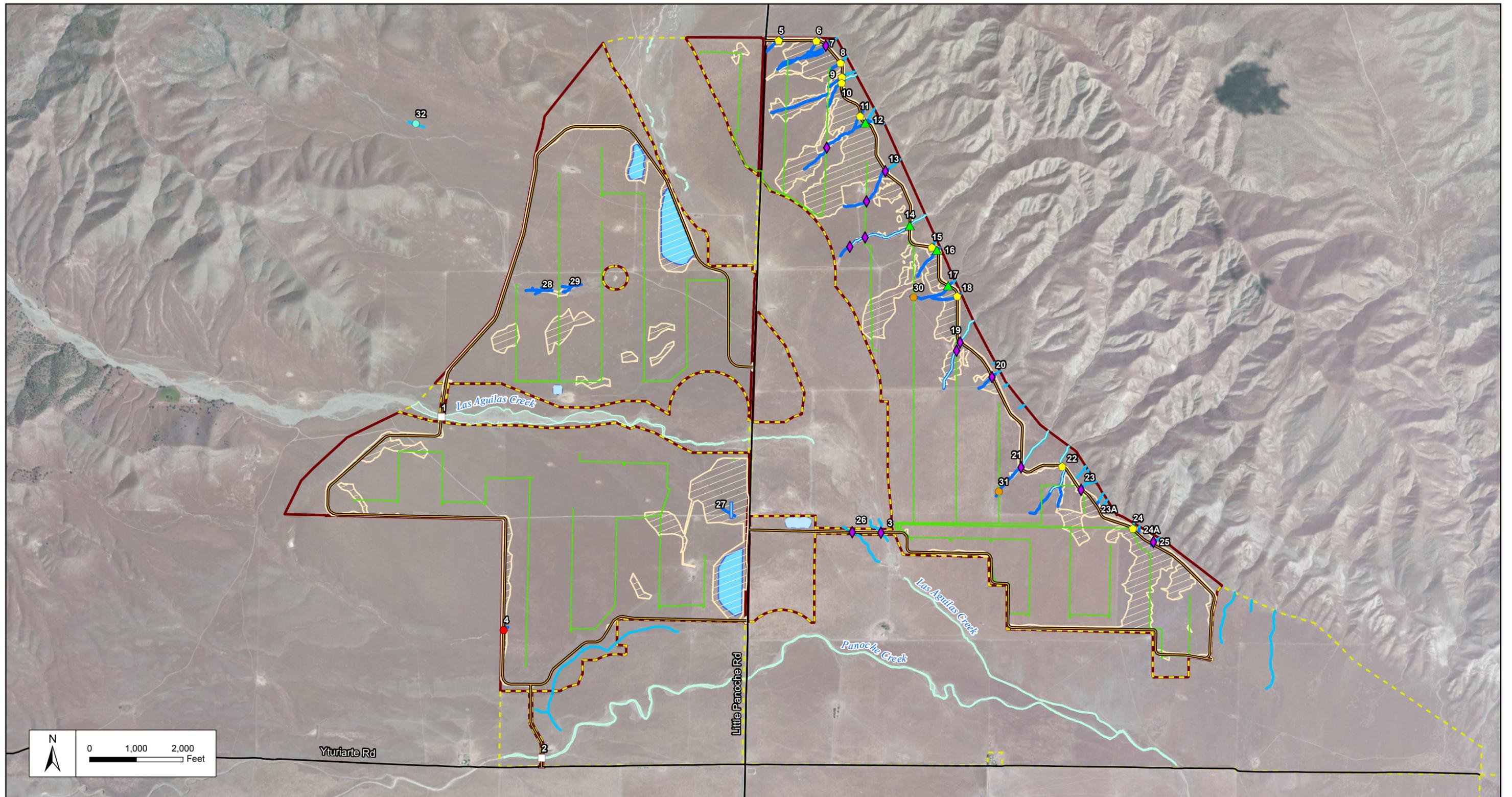
| Pool # | Plants observed | Comments | Classification |
|--------|--|---|---|
| 1 | <i>Malva parviflorum, Hordeum murinum</i> | thick vegetation near water trough; no evidence of ponding | Upland with overflowing water source |
| 2 | <i>Erodium cicutarium, Hordeum murinum, Matricaria discoidea, Lepidium nitidum, Plagiobothrys canescens</i> | impounded area from drainage to the west | Ephemeral pool; possible vernal pool hydrology appears present but vegetation dominated by upland plant species |
| 3 | No vegetation in depression | dried mud in road | road puddle from water collecting on road |
| 4 | No vegetation in depression | dried mud in road | road puddle from water collecting on road |
| 5, 36 | <i>Psilocarphus brevissimus, Lepidium nitidum, Hordeum murinum, Erodium cicutarium, Erodium brachycarpum, Plagiobothrys bracteatus, Lasthenia gracilis, Matricaria discoidea, Festuca microstachys, Plagiobothrys acanthocarpus, Festuca bromoides, Bromus madritensis, Dichelostemma capitata, Hordeum murinum, Bromus hordeaceus</i> | several species are indicative of vernal pools/wetlands, two pools connected (5/36), road runs through | Possible vernal pool based on hydrology and vegetation; no soil sampling conducted |
| 6 | No vegetation in depression | dried mud in road | road puddle from water collecting on road |
