Appendix F

Additional Botanical, Terrestrial and Aquatic Wildlife Species Considered for Analysis for the CEQA Initial Study

Summary of Project Activities

Project construction entails grading (terrace cut) within the meadow, placement of fill within the incised channel, placement of nine rock riffles at the downstream portion of the channel, excavation of 4 borrow sites along the meadow margins, culvert reconstruction, and rock placement for the grade control structure at the culvert site. Seven trees (red fir/lodgepole pine) would be removed within or adjacent to Foster Meadow to be used on channel-fill surfaces to reduce flow velocities. Because borrow sites will fill with groundwater and provide permanent water, four additional conifers would be placed in borrow sites (ponds) for aquatic habitat, providing refugia for aquatic organisms. Heavy equipment (e.g., excavator and track loader) will be used for construction activities. Travel will be on existing roads and skid trails as well as within the meadow and along the channel. The project includes a revegetation component, which encompasses relocation of existing sod mats and willows, seeding of disturbed surfaces with locally-collected seed, willow staking, and selected container planting.

Terrestrial and Aquatic Wildlife Species

The CNDDB QuickView Tool in BIOS was queried for occurrences in the Peddler Hill and Bear River Reservoir quads on August 7, 2018. A formal query of the CNDDB was performed on September 6, 2018. Based on these queries, the following species were identified that were not addressed in the Terrestrial Wildlife Biological Evaluation/Biological Assessment (Loffland 2018), Aquatic Wildlife Biological Assessment (Chow 2017a), or Aquatic Wildlife Biological Evaluation (Chow 2017b) that have the potential to occur in the project area (Table 1):

Table 1. List of additional special-status species to be addressed under CEQA based on CNDDB Occurrences in the Peddler Hill and Bear River Reservoir quads.

Scientific Name	Common Name	Federal Status	State Status	Quad Name	Data_Status
Ambystoma macrodactylum sigillatum	southern long-toed salamander	None	SSC	Peddler Hill	Mapped
Bombus morrisoni	Morrison bumble bee	None	Special Animal	Bear River Reservoir	Mapped
Vulpes vulpes necator	Sierra Nevada red fox	Candidate; Forest Service Sensitive*	Threatened	Peddler Hill	Mapped

*Included on the Region 5 Sensitive Animal Species List in the Lassen and Stanislaus national forests; not included for the Eldorado National Forest.

A California "Species of Special Concern" (SSC) is a species, subspecies, or distinct population of an animal native to California that is extirpated from the State or, in the case of birds, in its primary seasonal or breeding role; is listed as federally but not State-, threatened or endangered; meets the State definition of threatened or endangered but has not formally been listed, is experiencing, or

formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; and/or has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status (CDFW 2018a).

A "Special Animal" is a broad term used to refer to all the animal taxa tracked by the California Department of Fish and Wildlife's California Natural Diversity Database (CNDDB), regardless of their legal or protection status. A Special Animal is also referred to as a "species at risk" or "special status species". A Special Animal includes species, subspecies, or Evolutionarily Significant Units (ESU) where at least one of the following conditions applies: (CDFW 2018b)

- Officially listed or proposed for listing under the State and/or Federal Endangered Species Acts;
- Taxa considered by the Department to be a Species of Special Concern (SSC);
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act Guidelines;
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California;
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g. wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, etc.);
- Taxa designated as a special status, sensitive, or declining species by other state or federal agencies, or a non-governmental organization (NGO) and determined by the CNDDB to be rare, restricted, declining, or threatened across their range in California.

A brief species account and discussion of impacts is provided below for the species listed in Table 1.

Southern long-toed salamander (*Ambystoma macrodactylum sigillatum*)

The southern long-toed salamander (SLTS) is listed as a CDFW Species of Special Concern. The species has a broad distribution in western North America (IUCN SSCASG 2015) and is found in ponderosa pine, mixed conifer, and red fir forests associated with mountain meadows (Basey and Morey 1990). Adults spend most of their lives underground in animal burrows or under objects, except during the breeding season (Howard 1997). Breeding varies with snowpack depth and snowmelt, but is typically in late May or June in the Sierra Nevada as soon as ponds begin to thaw (Basey and Morey 1990). At higher elevations, larvae require two years to reach metamorphosis, and require permanent water for overwintering (Howard 1997). Southern long-toed salamanders are generally "secretive" and are not expected to be active during the day; most activity occurs during breeding migration and takes place during night (Howard 1997). Preferred foods include terrestrial arthropods for adult salamanders, with larvae consuming aquatic arthropods or terrestrial species that enter the water (Howard 1997). Predators include garter snakes and shrews (Howard 1997) as well as introduced, predatory trout, which have been shown to exclude salamanders from a portion of their former range (IUCN SSCASG 2015).

