

**FERC Project No. 14797**  
**Devil Canyon Project**  
***Botanical Resources Study Approach***

**FIELD RESULTS AND DATA SUMMARY**

*April 9, 2018*

The California Department of Water Resources (DWR) provides the following field results and data summary for the Devil Canyon Project, *Botanical Resources Study Approach*, which includes work completed to date, key findings, and associated data files.

***Completed Work:***

DWR has completed all portions of this Study Approach, specifically gathering data and preparing for the field effort; performing surveys to identify the locations of special-status plant species occurrences and wetland and riparian areas (i.e., lentic and lotic); and assessing and mapping field data. DWR's methodology followed the *Botanical Resources Study Approach*, and included the use of agency protocols and associated datasheets for collecting and recording data. A summary of completed work is as follows:

- Existing data were assembled and reviewed, and field maps were prepared.
- Special-status plant surveys were conducted and California Department of Fish and Wildlife (CDFW) California Native Species Field Survey Forms were completed for all findings. U.S. Forest Service (USFS) Region 6 (R6) Threatened, Endangered, and Sensitive (TES) Plant Element Occurrence Field Forms were completed for occurrences on USFS-owned lands.
- Data documenting special-status species occurrences in the Study Area were analyzed and compiled, and Geographic Information System (GIS) shapefiles were prepared.
- Field assessments of lentic and lotic areas in the vicinity of Silverwood Lake were conducted (no lentic or lotic areas were identified in the vicinity of the Devil Canyon Powerplant). The Reach Information Form and Proper Functioning Condition (PFC) Assessment Form (for lotic areas), and the Lentic Standard Checklist (for lentic areas), were completed for surveyed areas.
- Data documenting PFC features in the Study Area, including GIS shapefiles, were analyzed and compiled.
- Maps summarizing field data were prepared.

***Key Accomplishments/Summary of Findings:***

The completed work referenced above resulted in the following:

- The Botanical Resources Study Area was evaluated between April 4 and June 16, 2017 for the presence of special-status plant species. Some areas of steep terrain could not be surveyed on foot, but were evaluated through visual reconnaissance via boat using binoculars. Special-status species occurrences were assessed using protocols specified in the Botanical Resources Study Approach, and appropriate data forms were completed for areas in which these species were found. Specifically, California Native Species Field

Survey forms were completed for all special-status species encountered in the Study Area. In addition, USFS R6 TES Plant Element Occurrence Field Forms were completed for those occurrences that were identified on NFS lands. Fifty-nine occurrences of three special-status species were observed during field surveys, as summarized in Table 1 and depicted on maps (see Associated Data Files). None of the species are federally or State listed. All have been assigned a California Native Plant Society (CNPS) rare plant rank of 4.2, which indicates plants of limited distribution that are moderately threatened in California (20 to 80 percent occurrences threatened, with a moderate degree and immediacy of threat).

**Table 1. Special-Status Plant Species Occurrences Identified during 2017 Field Surveys**

Scientific Name	Common Name	State Ranking <sup>1</sup>	Number of Occurrences in Study Area	Location of Occurrences	Site Quality	Threats
<i>Calochortus plummerae</i>	Plummer's mariposa lily	S4	21	Throughout the Study Area (see maps). No occurrences were on USFS-owned lands.	5 excellent, 10 good, 5 fair, 1 poor	Recreation/human use. One occurrence on the west side of Silverwood Lake (feature 20170616-rp-sl-24-A on maps referenced in Associated Data) is threatened by erosion
<i>Juglans californica</i>	Southern California black walnut	S3	36	Most occurrences are near Devil Canyon powerplant. One occurrence is near the Silverwood Lake marina. Five occurrences were on USFS-owned lands.	14 good, 21 fair, 1 poor	Encroachment of non-native invasive plants, road and vehicle use, and human use. Individuals located within the powerplant area may be affected by facilities maintenance.
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i>	Ocellated Humboldt lily	S3	2	East Fork of the West Fork Mojave River. No occurrences were found on USFS land	2 good	Recreation/human use.

Source: California Department of Fish and Wildlife, Natural Diversity Database. July 2017. *Special Vascular Plants, Bryophytes, and Lichens List*. Quarterly publication. 126 pp. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline>

<sup>1</sup> S3 = Vulnerable – Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the State.

S4 = Apparently Secure – Uncommon but not rare in the State; some cause for long-term concern due to declines or other factors.

- An additional noteworthy observation was the finding of Pacific bleeding heart (*Dicentra formosa*) in the Study Area near Miller Canyon Group Campsite; only two previous observations of this species has occurred this far south in California. This was not a target species, and does not have a CNPS or CDFW ranking. This occurrence was verified by Rancho Santa Ana Botanic Garden as a native species (not a horticultural escapee).