| 7 | <i>Erodium brachycarpum, Plagiobothrys canescens, Festuca bromoides, Bromus madritensis, Trifolium depauperatum var. truncatum, Erodium cicutarium, Microseris douglasii, Crassula connata, Matricaria discoidea</i> | low spot appears to be gathering water from road runoff | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 8, 9 | <i>Erodium cicutarium, Malva parviflora, Poa annua, Hordeum murinum, Bromus madritensis, Lepidium nitidum</i> | Pools are mapped in upland near leaking water tank, adjacent ephemeral ditch that water is leaking into, heads into Conservation Lands to the south | "Pools" = upland; Ephemeral swale nearby with overflowing water source |
| 10 | <i>Vulpia myuros, Matricaria discoidea, Erodium brachycarpum, Lepidium nitidum, Erodium cicutarium, Plagiobothrys bracteatus,</i> | Part of series of low spots in road that extend slightly off of road | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 11, 42 | <i>Bromus madritensis, Erodium cicutarium, Erodium brachycarpum, Lepidium nitidum</i> | Low spot on road; similar to nearby Pool 11, which is off of the road extending to fenceline | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 17 | <i>Sisymbrium irio, Hordeum murinum, Malva parviflorum</i> | Trough and tank with planted eucalyptus | upland with overflowing water source |

