

## 1.0 NON-NATIVE INVASIVE PLANTS STUDY APPROACH

*This preliminary draft study approach is provided to inform of the general methods DWR followed during the study phase under FERC's Traditional Licensing Process.*

### 1.1 PROJECT NEXUS

Continued Project operation and maintenance (O&M) and Project-related recreation activities may facilitate the spread of non-native invasive plants (NNIP). For the purpose of this Non-Native Invasive Plants Study Approach (Study), an NNIP is a plant species that is listed as "A", "B", or "C" by the California Department of Food and Agriculture (CDFA). Other NNIP of interest include species of concern to United States Department of Agriculture, Forest Service (USFS) San Bernardino National Forest that are not rated by the CDFA..

#### 1.1.1 Existing Information and Need for Additional Information

Existing, relevant, and reasonably available information regarding NNIP known or with the potential to occur within the proposed Project boundary is provided in Section 4.6.3 of the California Department of Water Resources (DWR) Pre-Application Document (PAD). As a summary, the DWR found that no comprehensive NNIP surveys have been performed recently within the proposed Project boundary.. A list of NNIP species with potential to occur in the Study Area was identified in the PAD. Based on input from USFS and California Department of Fish and Wildlife (CDFW), DWR identified a revised list of target NNIP to focus on during field surveys (Table 1.1). This list may be adjusted based on additional input from agencies. Five NNIPs (i.e., tree tobacco [*Nicotiana glauca*], salt cedar [*Tamarix ramosissima*], Spanish broom [*Spartium junceum*], horehound [*Marrubium vulgare*] and black mustard [*Brassica nigra*]) have been reported in the Devil Canyon Powerplant area, but no information exists regarding NNIP occurrence in the vicinity of Silverwood Lake. This Study will augment existing information by providing current information regarding NNIP within the proposed Project boundary.

#### 1.1.2 Study Goals and Objectives

The goals of this Study are to: (1) identify and map the locations of NNIP in the Study Area, and (2) to collect ancillary data related to NNIP, including geographic extent of occurrences and/or number of individuals, and indications of potential threats for NNIP to expand in the NNIP Study Area.

The objective of this NNIP Study is to gather sufficient data necessary to fill recognized gaps in existing information on the presence and extent of NNIP in the Study Area.

**Table 1.1.** Target NNIP species to survey in the study area.

Scientific Name	Common Name	CFDA Rating
* <i>Ageratina adenophora</i>	Eupatory	--
** <i>Ailanthus altissima</i>	Tree of heaven	C
** <i>Arundo donax</i>	Giant reed grass	B
* <i>Brassica nigra</i>	Black mustard	--
* <i>Brassica tournefortii</i>	Asian mustard	--
* <i>Bromus diandrus</i>	Ripgut brome	--
* <i>Bromus madritensis ssp. rubens</i>	Red brome	--
* <i>Bromus tectorum</i>	Cheatgrass	--
** <i>Centaurea melitensis</i>	Tocalote	C
** <i>Centaurea solstitialis</i>	Yellow star-thistle	C
** <i>Cirsium vulgare</i>	Bull thistle	C
** <i>Cortaderia jubata</i>	Pampas grass	B
* <i>Cortaderia selloana</i>	Uruguayan Pampas Grass	--
* <i>Eucalyptus globulus</i>	Blue gum	--
* <i>Ficus carica</i>	Fig	--
* <i>Foeniculum vulgare</i>	Fennel	--
** <i>Genista monspessulana</i>	French broom	C
* <i>Hedera helix</i> and <i>H. canariensis</i>	English Ivy, Algerian Ivy	--
* <i>Picris (=Helminthotheca) echioides</i>	Bristly ox-tongue	--
* <i>Holcus lanatus</i>	Common velvetgrass	--
* <i>Lolium perenne ssp. multiflorum</i>	Italian ryegrass	--
* <i>Medicago polymorpha</i>	Burclover	--
* <i>Nicotiana glauca</i>	Tree tobacco	--
* <i>Pennisetum setaceum</i>	Fountain grass	--
* <i>Potamogeton crispus</i>	Curly pondweed	--
* <i>Ricinus communis</i>	Castorbean	--
* <i>Robinia pseudoacacia</i>	Black locust	--
* <i>Rubus armeniacus (=discolor)</i>	Himalayan blackberry	--
** <i>Salsola tragus</i>	Russian thistle	C
** <i>Saponaria officinalis</i>	Bouncing bet	C
* <i>Schedonorus (=Festuca) arundinacea</i>	Tall fescue	--
* <i>Schinus molle</i>	Peruvian pepper tree	--
* <i>Schismus arabicus, S. barbatus</i>	Arabian schismus, Common Mediterranean grass	--
* <i>Silybum marianum</i>	Milk thistle	--
** <i>Spartium junceum</i>	Spanish broom	C
** <i>Tamarix parviflora, T. ramosissima</i>	Saltcedar	B
* <i>Verbascum thapsus</i>	Common mullein	--
* <i>Vinca major</i>	Periwinkle	--
* <i>Vulpia (=Festuca) myuros</i>	Annual fescue	--