No focused surveys were conducted for this species in the Foster Meadow project area, however, the species is typically detected during surveys for Sierra Nevada yellow-legged frogs or other listed

amphibian species (J. Chow, pers. comm. 2018). The nearest documented occurrences of SLTS are 1.7 and 2 miles away, along an intermittent stream that drains into Anderson Canyon (survey 8/30/2011) and an unnamed pond (survey 8/18/2002) east of Foster Meadow. There have also been numerous SLTS larvae sightings in small unnamed ponds within the Podesta, Tragedy, and Upper Bear River drainages, however, no adults or larvae have been detected within the Foster Meadow project area (J. Chow, pers. comm. 2018).

California Wildlife Habitat Relationships (CWHR) range maps were also reviewed for the project area. The California Department of Fish and Wildlife (CDFW) has developed the CWHR as a comprehensive information system and predictive model for California's wildlife. Range maps produced for the CWHR represent the maximum, current geographic extent of each species within California. The range map for SLTS shows the project is outside of the mapped range for the species by approximately 2000 ft (Gogol-Prokurat 2016). Because there is an established predatory trout fishery in Foster Meadow (Chow 2017a), use of pools in the Middle Fork Cosumnes River channel for breeding is unlikely. The only existing pond in the meadow (0.31 ac.) is also unlikely to be used for breeding because it dries completely by mid-summer and would not provide overwintering habitat for larvae. However, the meadow is within the dispersal distance of breeding adults of approximately 3280 ft (Basey and Morey 1990). Therefore, this analysis assumes that southern long-toed salamander habitat is present in the project area and potentially impacted by project implementation.

Potential impacts to southern long-toed salamander:
There would be no potential for crushing or trampling of breeding adults because construction activities would occur during the fall low-flow period, after breeding migrations have completed. Further, cut and fill activities would not result in significant direct impacts to larvae due to the lack of suitable ponds for breeding within the meadow and presence of trout within channel pools. Potential direct effects to SLTS could result from construction disturbance of subterranean adults or temporary disturbance to suitable habitat. There is the potential to dig up subterranean adults while grading (4.9 ac. of terrace cut) or excavating fill material (0.8 ac. of borrow ponds) in the meadow and upland sites. However, because the presence of SLTS is unlikely due to the presence of predatory trout, lack of existing breeding habitat, and distance from the mapped range for this species, overall impacts from project implementation would be less-than-significant.

Long-term, potential habitat for SLTS would be enhanced by the project through the creation of 4 off-channel permanent water bodies (borrow ponds), which could provide breeding sites protected from the trout population. Construction of the aquatic organism passage (AOP) at the FH54 road crossing also would provide an enhanced dispersal corridor for breeding adults dispersing to Foster Meadow from nearby occupied habitats. Foraging opportunities are expected to improve long-term through the restored meadow hydrology. As the meadow becomes more mesic, terrestrial and aquatic invertebrates would become more abundant, providing for greater foraging opportunities.

Morrison bumble bee (*Bombus morrisoni*)

The Morrison bumble bee has no formal listing status, but is listed as a CDFW Special Animal, with an International Union for Conservation of Nature (IUCN) status of vulnerable (CDFW 2018b). The Morrison bumble bee is associated primarily with arid environments (Koch et al. 2012) such as open, dry scrub, and nests in abandoned rodent nests, grass hummocks, and dead trees (Hatfield et al. 2014). The Morrison bumble bee is considered a generalist forager, with the genera *Asclepias*, *Astragalus*,

Chrysothamnus, *Cirsium*, *Cleome*, *Ericameria*, *Helianthus*, *Melilotus*, and *Senecio* cited as important food sources (Hatfield et al. 2017). Although this species is only found sporadically west of the Sierra Nevada crest, the project area could provide high quality foraging habitat and the dryer conifer stands could provide nesting and overwintering habitat for queens.