| | | | |
|---------|---|--|--|
| 20 | <i>Hordeum murinum</i> , <i>Lepidium nitidum</i> , <i>Erodium cicutarium</i> , <i>Microseris douglasii</i> , <i>Plantago erecta</i> , <i>Lasthenia gracilis</i> , <i>Bromus hordeaceus</i> , <i>Plagiobothrys canescens</i> , <i>Psilocarphus brevissimus</i> | Cracked mud in road (dry); appears to follow remnant furrow to the southeast | road puddle from water collecting on road |
| 27 | <i>Hordeum murinum</i> , <i>Lepidium nitidum</i> , <i>Erodium cicutarium</i> , <i>Malva parviflora</i> | thick vegetation near water trough; no ponding apparent | upland with overflowing water source |
| 31, 94 | <i>Malva parviflora</i> , <i>Hordeum murinum</i> , <i>Erodium cicutarium</i> | thick vegetation near water trough; low spots | upland with overflowing water source |
| 37 | No vegetation in depression | dried mud in road | road puddle from water collecting on road |
| 38 | <i>Erodium brachycarpum</i> , <i>Plagiobothrys canescens</i> , <i>Festuca bromoides</i> , <i>Bromus madritensis</i> , <i>Trifolium depauperatum</i> var. <i>truncatum</i> , <i>Erodium cicutarium</i> , <i>Microseris douglasii</i> , <i>Crassula connata</i> , <i>Matricaria discoidea</i> | low spot appears to be gathering water from road runoff | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 40, 41 | <i>Erodium cicutarium</i> , <i>Erodium brachycarpum</i> , <i>Festuca myuros</i> , <i>Bromus madritensis</i> , <i>Lepidium nitidum</i> , <i>Matricaria discoidea</i> , <i>Leptosiphon bicolor</i> , <i>Dichelostemma capitatum</i> | 40 and 41 are connected; small swale from road northeast to fence line | Ephemeral pool; hydrology appears present but vegetation dominated by upland plant species |
| 43 | <i>Bromus madritensis</i> , <i>Erodium cicutarium</i> , <i>Erodium brachycarpum</i> , <i>Lepidium nitidum</i> | Low spot on road that extends slightly off of road | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 46 | | No depression or pool found at coordinates | |
| 48 | <i>Malva parviflorum</i> , <i>Hordeum murinum</i> , <i>Erodium cicutarium</i> , <i>Dichelostemma capitatum</i> , <i>Sisymbrium irio</i> | thick vegetation near water trough; no ponding apparent | upland with overflowing water source |
| 49, 103 | <i>Lepidium nitidum</i> , <i>Malva parviflora</i> , <i>Matricaria discoidea</i> , <i>Erodium cicutarium</i> | dried mud in road with some vegetation in middle and edges | road puddle from water collecting on road |
| 51 | <i>Plagiobothrys leptocladus</i> | a few plants in dried mud | Plant observed may be found in vernal pools; not enough evidence to classify as possible vernal pool with limited vegetative cover; Ephemeral pool |
| 56 | <i>Hordeum murinum</i> , <i>Bromus hordeaceus</i> , <i>Erodium cicutarium</i> , <i>Erodium brachycarpum</i> , <i>Lomatium</i> (1), <i>Plagiobothrys bracteatum</i> (5), <i>Festuca myuros</i> , <i>Lepidium nitidum</i> | low spot on road that extends slightly off of road | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |

| | | | |
|-----|--|--|---|
| 57 | <i>Hordeum murinum, Bromus hordeaceus, Erodium cicutarium, Erodium brachycarpum, Festuca myuros, Lepidium nitidum, Lupinus bicolor, Plagiobothrys canescens, Castilleja brevistyla</i> | Low spot on road that extends slightly off of road | road puddle from water collecting on road |
| 58 | <i>Hordeum murinum, Bromus hordeaceus, Erodium cicutarium, Erodium brachycarpum, Festuca myuros, Lepidium nitidum, Lupinus bicolor, Plagiobothrys canescens, Castilleja brevistyla</i> | Small swale from road runoff approximately 100' a long road | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 73 | <i>Bromus madritensis, Erodium cicutarium, Erodium brachycarpum, Lepidium nitidum</i> | Low spot on road that extends slightly off of road | road puddle from water collecting on road |
| 74 | <i>Festuca myuros, Matricaria discoidea, Erodium brachycarpum, Lepidium nitidum, Erodium cicutarium</i> | Part of series of low spots in road that extend slightly off of road | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 75 | <i>Festuca myuros, Matricaria discoidea, Erodium brachycarpum, Lepidium nitidum, Erodium cicutarium</i> | Part of series of low spots in road that extend slightly off of road | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 76 | <i>Festuca myuros, Matricaria discoidea, Erodium brachycarpum, Lepidium nitidum, Erodium cicutarium</i> | Part of series of low spots in road that extend slightly off of road | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 77 | <i>Festuca myuros, Matricaria discoidea, Erodium brachycarpum, Lepidium nitidum, Erodium cicutarium</i> | Part of series of low spots in road that extend slightly off of road | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 93 | <i>Malva parviflora, Hordeum murinum, Bromus madritensis, Sisymbrium irio</i> | thick vegetation near water trough; no ponding apparent | upland with overflowing water source |
| 101 | <i>Festuca myuros, Matricaria discoidea, Erodium brachycarpum, Lepidium nitidum, Erodium cicutarium</i> | Part of series of low spots in road that extend slightly off of road | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 105 | <i>Lepidium nitidum, Lepidium dictyotum, Hordeum murinum, Erodium cicutarium</i> | Part of larger swale extending east across Little Panoche Road and northwest. Dried mud present, hoof prints | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |
| 106 | <i>Festuca myuros, Matricaria matricarioides, Erodium brachycarpum, Lepidium nitidum, Erodium cicutarium</i> | Part of series of low spots in road (along with 40, 41) | Upland with road overflow; ephemeral pool; vegetation dominated by upland plant species |

Participating Botanists

The following qualified biologist participated in the survey efforts: Marcus Jones, Ed Kentner, Russell Kokx, Eve Laeger, Randi McCormick, Gene Moise, Keir Morse, and Jordan Zylstra.