### **1.1.3 Study Methods**

#### **1.1.3.1 *Study Area***

The Study Area consists of the area within the proposed Project boundary, excluding lands overlying the San Bernardino Tunnel on which DWR does not perform any Project O&M. The Study Area is shown in Figure 1.1-1.

#### **1.1.3.2 *General Concepts and Procedures***

- Fieldwork will only occur in safely accessible areas and under conditions deemed safe by the field crews. Locations within the Study Area that cannot be accessed in a safe manner (e.g., locations containing dense vegetation or unsafe slopes) and areas inundated when the surveys are performed, will not be surveyed; these areas will be identified in the data summary and an explanation for survey exclusion will be provided.
- The Study may begin as early as January 2017.
- The Study does not include the development of requirements for the new license, which will be addressed outside the Study.
- This Study focuses specifically on NNIP within the proposed Project boundary, but the Study Area is specific to the areas that can support that resource.
- If required for the performance of the Study, DWR will make a good faith effort to obtain permission to access private property well in advance of initiating the Study. DWR will only enter private property if permission has been provided by the landowner.
- DWR will acquire all necessary agency permits and approvals prior to beginning fieldwork for the Study.
- Field crews may make variances to the Study Plan in the field to accommodate actual field conditions and unforeseen problems. Any variances from the Plan will be noted in the data resulting from the Study.
- To prevent the introduction and transmittal of amphibian chytrid fungus and invasive invertebrates (e.g., quagga mussels, zebra mussel, and Asian clams), field crews will be trained on, provided with, and use materials (e.g., Quat) for decontaminating their boots, waders, and other equipment between water-based study sites. Field crews will follow DWR's Quagga and Zebra Mussel Rapid Response Plan for decontaminating their boots, waders, and other equipment when leaving or traveling between water-based study sites, and will also follow CDFW's Aquatic Invasive Species Decontamination Protocol found at the following link: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=43333>. All boats used during the study will follow clean protocols, including inspections before and after use. All decontamination requirements in place at Project

reservoirs including those of DWR's Quagga and Zebra Mussel Rapid Response Plan for the SWP will be strictly followed (DWR 2010).

