



**ADVANCE MITIGATION PROGRAM**  
**Upper Cache and Upper Putah Sub-basins**  
**Regional Advance Mitigation**  
**Needs Assessment**

**Appendices**

Version 1.0

**Establishing Caltrans' Need for Advance Mitigation  
for Caltrans Districts 1, 3, and 4 for the  
Upper Cache and Upper Putah Sub-basins  
forecast fiscal years 2021/2022 to 2030/2031**

**California Department of Transportation – District 1**

March 2024

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## **APPENDICES**

Appendix A – GIS Sources

Appendix B – Transportation Projects Planned for the GAI during the Planning Period

Appendix C – Land Cover Types

Appendix D – Complete SAMNA Species Results

Appendix E – Hydrologic Units

Appendix F – Aquatic Resource Locations

Appendix G – Conservation and Mitigation Bank Service Area Maps

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## **APPENDIX A: GIS SOURCES**

This RAMNA relies on maps to convey information. At the bottom of each map figure is a citation that lists the geographic information system (“GIS”) source identification numbers. These source identification numbers refer to Table A-1, where the metadata documentation is provided. When available, the source date and/or website address to access the data layer online are also provided.

**Table A-1. District 1 RAMNA GIS Sources**

ID	GIS Layer	Source Agency	Source Date	Download Date	Website
1	State Highway Network	California Department of Transportation (“Caltrans”)	8/1/2018	10/11/2018	<a href="https://gisdata-caltrans.opendata.arcgis.com/datasets/77f2d7ba94e040a78bfbe36feb6279da_0/about">https://gisdata-caltrans.opendata.arcgis.com/datasets/77f2d7ba94e040a78bfbe36feb6279da_0/about</a>
2	State Highway Operation and Protection Program (“SHOPP”)	Caltrans	2021/2022 Quarter (“Q”)2	11/23/2022	Caltrans System Planning
3	State Transportation Improvement Program (“STIP”)	California Transportation Commission	2021/2022 Q2	11/23/2022	Caltrans System Planning
4	Ecoregion Section	U.S. Forest Service (“USFS”)	1/26/2021	1/26/2021	<a href="https://data.fs.usda.gov/geodata/edw/datasets.php?xmlKeyword=Ecomap">https://data.fs.usda.gov/geodata/edw/datasets.php?xmlKeyword=Ecomap</a>
5	Watershed Boundary Dataset (geographic area of interest [“GAI”])	U.S. Geological Survey (“USGS”)	9/26/2014	10/19/2018	<a href="https://www.usgs.gov/core-science-systems/ngp/national-hydrography">https://www.usgs.gov/core-science-systems/ngp/national-hydrography</a>
6	County Boundaries	U.S. Census Bureau	7/8/2016	10/11/2018	<a href="https://data.ca.gov/dataset/ca-geographic-boundaries">https://data.ca.gov/dataset/ca-geographic-boundaries</a>
7	California Conservation Easements	California Protected Areas Database	12/1/2020	2/2/2021	<a href="http://www.calands.org/cced">http://www.calands.org/cced</a>
8	California Protected Areas Holdings	California Protected Areas Database	2/10/2021	2/10/2021	<a href="https://www.calands.org/get-data/">https://www.calands.org/get-data/</a>
9	Tribal Land Boundaries	Bureau of Indian Affairs	5/16/2017	10/11/2018	<a href="https://hub.arcgis.com/items/2e915ef3df48422283e5b2c7d89dfcba">https://hub.arcgis.com/items/2e915ef3df48422283e5b2c7d89dfcba</a>
10	U.S. Military Installations	U.S. Census Bureau	12/1/2017	10/11/2018	<a href="https://www2.census.gov/geo/tiger/TIGER2020/MIL/">https://www2.census.gov/geo/tiger/TIGER2020/MIL/</a>
11	Farmland Mapping & Monitoring Program	California Department of Conservation	6/7/2016	4/27/2021	<a href="https://gis.conservation.ca.gov/portal/home/item.html?id=16689151f4d240d2a16232ea650a6c62">https://gis.conservation.ca.gov/portal/home/item.html?id=16689151f4d240d2a16232ea650a6c62</a>