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|---------------------------------|---------------------------------|---------------------|--------------------|
| Project Footprint | Perimeter Road | Drainage | Low Water Crossing |
| Valley Floor Conservation Lands | AC Block Feeder | Drainage Impact | Single Span Bridge |
| Grading Area | Federal Jurisdictional Drainage | CTS Mitigation Pond | Trench |
| Detention Pond | Temporary Water Pond | Culvert | Vented Ford |
| | | Diversion | |

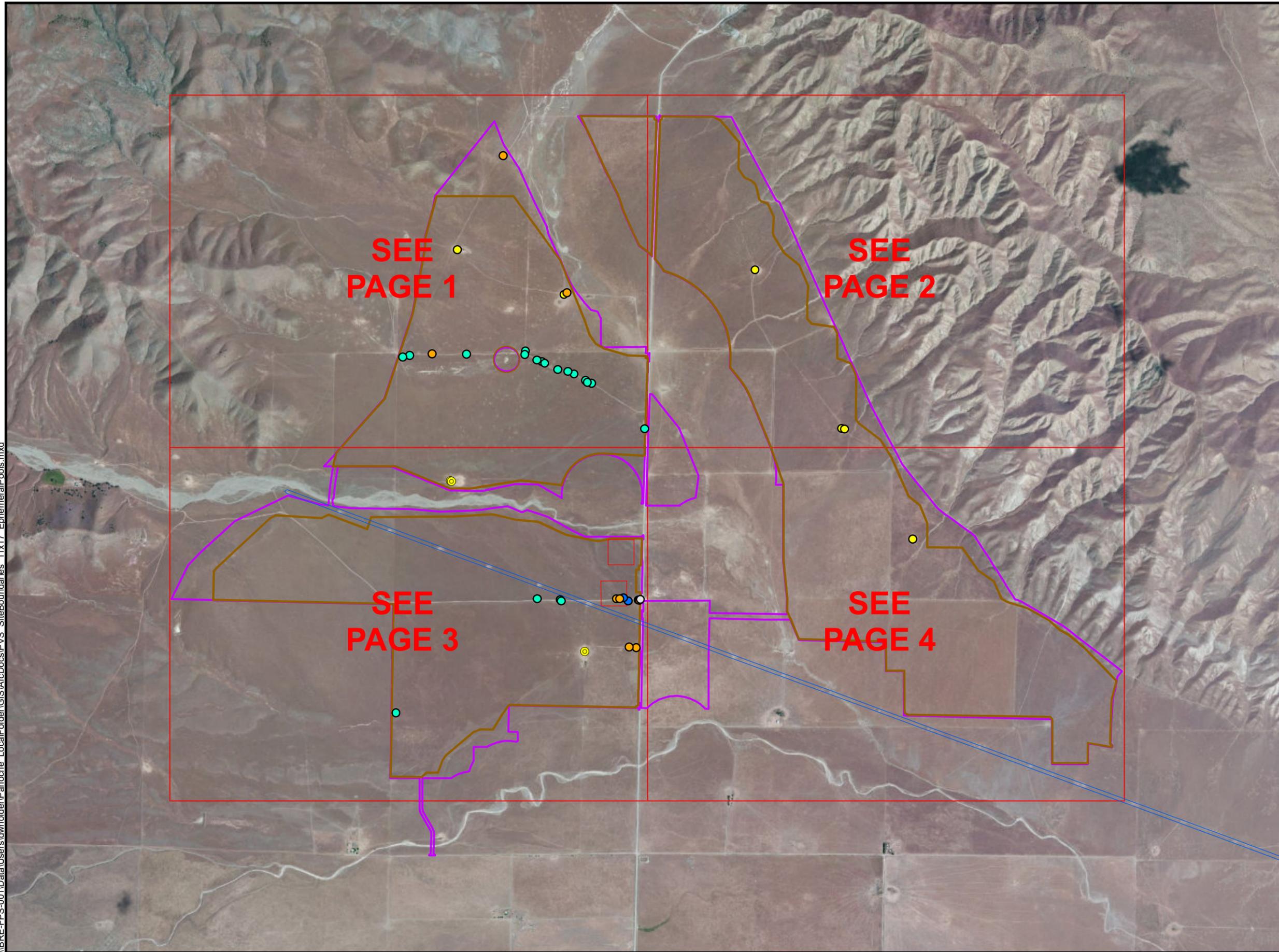
Panoche Valley Solar Project

Drainage Impacts

FIGURE

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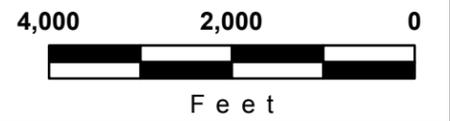


Legend

-  PVS Project Footprint
-  PVS Perimeter Fence
-  Substation and Switchyard
-  ROW

Ephemeral Pools

-  Ephemeral pool
-  Possible vernal pool
-  Road puddle
-  Trough/tank overflowing into upland
-  Upland with overflowing water source (drainage being inundated to the south)
-  No pool found; outside of project fence on Little Panoche Road

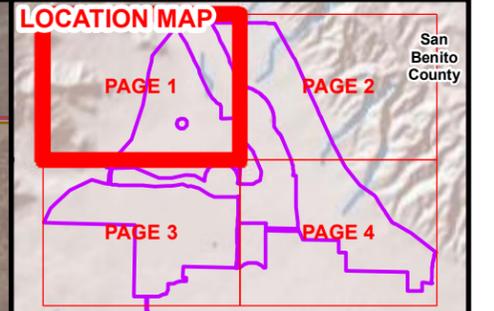


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**EPHEMERAL POOLS
OVERVIEW**

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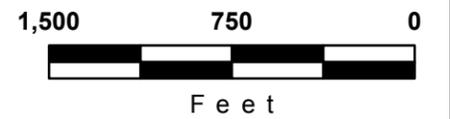