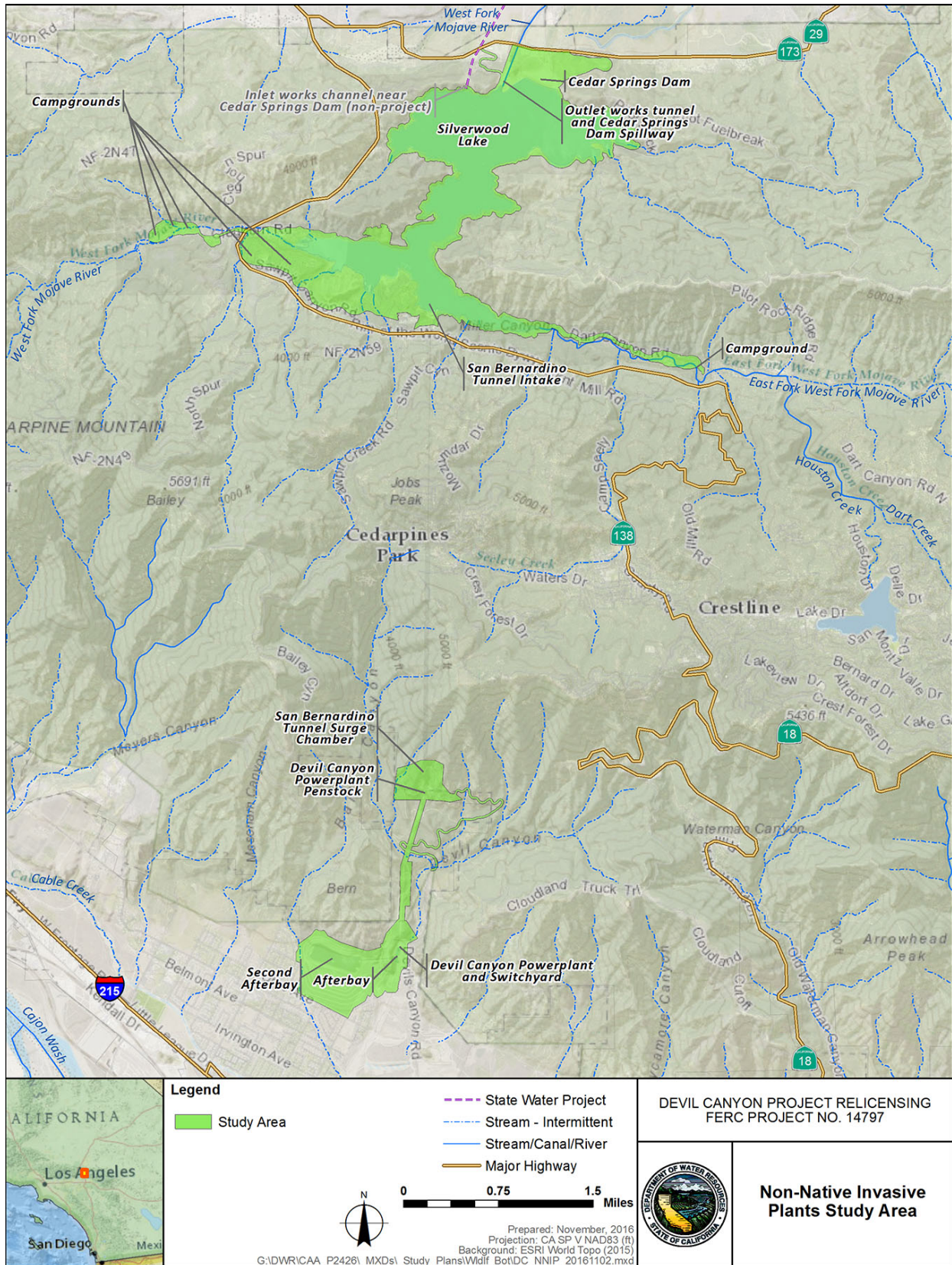


Figure 1.1-1. Non-Native Invasive Plants Study Area



### 1.1.3.3 *Methods*

Fieldwork for this Study will be performed in conjunction with DWR's relicensing *Botanical Resources Study*, a separate study being undertaken by DWR as part of this relicensing effort, which includes a comprehensive floristic survey within the same Study Area. Floristic surveys require that all species encountered are identified to the extent necessary to determine listing status. The Study will consist of three steps: (1) gather data and prepare for the field effort, (2) conduct field surveys, and (3) prepare data. These steps are described below.