- The Botanical Resources Study Area was evaluated between April 4 and April 20, 2017 for the presence of lentic and lotic features, and appropriate data forms were completed for areas in which these features were found.
- Fifteen lotic areas were assessed in the Study Area. These are summarized in Table 2 and displayed on field summary maps (see Associated Data Files).

**Table 2. Lotic Features Assessed during 2017 Field Surveys**

Feature ID	Location	Functional Assessment	Wetland System (Cowardin)	Wetland Class (Cowardin)	Water Regime (Cowardin)
SL-14-Lo-A	east side of Silverwood Lake	Properly functioning condition	Riverine	Streambed	Intermittently flooded
SL-14-Lo-B	east side of Silverwood Lake	Properly functioning condition	Riverine	Scrub-Shrub Wetland	Semipermanently flooded
SL-12-Lo-B	west of Silverwood Lake marina	Functional - at risk	Riverine	Streambed	Intermittently flooded
SL-12-Lo-A	West Fork of West Fork Mojave River	Properly functioning condition	Riverine	Streambed	Intermittently flooded
SL-4-Lo-B	west of Silverwood Lake marina	Properly functioning condition	Riverine	Streambed	Semipermanently flooded
SL-9-Lo-C	northwest arm of Silverwood Lake	Properly functioning condition	Riverine	Streambed	Intermittently flooded
SL-15-Lo-A	West Fork of West Fork Mojave River	Properly functioning condition	Riverine	Streambed	Permanently flooded
SL-15-Lo-B	West Fork of West Fork Mojave River	Functional - at risk	Riverine	Streambed	Permanently flooded
SL-16-Lo-A	East Fork of West Fork Mojave River	Properly functioning condition	Riverine	Streambed	Permanently flooded
SL-16-Lo-B	East Fork of West Fork Mojave River	Properly functioning condition	Riverine	Streambed	Permanently flooded
SL-16-Lo-C	East Fork of West Fork Mojave River	Properly functioning condition	Riverine	Forested Wetland	Permanently flooded
SL-18-Lo-A	northeast arm of Silverwood Lake	Nonfunctional	Riverine	Unconsolidated Bottom	Intermittently flooded
SL-19-Lo-A	northeast arm of Silverwood Lake	Functional - at risk	Riverine	Streambed	Intermittently flooded
SL-19-Lo-B	northeast arm of Silverwood Lake	Properly functioning condition	Riverine	Streambed	Intermittently flooded
SL-14-Lo-C	east side of Silverwood Lake	Functional - at risk	Riverine	Forested Wetland	Intermittently flooded

- Ten of the 15 lotic areas were determined to exhibit “Proper Functioning Condition,” four were determined to be “Functional – at risk,” and one was determined to be “Nonfunctional.” Areas were determined to be Functional – at risk or Nonfunctional for a variety of reasons, including limited vegetative structure, riprapped shorelines, recreation/human use (e.g., foot traffic), road/trail interception, and erosion and sedimentation.
- The 18 lentic areas that were assessed in the Study Area include many discontinuous areas that were similar and close in proximity, but were separated by non-lentic areas or other types of lentic features. These features were combined into a single feature for purposes of analysis and reporting. These are summarized in Table 3 and displayed on field summary maps (see Associated Data Files).

**Table 3. Lentic Features Assessed during 2017 Field Surveys**

Feature ID	Location	Functional Assessment	Wetland System (Cowardin)	Wetland Class (Cowardin)	Water Regime (Cowardin)
SL-23-Le-B	East Fork of West Fork Mojave River	Properly functioning condition	Lacustrine	Emergent Wetland	Permanently flooded
SL-23-Le-A	East Fork of West Fork Mojave River	Properly functioning condition	Lacustrine	Emergent Wetland	Permanently flooded
SL-23-Le-C	East Fork of West Fork Mojave River	Properly functioning condition	Lacustrine	Emergent Wetland	Permanently flooded
SL-18-Le-B	northeast arm of Silverwood Lake	Functional - at risk	Lacustrine	Scrub-Shrub Wetland	Semipermanently flooded
SL-2-Le-A	near East Fork of West Fork Mojave River	Functional - at risk	Riverine	Streambed	NA
SL-1-Le-A	near East Fork of West Fork Mojave River	Functional - at risk	Riverine	Forested Wetland	NA
SL-2-Le-B	near East Fork of West Fork Mojave River	Functional - at risk	Riverine	Streambed	NA
SL-2-Le-C	near East Fork of West Fork Mojave River	Functional - at risk	Riverine	Streambed	NA
SL-11-Le-A	near San Bernardino Tunnel Intake	Functional - at risk	Riverine	Forested Wetland	NA