Three surveys for bumble bees, including Morrison bumble bee, were conducted within the Foster Meadow project area during June, July and August of 2018 (H. Loffland pers. comm. 2018). There were no detections of this species on any occasion, and if present, their numbers are likely low. The CNDDB has one record of this species near Foster Meadow, approximately 3.9 miles from the project area (survey date 6/17/1937).

Potential Impacts to Morrison Bumble bee:
The meadow is too wet to provide nesting and overwintering habitat for Morrison bumble bee, as even the portions of the meadow in a xeric trend are subject to early season flooding due to snow melt. Therefore, project construction activities would not be expected to result in mortality to nesting and overwintering queens. Potential foraging habitat would be impacted by grading activities within the meadow, which would remove some flowering plants. However construction activities are planned for the low-flow season (August through September), after flowering plants have peaked, and only queens would be expected to be present in the meadow during this time. If individual queens are present, there will be sufficient foraging habitat available outside of construction activities, and individuals disturbed by construction equipment could disperse to these areas. Therefore, direct impacts to Morrison bumble bee would be less-than-significant. Long-term effects are expected to be positive. The quantity of foraging habitat would expand as a result of the restored meadow hydrology, which would enhance the vigor of the meadow plant community. The quality of foraging habitat would be enhanced by the revegetation component of the project, which would seed with a diversity of plant species.

Sierra Nevada red fox (*Vulpes vulpes necator*)

The Sierra Nevada red fox is not known to occur in the Eldorado National Forest. The CNDDB contains one record of this species near the project area, from June 1971, approximately 8.7 miles from Foster Meadow. Systematic surveys from 1996-2002 of the entire Sierra Nevada and southern Cascades did not detect the Sierra Nevada red fox anywhere within its historic range (Perrine et al. 2010). The only known population is in Lassen National Park, with an additional detection in 2010 on the Humboldt-Toiyabe National Forest (Sierra Nevada Red Fox Interagency Working Group 2010). California Wildlife Habitat Relationships (CWHR) range maps were also reviewed for the project area for this species. The project is outside of the mapped CWHR range for Sierra Nevada red fox and predicted habitat range by more than two miles. Because the Sierra Nevada red fox does not occur in the project area, the project would not result in impacts to this species, and no further analysis will be provided.

Botanical Species

The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants was queried on August 9, 2018 to identify additional rare plants in the Foster Meadow project area that may not have been addressed in the Botanical BE/BA (CNPS 2018). A total of 11 species have documented records in the Bear River Reservoir and Peddler Hill quads (Table 2). A review of the Botanical BE/BA indicates that all species have been addressed and no further analysis is required (Brown 2018).

Table 2. CNPS Inventory of Rare and Endangered Plants query results for the Bear River Reservoir and Peddler Hill

Scientific Name	Common Name	Family	Lifeform	CRPR	GRank	SRank	CESA	FESA
Allium tribracteatum	three-bracted onion	Alliaceae	perennial bulbiferous herb	1B.2	G2	S2	None	None
Botrychium crenulatum	scalloped moonwort	Ophioglossaceae	perennial rhizomatous herb	2B.2	G4	S3	None	None
Botrychium minganense	Mingan moonwort	Ophioglossaceae	perennial rhizomatous herb	2B.2	G4G5	S3	None	None
Botrychium montanum	western goblin	Ophioglossaceae	perennial rhizomatous herb	2B.1	G3	S2	None	None
Calochortus clavatus var. avius	Pleasant Valley mariposa lily	Liliaceae	perennial bulbiferous herb	1B.2	G4T2	S2	None	None
Clarkia virgata	Sierra clarkia	Onagraceae	annual herb	4.3	G3	S3	None	None
Dryopteris filix-mas	male fern	Dryopteridaceae	perennial rhizomatous herb	2B.3	G5	S2	None	None
Lewisia kelloggii ssp. hutchisonii	Hutchison's lewisia	Montiaceae	perennial herb	3.2	G3G4T3Q	S3	None	None
Lewisia kelloggii ssp. kelloggii	Kellogg's lewisia	Montiaceae	perennial herb	3.2	G3G4T2T3Q	S2S3	None	None
Orthotrichum holzingeri	Holzinger's orthotrichum moss	Orthotrichaceae	moss	1B.3	G3	S2	None	None
Peltigera gowardii	western waterfan lichen	Peltigeraceae	foliose lichen (aquatic)	4.2	G3G4	S3	None	None

CRPR = California Rare Plant Rank; GRank = NatureServe Global Rank (across entire distribution of the species); SRank = NatureServe State Rank (within California distribution of the species); CESA = California Endangered Species Act; FESA = Federal Endangered Species Act; All rankings defined in Attachment A.