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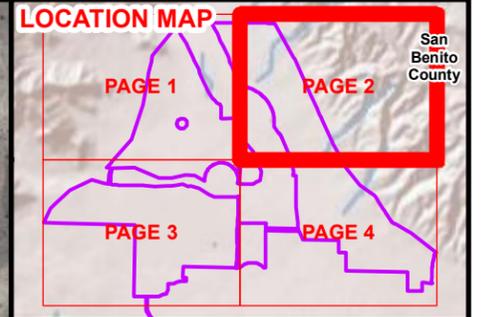
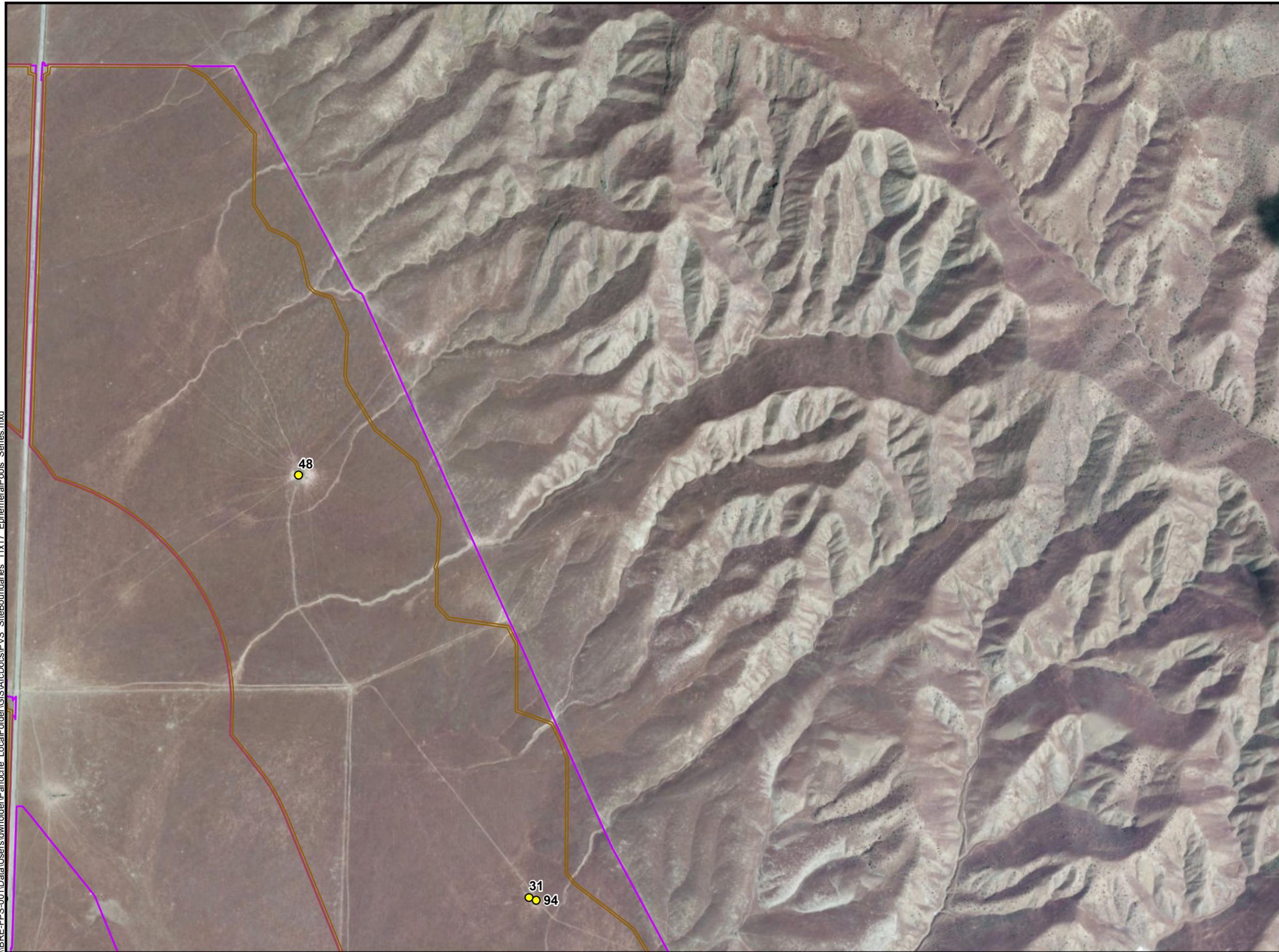


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**EPHEMERAL POOLS
DETAIL PAGE 1 of 4**

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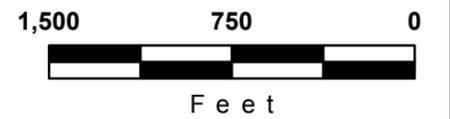