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SL-12-Le-C	west of Silverwood Lake marina	Properly functioning condition	Lacustrine	Scrub-Shrub Wetland	Semipermanently flooded
SL-2-Le-E	near East Fork of West Fork Mojave River	Functional - at risk	Riverine	Streambed	NA
SL-2-Le-F	near San Bernardino Tunnel Intake	Functional - at risk	Riverine	Streambed	NA
SL-2-Le-D	near East Fork of West Fork Mojave River	Functional - at risk	Riverine	Streambed	NA
SL-3-Le-A	west of Silverwood Lake marina	Nonfunctional	Lacustrine	Rocky Shore	NA
SL-4-Le-A	west of Silverwood Lake marina	Properly functioning condition	Lacustrine	Forested Wetland	Semipermanently flooded
SL-9-Le-A	northwest arm of Silverwood Lake	Properly functioning condition	Riverine	Streambed	NA
SL-9-Le-B	northwest arm of Silverwood Lake	Properly functioning condition	Riverine	Streambed	NA
SL-6-Le-A	near Silverwood Lake marina	Nonfunctional	Lacustrine	Unconsolidated Shore	Semipermanently flooded

- Seven features were found to be in “Proper Functioning Condition,” nine were “Functional – at risk,” and two were “Nonfunctional.” Areas were determined to be Functional – at risk or Nonfunctional for a variety of reasons, including limited vegetative structure, ripped shorelines, recreation/human use (e.g., foot traffic), road/trail interception, and erosion and sedimentation.
- Lentic and lotic feature polygons were digitized in GIS based on collected field data and aerial imagery.

**Associated Data Files:** (All associated data can be found at the file location below on DWR’s Devil Canyon Project Relicensing Website. (<http://devil-canyon-project-relicensing.com/>))

File Name	Data Description	File Type	File Location
Various. Naming convention is date_rp_dc_FeatureID. ‘usfs’ is appended to end of file name for those species that occur on USFS-owned lands, and for which USFS datasheets were completed	Special-status plant datasheets	PDF	Studies/Study-2-Botanical-Resources/Associated Data Files/Datasheets/Special Status Plants

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<b>File Name</b>	<b>Data Description</b>	<b>File Type</b>	<b>File Location</b>
20170830_DC_Special_Statu s_Plants	Zip file with GIS shapefile containing special-status plant occurrence polygon and point data with descriptive information	Shapefile	Studies/Study-2- Botanical- Resources/Associated Data Files/Maps and GIS Data/Special Status Plants
20170831_DC_Special_Statu s_Plants.pdf	Maps depicting special-status plant occurrences in the Study Area	PDF	Studies/Study-2- Botanical- Resources/Associated Data Files/Maps and GIS Data/Special Status Plants
Various. Naming convention is date_pfc_FeatureID	PFC lentic and lotic datasheets, botanical species observed by day	PDF	Studies/Study-2- Botanical- Resources/Associated Data Files/Datasheets/PFC
Various. Naming convention is date_pfc_sl_feature_ID_ photo number	Photos of lentic and lotic features	JPEG	Studies/Study-2- Botanical- Resources/Associated Data Files/Photos/PFC
Various. Naming convention is date_rp_sl_feature_ID_ photo number	Photos of special status plants	JPEG	Studies/Study-2- Botanical- Resources/Associated Data Files/Photos/Special Status Plants
20170901_dwr_dc_botanical_i nventory_fnl	List of all plant species observed during 2017 botanical field surveys	MS Excel	Studies/Study-2- Botanical- Resources/Associated Data Files/Botanical Inventory
2017_dwr_dc_weekly_summa ry_crew_compiled_all.pdf	Weekly summaries	PDF	Studies/Study-2- Botanical- Resources/Associated Data Files/Weekly Summaries
20170910_DC_ PFC	Zip file with GIS shapefile containing lentic and lotic feature polygons with descriptive data	Shapefile	Studies/Study-2- Botanical- Resources/Associated Data Files/Maps and GIS Data/PFC
20170910_DC_LenticLotic	Maps depicting lentic and lotic features, with PFC assessment	PDF	Studies/Study-2- Botanical- Resources/Associated

File Name	Data Description	File Type	File Location
			Data Files/Maps and GIS Data/PFC

***Variations from Study Methods, Schedule, or Approach and Abnormalities in Expected Field Conditions:***

There were no variations from Study Methods, Schedule, or Approach encountered during the *Botanical Resources Study Approach*.

***Remaining Work:***

The Study is complete.