Sensitive Natural Communities

Sensitive natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects (CDFW 2018c). Although the project area has not been surveyed specifically for sensitive natural communities, several vegetation monitoring efforts were used to determine the potential for presence of sensitive natural communities. These efforts include long-term range monitoring plots established in 1999 and 2001, monitoring as a reference site under a Federal Energy Regulatory Commission (FERC) License in 2010, and sensitive and invasive plant surveys in 2009 and 2016. In addition, native plant seed from 30 species was collected from Foster Meadow in 2017, for use in re-vegetating Foster Meadow. A combined species list was generated based on these monitoring and seed collection efforts (Table 3), and cross-referenced with the List of California Natural Communities (CDFW 2018d).

A comparison of the Foster Meadow composite species list with the List of California Natural Communities (CDFW 2018d) yields ten sensitive natural community alliances that have the potential to occur in the Foster Meadow Restoration Project Area (Table 4).

Table 3. Composite species list for Foster Meadow based on seed collection and monitoring efforts.

Species Name	Seed Collected	Plot ID			Species Name	Seed Collected	Plot ID		
Achnatherum nelsonii ssp.		EID_FERC			*Galium trifidum*		ELD9904		
Achnatherum occidentale	Y				*Glyceria elata*	Y			
Agrostis capillaris		EID_FERC			*Hackelia velutina*	Y			
Agrostis pallens	Y	ELD0103			*Homalotheclum aeneum (moss)*		EID_FERC		
Agrostis scabra	Y	ELD9904			*Hordeum brachyantherum*	Y			
Agrostis sp.		ELD0103			*Hypericum anagalloides*		ELD0103	ELD9904	
Agrostis stolonifera		EID_FERC			*Juncus* sp.	Y			
Allium validum	Y				*Juncus xiphioides*		EID_FERC		
Aster alpiginus var.		EID_FERC			*Ligusticum grayi*		EID_FERC		
Aster breweri	Y				*Lupinus latifolius*	Y			
Aster integrifolius		EID_FERC			*Lupinus polyphyllus*	Y			
Aster sp.		ELD0103			*Luzula comosa*		EID_FERC		
Astragalus bolanderi	Y				*Mimulus guttatus*		ELD0103		
Botrychium simplex		SSS			*Mimulus primuloides*		EID_FERC	ELD0103	ELD9904
Bromus carinatus	Y				*Monardella odoratissima*	Y			
Carex aquatilis	Y	ELD0103			Moss		ELD9904		
Carex echinata		ELD9904			*Muhlenbergia filiformis*		ELD0103	ELD9904	
Carex integra		ELD0103			*Muhlenbergia richardsonis*		EID_FERC		
Carex lemmomi		EID_FERC	ELD0103		*Perideridia* sp.		EID_FERC		
Carex lenticularis	Y	ELD0103			*Perideridia parishii*		ELD0103	ELD9904	
Carex luzulina		ELD0103	ELD9904		*Pinus contorta*		ELD9904		
Carex microptera	Y				*Pinus contorta* var. *murrayana*		ELD9904		
Carex nebrascensis	Y	ELD0103			*Poa pratensis*		EID_FERC		
Carex sp.		EID_FERC	ELD0103		*Polygonum bistortoides*		EID_FERC	ELD0103	ELD9904
Carex utriculata	Y	ELD0103	ELD9904		*Potentilla gracilis*	Y			
Carex vesicaria		ELD9904			*Ranunculus* sp.		ELD0103		
Castilleja miniata ssp.		EID_FERC			*Ribes cereum*	Y			
Danthonia californica		EID_FERC	ELD0103	ELD9904	*Rudbeckia californica*	Y			
Delphinium glaucum	Y	EID_FERC			*Scirpus congdonii*		EID_FERC	ELD0103	
Deschampsia cespitosa	Y				*Scirpus microcarpus*	Y			
Eleocharis macrostachya		ELD9904			*Senecio integerrimus*	Y			
Eleocharis quinqueflora		ELD0103	ELD9904		*Senecio triangularis*	Y	EID_FERC		
Eleocharis sp.		ELD9904			*Solidago californica*	Y			
Epilobium sp.		ELD0103	ELD9904		*Symphyotrichum spathulatum* var. *spathulatum*		ELD9904		
Epilobium minutum		ELD9904			*Trifolium bolanderi*		ELD9904		
Erigeron peregrinus	Y				*Trifolium longipes*		ELD0103	ELD9904	
Eurybia integrifolia		ELD0103			*Trifolium monanthum*		ELD0103		
Festuca Idahoensis	Y				*Veratrum californicum*		ELD0103		
Galium sp.		ELD0103			*Viola macloskeyi*		ELD0103	ELD9904	