Step 1 – Gather Data and Prepare for Field Effort. DWR will prepare field maps for use by survey teams. The maps will depict the Study Area on an aerial imagery base and will include the location of Project features. Pre-field planning activities will include preliminary identification of vegetation and habitats that could support NNIP.

Step 2 – Conduct Field Surveys. DWR will conduct NNIP plant surveys in conjunction with special-status plant species surveys that will be performed under the *Botanical Resources Study*. Surveys will follow applicable CDFW protocol methodology described in the botanical survey section of the California Department of Fish and Wildlife's (CDFW) *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. This protocol uses systematic sampling techniques to ensure thorough coverage of plant communities that could support NNIPs. The CDFW protocol states that "the level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity, which determines the distance at which plants can be identified." Staff will conduct surveys by walking over the entire site that can be safely accessed to ensure thorough coverage, noting all plant taxa observed. When performing NNIP surveys on USFS lands, a qualified team of field staff will follow USFS protocols, excluding treatment protocols (USFS 2014). Special attention will be paid to disturbed areas, including road edges, recreation areas, and maintenance areas. Field staff will perform surveys between March and August, encompassing the period within which most NNIP are expected to flower, with at least two survey visits being performed in all target areas to maximize the likelihood of detection of NNIP. Surveyors will be botanists or scientists with similar background who are qualified to identify NNIP likely to occur in the Study Area. Taxonomy and nomenclature will be based on *The Jepson Manual* (Baldwin et al., 2012).

Because the field survey will be floristic in nature, all species observed will be documented. More extensive data will be collected for target species in Table 1.1. For these species that are not listed by CDFA (identified with one asterisk in Table 1.1), data will be collected in accordance with USFS protocols (USFS 2014) for any occurrences on USFS lands. For species identified with two asterisks in Table 1.1, occurrence data will be collected wherever it is observed within the study area.

Two forms of noxious weed data will be collected and maintained, depending on the type and distribution of weeds located during survey efforts:

- Quantitative data: for discrete occurrences of weeds, data collected will include species, GPS-derived location, and other data, including percent cover, distribution, plant phenology, habitat description, and land use notes. For species occurrences on USFS lands, data collection will follow USFS protocols (USFS 2014, 2015)
- Qualitative data: for widespread weeds, or for those weeds for which detailed mapping is unlikely to remain accurate (e.g., annual grasses, which change distributions yearly), the Licensees will describe general distribution and extent within the study area

Step 3 – Prepare Data. Following surveys, DWR will develop Geographic Information System (GIS) maps depicting the locations of high priority NNIP population occurrences; Project facilities, features, and specific Project-related activities (e.g., dispersed use camping); and other related information collected during the Study.

#### **1.1.3.4 Quality Assurance and Quality Control**

Field data will be collected in a manner that promotes high quality results and will be subject to appropriate quality assurance/quality control (QA/QC) procedures, including spot-checks of transcription and comparison of GIS maps with field notes to verify locations of NNIPs.

#### **1.1.3.5 Reporting**

Study results, as well as other existing and relevant information will be included in the Draft License Application and Final License Application.

#### **1.1.4 Consistency of Methodology with Generally Accepted Scientific Practices**

This Study is generally consistent with the goals, objectives, and methods outlined for most recent FERC hydroelectric relicensing efforts in California, including the Don Pedro Project (FERC No. 2299), Yuba River Development Project (FERC No. 2246)

and Merced River Hydroelectric Project (FERC No. 2174), and will follow applicable standard botanical survey methods as defined by CDFW and USFS.

### 1.1.5 Schedule

The Study may begin as early as January 2017. DWR anticipates the schedule below will be followed to complete the NNIP Study.

Fieldwork Preparation	January 2017– February 2017
Fieldwork	March 2017 – August 2017
Data QA/QC	August 2017 – September 2017
Data Analysis and Reporting	September 2017 – December 2017

### 1.1.6 Level of Effort and Cost

Based on the work effort described above, DWR estimates that the cost to complete this NNIP Study will range between \$126,000 and \$168,000.

### 1.1.7 References

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