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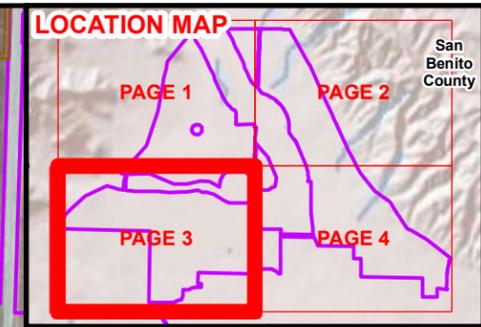
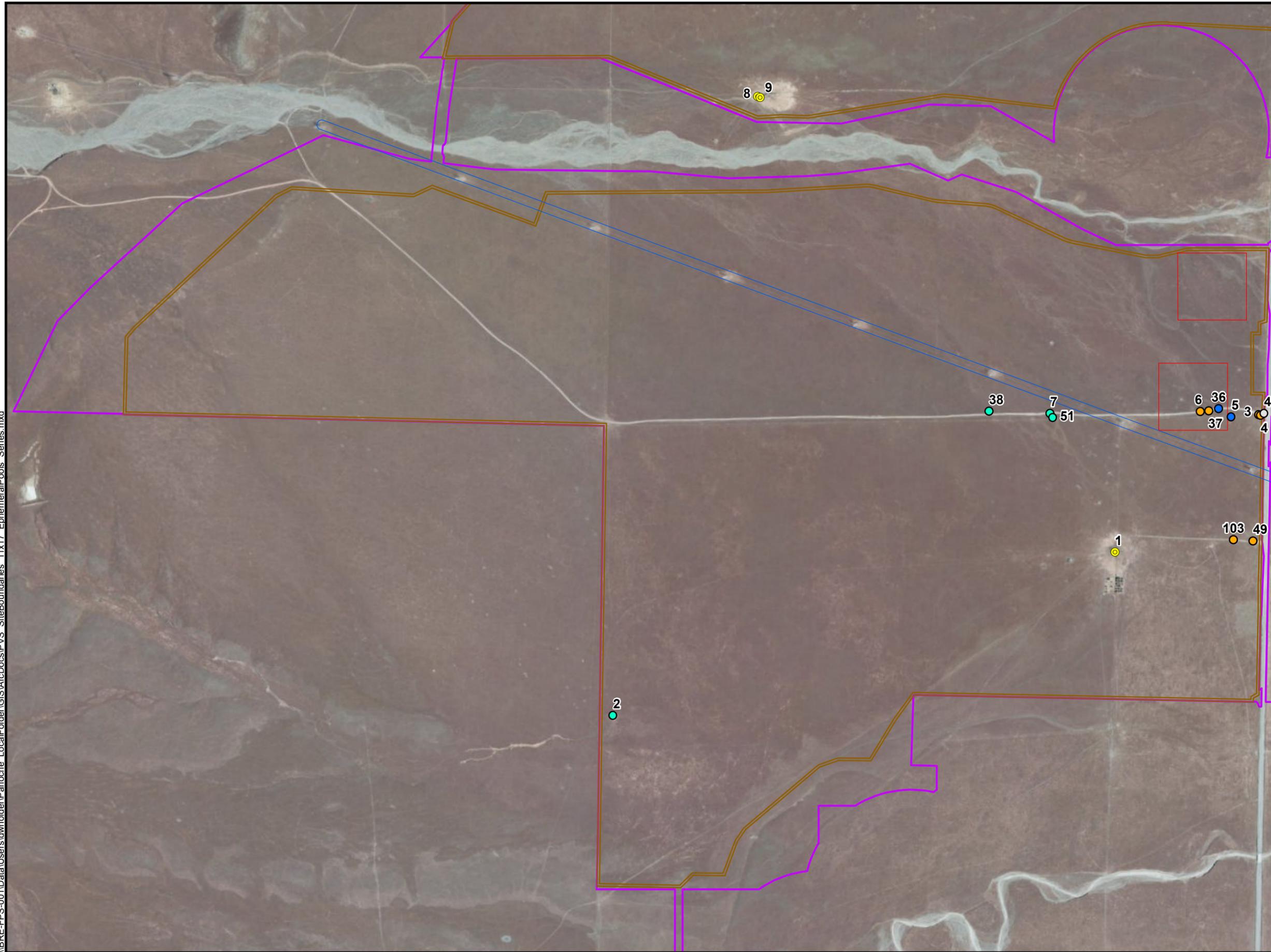


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**EPHEMERAL POOLS
DETAIL PAGE 2 of 4**

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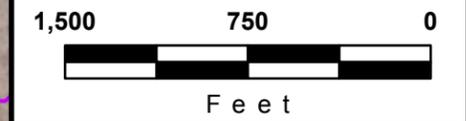