EID_FERC = 2010 Transects for El Dorado Irrigation District (EID) FERC Project 184

ELD0103 = Eldorado National Forest (ENF) long-term range monitoring plot established in 2001

ELD9904 = ENF long-term range monitoring plot established in 1999

SSS = Botanical special-status species survey

Table 4. List of Sensitive Natural Communities that may occur in the project area (grey rows indicate no seed was collected from dominant species).

Alliance Scientific Name	Alliance CaCode	Common Name	Alliance Global Rank	Alliance State Rank	Seed Collected?	NWPL Classification	Alliance membership rules
Carex (aquatilis, lenticularis)	45.168.00	Water sedge and lakeshore sedge meadows	G5	S3	Y	OBL	C. aquatilis or C. lenticularis ≥ 30% relative cover (in herbaceous layer); C. scopulorum, C. utriculata, or C. vesicaria absent or at relatively low cover
*Carex integra (*Provisional*)*	45.175.00	Small-fruited sedge meadows	G4?	S2?		OBL	Not defined (provisional alliance)
*Carex microptera (*Provisional*)*	45.181.00	Small-winged sedge meadows	G4	S2?	Y	FACU	Not defined (provisional alliance)
Danthonia californica	41.050.00	California oat grass prairie	G4	S3		FAC	> 50% relative cover (in herbaceous canopy) generally > 25% absolute cover (in herbaceous layer)
Festuca idahoensis	41.250.00	Idaho fescue grassland	G4	S3?	Y	FACU	usually > 30% relative cover with other perennial grasses in the herbaceous layer
Glyceria (elata, striata)	41.222.00	Manna grass meadows	G4	S3?	Y	FACW*	G. elata or G. striata ≥ 1% absolute cover (in herbaceous layer)
Hordeum brachyantherum	42.052.00	Meadow barley patches	G4	S3?	Y	FACW	> 30% relative cover (in herbaceous layer; H. brachyantherum characteristically present, usually with other wetland plants that may be at high cover
Juncus (oxymeris, xiphioides) (Provisional)	45.568.00	Iris-leaf rush seeps	G2?	S2?		OBL	Not defined (provisional alliance)
Mimulus (guttatus)	44.111.00	Common monkey flower seeps	G4?	S3?		OBL	> 50% relative cover in the herbaceous layer, though may be > 30% with Eleocharis acicularis present; Trifolium variegatum is absent or < 1% absolute cover
Scirpus microcarpus	52.113.00	Small-fruited bulrush marsh	G4	S2	Y	OBL	≥ 30% relative cover in the herbaceous layer; shrub cover < 15% absolute cover; S. microcarpus or S. congdonii > 5% absolute cover, > 50% relative cover in the herbaceous layer; shrub cover < 25% absolute cover

**Glyceria elata,* the species present in Foster Meadow, is a FACW species.

Alliance CaCode = CDFW numeric code for the vegetation alliance; Global Rank= NatureServe Global Rank (across entire distribution of the alliance); State Rank = NatureServe State Rank (within California distribution of the alliance); NWPL Classification = National Wetland Plant Inventory (Lichvar et al. 2016) classification; All rankings defined in Attachment A.

