A.31 VEINY MONARDELLA (*MONARDELLA DOUGLASII* SSP. *VENOSA*)

A.1.31.1 Legal and Other Status

The veiny monardella (*Monardella douglasii* ssp. *venosa*) is not listed as endangered under the federal Endangered Species Act (ESA) or under the California ESA (DFG 2011). The California Native Plant Society (CNPS) includes the veiny monardella on California Rare Plant Rank 1B.1 (formerly List 1B.1): Plants Rare, Threatened, or Endangered in California and Elsewhere, signifying it as seriously endangered in California (CNPS 2010). The veiny monardella was formerly classified as List 1A, Presumed Extinct, until 1992 when it was rediscovered. Its State Rank is S1.1, very threatened, with fewer than six occurrences; its Global Rank is G5T1, the least secure, with fewer than six viable Element Occurrences worldwide (CNPS 2007).

A.1.31.2 Species Distribution and Status

A.1.31.2.1 Range and Status

The veiny monardella is a California endemic, currently known from two extant populations. One occurrence is in central Butte County, located on private property, and the other is in Tuolumne County, on private land near the Peoria Basin (CNDDB 2007).

The veiny monardella's original distribution is unknown. Besides the two extant populations, it is known from two other CNDDB occurrences (CNDDB 2007). One was located in the "plain of the Feather River" near the town of Marysville. This was an 1854 occurrence that has not been seen since. The other occurrence was located in Butte County, possibly near the town of Cherokee off Highway 70. This was an 1879 occurrence that has not been seen since. Both of these populations are presumed to be extirpated (CNDDB 2007).

Besides these occurrences, the species had been reported from two other sites near Chico in Butte County that are both presumed to be extirpated (Castro and

Janeway 1993). Hickman (1993) lists it as found in Sutter, Butte, and Tuolumne counties; CNPS lists these and Yuba County as counties where it is or has been found (CNPS 2007). The species was thought to be extinct when surveys conducted in the 1980s were unable to locate the plant (Castro pers. comm.). In 1992, however, a Butte County population was relocated. The Tuolumne County population was subsequently relocated in 1998 (D. Taylor in CNDDB 2007). Besides these two areas, no other occurrences can be found (Castro pers. comm.).

From the known extant occurrences, the veiny monardella's elevation range is 270 feet (82 meters) in Butte County to 860 feet (262 meters) in Tuolumne County (CNDDB 2007). Two extirpated populations were found at 100 feet (30 meters) in Yuba County, and possibly at 1,325 feet (403 meters) in Butte County (if the occurrence was near the town of Cherokee), indicating a large elevational range for the species. However, the location of the "Cherokee" occurrence is not specified and could have referred to a lower valley location. The two historical Chico occurrences were most likely close to 250 feet (80 meters) elevation (Castro pers. comm.).

A.1.31.2.2 Distribution and Status in the Plan Area

The extant occurrence in Butte County occurs within the Plan Area on private property south of Chico near Neal Road. The population is found scattered among eight small sites, containing from fewer than 10 to over 1,000 plants each within a 60-hectare area in two separate but interconnected canyons. In 1992 more than 3,000 individuals were seen in this area and the population's numbers appear to have been steady since this time (Castro pers. comm.) (see Figure A.30-1, *Veiny Monardella Recorded Occurrences*).

A.1.31.3 Habitat Requirements and Special Considerations

The veiny monardella is found in open grassland; both the Butte and Tuolumne County populations are found in heavy clay soils, with deep cracks, of volcanic or serpentine origin (Castro pers. comm.).

The Butte County occurrence is found in a canyon bottom creek terrace, in gray black vertisol soils, on seasonally wet land (CNDDB 2007). Here it is found in flat to gently sloping terrain at the bottom edge of the Sierra Nevada foothills abutting the Sacramento Valley (Castro pers. comm.) (see Figure A.30-1). It is found in lenses of clay possibly derived from Tuscan Mudflow rock outcrops (Center for Plant Conservation 2007) or volcanic ash (Conlin pers. comm.) and is a component of the annual grassland in an area with sparsely clustered forbs and grasses. Common associates of the veiny monardella in this area include dwarf dwarf-cudweed (*Evax caulescens*), Tehama navarretia (*Navarretia heterandra*), adobe navarretia (*Navarretia nigelliformis*), and species in the tarweed genus (*Hemizonia* spp.) (CNDDB 2007).