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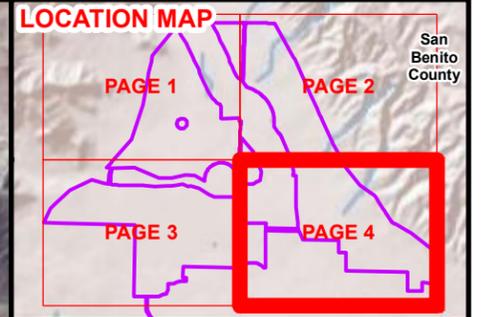
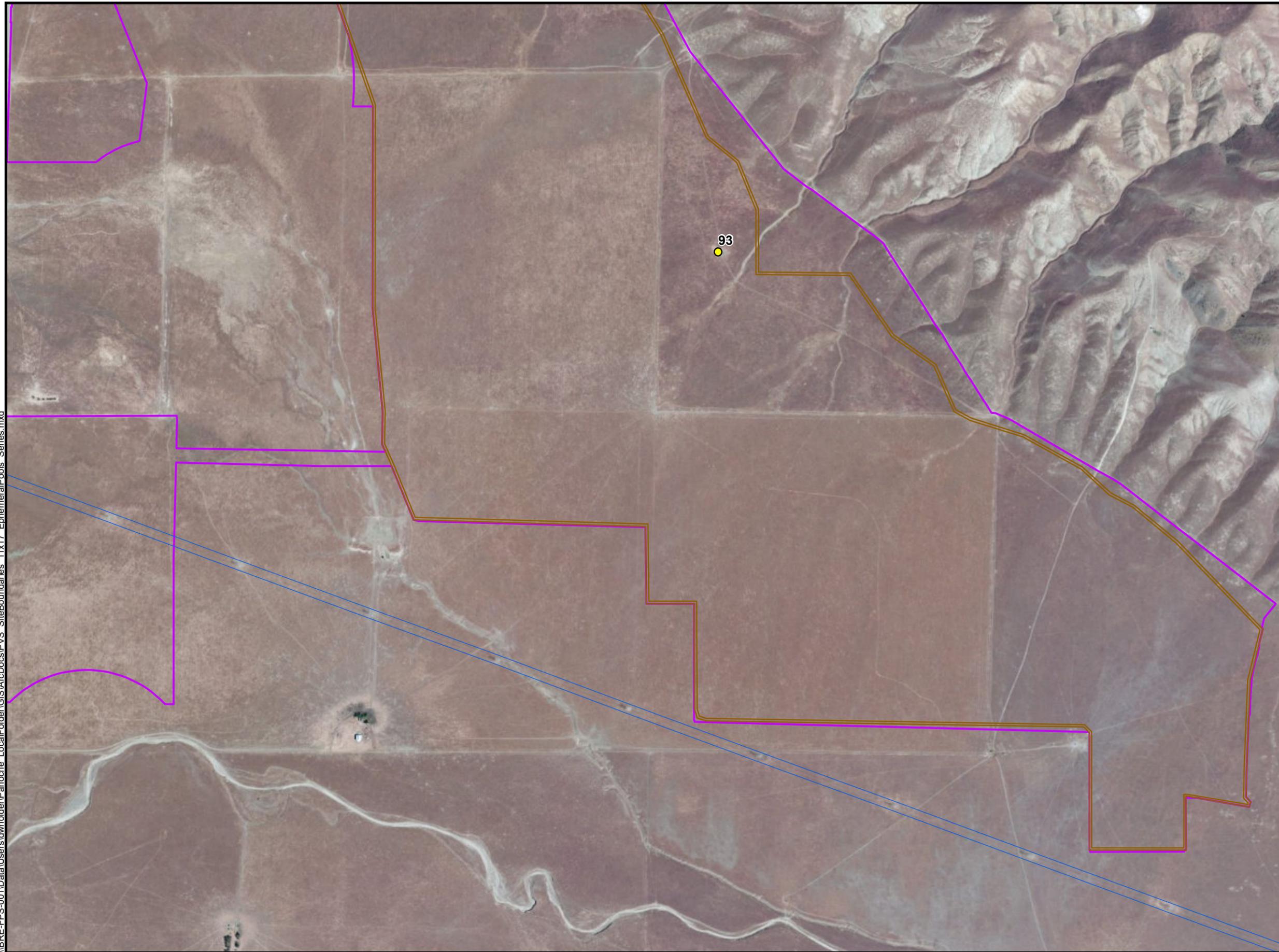


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**EPHEMERAL POOLS
DETAIL PAGE 3 of 4**

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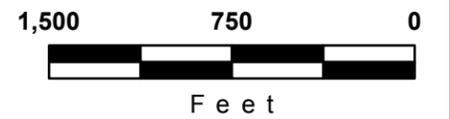


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DETAIL PAGE 4 of 4**