Potential impacts to sensitive natural communities that may occur in the project area could result from removal of vegetation during grading of meadow terraces or excavation of borrow ponds, or burial of vegetation when filling the incised channel. The following design criteria have been incorporated into the project, which will ensure that potential impacts to sensitive natural communities would be less-than-significant:

1. The project includes a substantial re-vegetation component. In 2017, 80 lbs of seed were collected in Foster Meadow for the proposed project. Seed was collected from 30 different native plant species (noted in Table 3), including 6 of the 10 species that may be present on site as a sensitive natural community. This seed will be spread on all fill surfaces upon project completion. In the spring following project construction, additional seeding of disturbed areas in the meadow and on graded terraces will take place.
2. Transplanting of native vegetation: Sod mats, willow wads, and other meadow vegetation from fill and borrow sites will be transplanted to plug edges, terraces, and key locations on the remnant channel. This action will preserve any sod-forming native species, as well as the soil seed bank, including those for annual species that may co-occur with perennial species.
3. Supplemental native planting: In addition to willow staking, there will be hand-planting of container stock from locally-sourced material. Container stock will consist of rhizomatous species that can quickly colonize the terrace cuts and plugs (species TBD, but based on site availability).
4. The majority of species in the sensitive natural community alliance shown in Table 4 are obligate or facultative wetland plant species. The proposed project is a meadow restoration project that would restore channel-floodplain connectivity in Foster Meadow, improving the condition of wetland plant communities on approximately 23 acres and expanding total acreage of wetlands by approximately one acre. The meadow is currently in a xeric trend, and sensitive natural communities that may potentially occur in the meadow would expect to benefit from the project via the restored hydrologic regime.
5. Soil disturbances can provide opportunities for the introduction and proliferation of invasive species. These species have the potential to quickly outcompete native plants for sunlight, water, and nutrients. Seeds of these species can be carried into sensitive natural communities on equipment, vehicles, and on workers boots and clothing. Implementation of the following mitigation measures/design criteria should minimize the likelihood of project activities enhancing or spreading invasive species into the proposed project area:
    a. All off-road equipment would be cleaned to insure it is free of soil, seeds, vegetative matter or other debris that could contain seeds before entering the project area.
    b. Infestations of invasive plants that are discovered during project implementation would be documented and locations mapped. New sites would be reported to the Forest botanist.
    c. Rock for riffle construction would be weed free.
    d. Onsite sand, gravel, rock, or organic matter would be used where possible.
    e. Any seed used for restoration or erosion control would be from a locally collected source.

Fens

The Foster Meadow project area includes two fens. There would be no impact to fens under the proposed project. The fens would be flagged prior to project implementation for avoidance, and crews conducting repair work at Foster Meadow would be informed of the fen locations.

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Attachment A – California Rare Plant and Sensitive Natural Community Ranking Descriptions

Source: California Department of Fish and Wildlife, Natural Diversity Database. August 2018. Special Vascular Plants, Bryophytes, and Lichens List. Quarterly publication. 127 pp. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline Accessed 9/5/2018.

Element Ranking

Global Ranking
The *global rank* (G-rank) is a reflection of the overall status of an element throughout its global range. Both Global and State ranks represent a letter+number score that reflects a combination of Rarity, Threat and Trend factors, with weighting being heavier on Rarity.

Species or natural community level:
G1 = Critically Imperiled— At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2 = Imperiled— At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
G3 = Vulnerable— At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
G4 = Apparently Secure— Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5 = Secure— Common; widespread and abundant.

Subspecies/variety level:
Subspecies/varieties receive a T-rank attached to the G-rank. With the subspecies/varieties, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety. For example: *Chorizanthe robusta* var. *hartwegii* is ranked G2T1. The G-rank refers to the whole species range i.e., *Chorizanthe robusta.* The T-rank refers only to the global condition of var. *hartwegii*.

State Ranking
The *state rank* (S-rank) is assigned much the same way as the global rank, but state ranks refer to the imperilment status only within California's state boundaries.

S1 = Critically Imperiled— Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.
S2 = Imperiled— Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.
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.

S5 = Secure— Common, widespread, and abundant in the state.

Notes:

1. Other considerations used when ranking a species or natural community include the pattern of distribution of the element on the landscape, fragmentation of the population/stands, and historical extent as compared to its modern range. It is important to take a bird's eye or aerial view when ranking sensitive elements rather than simply counting element occurrences.
2. Uncertainty about the rank of an element is expressed in two major ways: by giving a range rank (e.g. S2S3 means the rank is somewhere between S2 and S3) or by adding a ? to the rank (e.g. S2? means the rank is more certain than S2S3 but less certain than S2).
3. Other symbols include: GH (all sites are historical), SH (all CA sites are historical), GX (all sites are extirpated, element is extinct in the wild), SX (all CA sites are extirpated), G#Q (the element is very rare but there are taxonomic questions associated with it; the calculated G rank is qualified by adding a Q after the G#).

