

FERC Project No. 2426
South SWP Hydropower
Special-Status Aquatic Amphibians and Semi-Aquatic Snakes Study

FIELD RESULTS AND DATA SUMMARY

July 10, 2019

Consistent with Section 5.0 of the South SWP Hydropower Revised Study Plan and as approved in the Federal Energy Regulatory Commission (FERC) Study Plan Determinations dated June 14, 2017 and September 7, 2018, the California Department of Water Resources (DWR) and Los Angeles Department of Water and Power (Licensees) provide the following Field Results and Data Summary for Study 4.1.4 *Special-Status Aquatic Amphibians and Semi-Aquatic Snakes Study* (Study), which includes work completed to date, key findings, associated data files, variances, and remaining work. The Licensees consider this data to be public.

Completed Work to Date:

The Study is complete. As required by the FERC-approved Study Plan, the Licensees completed Step 1 (Identify Potential Habitat), Step 2 (Conduct Field Reconnaissance and Surveys), and Step 3 (Prepare Results).

Key Accomplishments/Summary of Findings:

Surveys were conducted for the following special-status amphibian and semi-aquatic reptile species throughout the Study area as follows:

Foothill Yellow-legged Frog (FYLF)

Stream reaches with potential habitat for FYLF were identified by a desktop review of aerial imagery and other information, followed by a pre-survey field reconnaissance on February 27, 2018 and February 28, 2018. This assessment determined that potential habitat for FYLF in the Study area is limited to Piru Creek, upstream and downstream of Pyramid Lake. Seasonal streams that are not tributaries of larger streams with persistent aquatic habitat were not regarded as potential FYLF habitat. These seasonal streams included ephemeral channels that appear to hold water only after heavy precipitation. Los Alamos Creek and Gorman Creek include sections with apparent perennial flows, but neither is characteristic of FYLF habitat because of fine-grained (i.e., sand and silt) substrates, and dense emergent and overhanging riparian vegetation inconsistent with FYLF habitat.

Survey sites were designated in a segment of Piru Creek upstream of Pyramid Lake within the Study area and in representative sections of potentially suitable habitat within Pyramid reach. No survey sites were designated downstream of Ruby Canyon, which is the section that has been surveyed annually by DWR for arroyo toad and other sensitive species since 2010. Each designated survey site was surveyed for FYLF following visual encounter survey (VES) methods on three dates as detailed below, with the exception of one site located approximately 1.5 miles upstream of Ruby Canyon. The latter site, which was not safely accessible because of the distance from the nearest access point (6.5 miles) and dangerous conditions (e.g., rugged terrain requiring heavy backpacks, heat, and lack of satellite phone coverage), was surveyed once on April 17, 2018 after which no further surveys were

attempted.

Because the only access points for Piru Creek between Frenchman's Flat and Ruby Creek (i.e., Frenchman's Flat and Blue Point Campground) are separated by about five miles of stream, the surveys within this reach focused on scattered habitats suitable for egg deposition and potential larval habitat, which collectively comprised up to 20% of the sites. The intervening habitats were not intensively searched but were traversed while alert for sightings of FYLF or other special-status species, a procedure also followed while traversing to and from the following survey sites.

- Piru Creek (upstream of Pyramid Lake within Study area) – One site approximately 2,600 feet long on April 4, May 16, and July 25, 2018
- Piru Creek (Pyramid reach)
 - Pyramid Dam to upstream of Frenchman's Flat: Two contiguous sites representing a total distance of 2,300 feet on April 3, May 15, and May 29, 2018
 - Frenchman's Flat to Fish Creek confluence: Four sites, including two contiguous sites, representing a total distance of approximately 8,500 feet on April 18, May 30, July 23, September 25, and September 26, 2018
 - Fish Creek to Ruby Canyon: Three sites, including two contiguous sites, representing a total distance of approximately 3,800 feet on April 16, April 17, September 25, and September 26, 2018

In addition to the VES, water samples were collected at 500-meter intervals along the entire Pyramid reach as part of the *Pyramid Reach Fish Population Study* to be analyzed for environmental deoxyribonucleic acid (eDNA) to assess the presence of target fish species. These samples were also analyzed for the presence of FYLF mitochondrial DNA (mtDNA) using the same species-specific quantitative polymerase chain recreation (qPCR) assay as described in Bedwell 2018, at the same thermocycling conditions discussed in Genidaqs 2018. The qPCR was performed in 10 microliters (μl) total volume containing 4 μl of DNA template. The reactions were run using 5 μl Qiagen Environmental Master Mix, 0.1 μl 90 micrometers (μM) of both forward and reverse primers (900 nanomolar [nM] final concentration) and 0.2 μl 15 μM probes (300 nM final concentration).