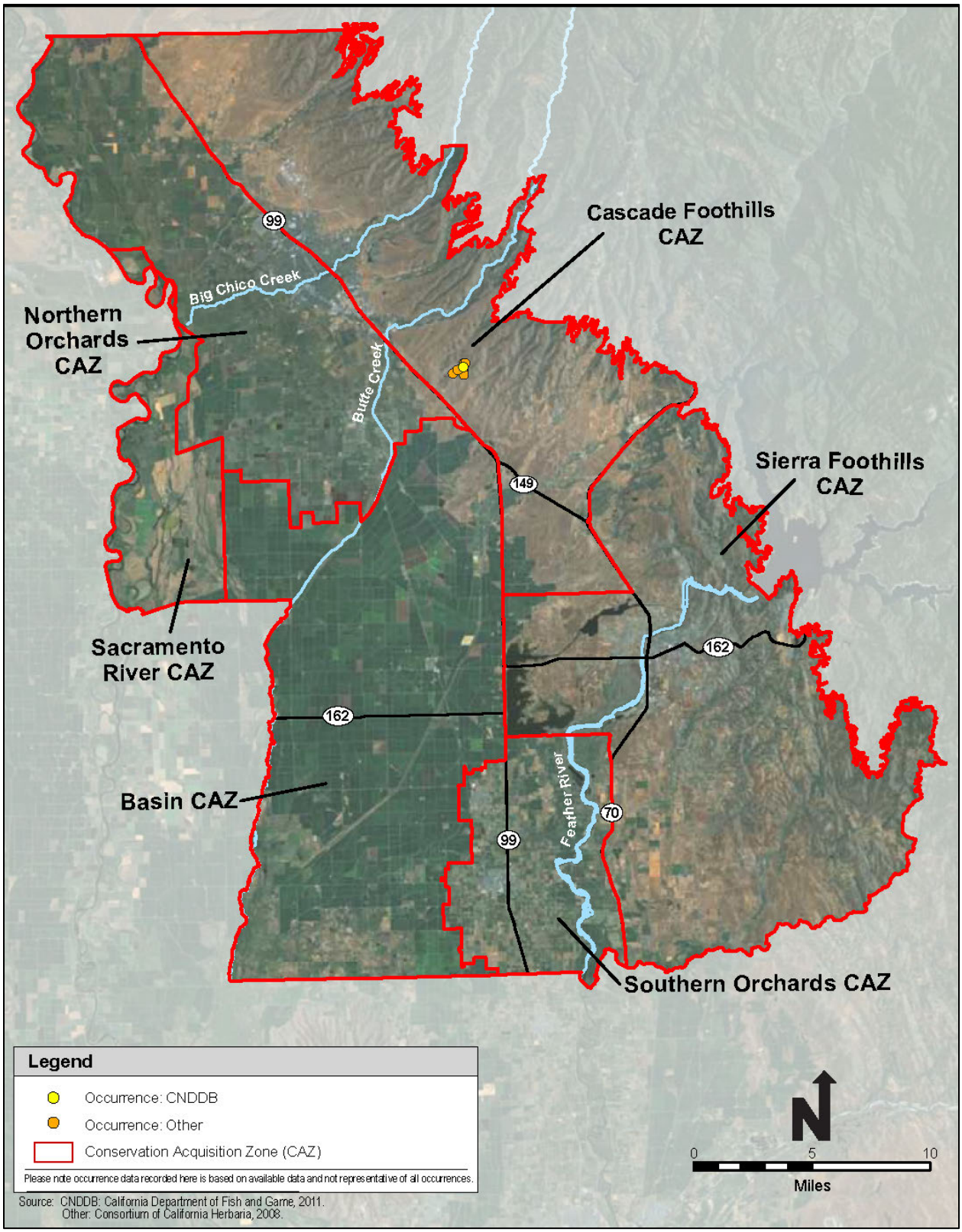

Figure A.30-1. Veiny Monardella Recorded Occurrences

A.1.31.4 Life History

Veiny monardella is a late spring annual. Seeds fall into deep cracks in the clay, germinate in late fall (November), and accelerate growth in early spring (Castro pers. comm.). Flowering does not begin until early to mid-May (Castro pers. comm.). Seed rain seems to be limited to existing patches and the small seeds do not seem to disperse far, dropping into deep clay cracks beneath parent individuals (Castro pers. comm.).

Veiny monardella seems to respond well to late summer fire. The Butte County population burned in September 1992, and was found germinating well in the fall of the same year (Castro and Janeway 1993). The area where veiny monardella was rediscovered in May 1992 was burned in a wildfire in September 1992, followed by two rainstorms. Four weeks after the fire, abundant seedlings were observed (Castro and Janeway 1993).

For the Butte County occurrence, population numbers vary but have remained reasonably high despite varied water years, based on 10 years of population census. Data on reproductive effort, measured in flower heads per plant, have also been gathered over the past 10 years (Castro pers. comm.).

The veiny monardella is susceptible to water mold diseases during high rainfall years under ex situ conditions (Center for Plant Conservation 2007).

A.1.31.5 Threats

The main factors contributing to the decline of the veiny monardella are development, habitat fragmentation, and possibly competition with invasive plant species. The species appears to do well with moderate grazing; presumably grazing suppresses yellow starthistle (*Centaure*a *solstitialis)* and other invading European grasses (Castro pers. comm.) that compete for water, light or space. Heavy grazing is expected to be deleterious, as cattle tend to congregate in the moist clay soils where veiny monardella grows, and trampling and compaction could do significant harm to these populations. Another potential threat could be artificial alteration of water regime by either increase or depletion.

A.1.31.6 Relevant Conservation Efforts

No specific conservation efforts for this species are known at this time.

A.1.31.7 Species Habitat Suitability Model

A habitat suitability model has not been developed for veiny monardella, because there is insufficient information regarding its habitat requirements and the distribution of the physical attributes that support its habitat in the Plan Area.

A.1.31.8 Recovery Plan Goals

A recovery plan and recovery goals have not been prepared for this species.

A.1.31.9 References

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Personal Communications

Barbara Castro, Environmental Scientist/Botanist. California Department of Water Resources. 2007 – email to Letty Brown with attachment of general notes on veiny monardella.

Andrew Conlin, Soil Scientist. USDA - Natural Resources Conservation Service (NRCS). 2007 – communication with Barbara Castro on soil types associated with veiny monardella.

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