California Rare Plant Ranks[1]

1A. Presumed extirpated in California and either rare or extinct elsewhere
1B. Rare or Endangered in California and elsewhere
2A. Presumed extirpated in California, but more common elsewhere
2B. Rare or Endangered in California, but more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

1A: Plants Presumed Extirpated in California and either rare or extinct elsewhere

The plants of Rank 1A are presumed extirpated because they have not been seen or collected in the wild in California for many years. This rank includes those plant taxa that are both presumed extinct, as well as those plants which are presumed extirpated in California and rare elsewhere. A plant is extinct if it no longer occurs anywhere. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in its range.

1B: Plants Rare, Threatened, or Endangered in California and Elsewhere (Includes Rare Plant Ranks 1B.1, 1B.2, 1B.3)

The plants of Rank 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. California Rare Plant Rank 1B plants constitute the majority of plant taxa tracked by the CNDDB, with more than 1,000 plants assigned to this category of rarity.

2A: Plants Presumed Extirpated in California, but more common elsewhere

The plants of Rank 2A are presumed extirpated because they have not been seen or collected in the wild in California for many years. This rank includes only those plant taxa that are presumed extirpated in California, but that are more common elsewhere in their range. Note: Plants of both Rank 1A and 2A are presumed extirpated in California; the only difference is the status of the plants outside of the state.

2B: Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere (Includes Rare Plant Ranks 2B.1, 2B.2, 2B.3)

The plants of Rank 2B are rare, threatened or endangered in California, but more common elsewhere. Plants common in other states or countries are not eligible for consideration under

the provisions of the Federal Endangered Species Act; however they are eligible for consideration under the California Endangered Species Act. This rank is meant to highlight the importance of protecting the geographic range and genetic diversity of more widespread species by protecting those species whose ranges just extend into California. Note: Plants of both Rank 1B and 2B are rare, threatened or endangered in California; the only difference is the status of the plants outside of the state.

3: Plants About Which We Need More Information - A Review list

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1 In March, 2010, DFG changed the name of "CNPS List" or "CNPS Ranks" to "California Rare Plant Rank" (or CRPR). This was done to reduce confusion over the fact that CNPS and DFG jointly manage the Rare Plant Status Review groups (300+ botanical experts from government, academia, NGOs and the private sector) and that the rank assignments are the product of a collaborative effort and not solely a CNPS assignment.

In July 2013, CNPS revised the Rare Plant Ranks in order to better define and categorize rarity in California's flora. In essence, Rank 2 was split into Rank 2A and Rank 2B to be complementary to the already existing 1A and 1B ranks. This split in Rank 2 plants resulted in five Rank 2 plants moving to Rank 2A (Presumed extirpated in California, but more common elsewhere) and the remaining Rank 2 plants being re-classified as Rank 2B (Rare, Threatened or Endangered in California, but more common elsewhere).

(Includes Rare Plant Ranks 3, 3.1, 3.2, 3.3)

The plants that comprise Rank 3 are united by one common theme--we lack the necessary information to assign them to one of the other lists or to reject them. Nearly all of the plants
remaining on Rank 3 are taxonomically problematic.

4: Plants of Limited Distribution - A Watch list
(Includes Rare Plant Ranks 4.1, 4.2, 4.3)

The plants in this category are of limited distribution or infrequent throughout a broader area in California, and their vulnerability or susceptibility to threat appears low at this time.
While we cannot call these plants "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly. Should the degree of endangerment or
rarity of a Rank 4 plant change, we will transfer it to a more appropriate rank or delete it from consideration.

Threat Ranks:
The California Rare Plant Ranks (CRPR) use a decimal-style threat rank. The threat rank is an extension added onto the CRPR and designates the level of threats by a 1 to 3 ranking with 1
being the most threatened and 3 being the least threatened. So most CRPRs read as 1B.1, 1B.2, 1B.3, etc. Note that some Rank 3 plants do not have a threat code extension due to difficulty in ascertaining threats for these species. Rank 1A and 2A plants also do not have threat code extensions since there are no known extant populations of the plants in California.

Threat Code extensions and their meanings:
.1 - Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 – Moderately threatened in California (20-80% of occurrences threatened / moderate degree and immediacy of threat)
.3 – Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)