The results of the VES included no observations of FYLF at any site nor did the eDNA analysis indicate the presence of FYLF mtDNA. In addition, there were no incidental observations of this species during other field work.

Western Spadefoot

Potential western spadefoot breeding habitat was identified at only two locations in the Study area. Seasonal pools on each end of a culvert under Orwin Road appeared to be suitable habitat and were surveyed on May 18, 2018, when only western toad larvae were found. These pools were dry when revisited on July 26, 2018. The other location that may represent suitable habitat was a depression within a former channel of Piru Creek upstream of Frenchman's Flat along the Pyramid reach on the west side of Golden State Highway. Although this pool was dry when first discovered on May 15, 2018, it may hold water seasonally for a sufficient period to be habitat for western spadefoot. No western spadefoot

were detected during the Study or observed incidentally during other field work.

Two-Striped Gartersnake and South Coast Gartersnake

Potentially suitable habitat for special-status gartersnakes were identified along perennial and intermittent streams, and in riparian habitat patches associated with Project reservoirs, including the mouths of seasonal tributary streams. These areas indicated below were each surveyed on multiples dates for gartersnakes. Seasonal swales at Los Alamos Campground that were observed to be dry during the Study were surveyed.

- Quail Lake – Riparian habitat patches surveyed entirely on April 2, and May 31, 2018
- Gorman Bypass Channel, immediately below Quail Lake Spillway, on April 5, May 31, and July 26, 2018
- Gorman Creek on April 5, May 17, and July 26, 2018
- Los Alamos Creek on April 5, May 14, and July 26, 2018
- Los Alamos Campground on April 5, May 14, and July 26, 2018
- Select Pyramid Lake recreation sites and reservoir tributaries, including Spanish Point Day Use Area, Bear Trap Day Use Area, Yellow Bar Day Use Area, Piru Creek (upstream of Pyramid Lake within Study area), and at four other coves, on April 4, May 16, and July 25, 2018
- Piru Creek (Pyramid reach) on April 3, 16, 17, and 18; May 15, 29, and 30; July 23; and September 25, and 26, 2018
- Select Elderberry Forebay tributaries and habitat patches on May 18, June 1, and July 27, 2018

A total of four two-striped gartersnakes were observed during the Study. All of these were observed in the Pyramid reach of Piru Creek as follows:

- April 16, 2018 near Turtle Canyon, this individual was deceased and had been recently killed by a predator. It was found on the banks in cobble substrate.
- April 17, 2018 near Turtle Canyon
- April 17, 2018 downstream of Fish Creek
- May 30, 2018 upstream of Fish Creek

No South Coast gartersnakes were found during the Study or observed incidentally during other field work. Notable findings during the Study included observations of southern western pond turtles within the Pyramid reach of Piru Creek and within Pyramid Lake north at the confluence with Piru Creek.

Based on the number and location of two-striped gartersnakes found during this Study, as well as during annual arroyo toad surveys conducted by DWR in the lower section of Pyramid

reach (i.e., Blue Point to Ruby Canyon), it appears that suitable habitat for this species is concentrated in the more open sections of the lower Pyramid reach, with less suitable areas upstream.

Associated Data Files (All associated data can be found in the folder with this summary form. Note: confidential CEII/privileged information will not be posted publicly.):

| File Name | Data Description | File Type | File Location |
|--|------------------------------------|-----------|-----------------|
| 20181031_SSWP_SS_Amphibian_site_habitat_assessment_Data_Sheets | Site habitat assessment datasheets | PDF | Project website |
| 20181031_SSWP_SS_Amphibian_Survey_Data_Sheets | Survey datasheets | PDF | Project website |
| 20181126_SSWP_SS_Amphibian_photo_log | Photo log of amphibian surveys | PDF | Project website |
| SSWP_SS_Amphibian_FINAL_PIRU_CREEK_FYLF_RESULTS_SUMMARY | Results of eDNA survey | Excel | Project website |

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

There were no variations in Study Methods, Schedule, or Approach from the FERC-approved Study Plan.

Remaining Work:

This Study is complete.

References Cited:

- Bedwell, M.E. Using genetic tools to investigate distribution and connectivity of two Sierra Nevada amphibians, *Rana sierrae* and *Rana boylei*. MS Thesis. Washington State University, 2018.
- Schumer, G. and S.M. Blankenship. 2018. Analysis of eDNA samples for santa ana sucker (*Castostomus santaanae*), arroyo chub (*Gila orcuttii*) and rainbow trout (*Oncorhynchus mykiss*). Cramer Fish Sciences. Sacramento, California. March 2018.