ID	GIS Layer	Source Agency	Source Date	Download Date	Website
12	Areas of Conservation Emphasis (“ACE”) Climate Resilience – ACE [ds2738]	California Department of Fish and Wildlife (“CDFW”)	2/22/2018	10/17/2018	<a href="https://map.dfg.ca.gov/metadata/ds2738.html?5.66.18">https://map.dfg.ca.gov/metadata/ds2738.html?5.66.18</a>
13	Vegetation D01/D03/D04 in Caltrans District 1 Geospatial Data for the Advance Mitigation Needs Assessment for the Fourth Quarter of Fiscal Year (“FY”) 2021/2022	Statewide Advance Mitigation Needs Assessment (“SAMNA”)	1/1/2017	7/21/2023	<a href="https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation">https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation</a>
14	Waters and Wetlands D01/D03/D04 in Caltrans District 1 Geospatial Data for the Advance Mitigation Needs Assessment for the Fourth Quarter of FY 2021/2022	SAMNA	1/1/2017	7/21/2023	<a href="https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation">https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation</a>
15	U.S. Fish and Wildlife Service (“FWS”) Critical Habitat	FWS	12/9/2022	1/5/2023	<a href="https://ecos.fws.gov/ecp/report/table/critical-habitat.html">https://ecos.fws.gov/ecp/report/table/critical-habitat.html</a>
16	Essential Connectivity Areas – California Essential Habitat Connectivity (“CEHC”)	CDFW	1/1/2014	10/17/2018	<a href="https://map.dfg.ca.gov/metadata/ds0620.html?5.66.18">https://map.dfg.ca.gov/metadata/ds0620.html?5.66.18</a>
17	Natural Landscape Blocks – CEHC	CDFW	10/1/2017	10/17/2018	<a href="https://map.dfg.ca.gov/metadata/ds0621.html?5.66.18">https://map.dfg.ca.gov/metadata/ds0621.html?5.66.18</a>
18	Potential Riparian Connections – CEHC	CDFW	3/1/2010	10/17/2018	<a href="https://map.dfg.ca.gov/metadata/ds0622.html?5.66.18">https://map.dfg.ca.gov/metadata/ds0622.html?5.66.18</a>
19	National Flood Hazard Layer	Federal Emergency Management Agency	12/7/2021	12/7/2021	<a href="https://www.fema.gov/national-flood-hazard-layer-nfhl">https://www.fema.gov/national-flood-hazard-layer-nfhl</a>
20	CalWater Hydrologic Areas	California Department of Forestry and Fire Protection	11/1/2016	10/19/2018	<a href="https://frap.fire.ca.gov/mapping/gis-data/">https://frap.fire.ca.gov/mapping/gis-data/</a>
21	National Wild and Scenic Rivers	USFS	3/2/2016	8/4/2021	<a href="https://www.rivers.gov/mapping-gis.php">https://www.rivers.gov/mapping-gis.php</a>

ID	GIS Layer	Source Agency	Source Date	Download Date	Website
22	Terrestrial Connectivity – ACE [ds2734]	CDFW	8/28/2019	9/25/2019	<a href="https://map.dfg.ca.gov/metadata/ds2734.html?5.80.28">https://map.dfg.ca.gov/metadata/ds2734.html?5.80.28</a>
23	State Wildlife Action Plan (“SWAP”) Terrestrial Targets – 2015	CDFW	2/1/2018	10/29/2018	<a href="https://map.dfg.ca.gov/metadata/ds1966.html?5.66.18">https://map.dfg.ca.gov/metadata/ds1966.html?5.66.18</a>
24	Aquatic Biodiversity Summary – ACE [ds2768]	CDFW	2/22/2018	7/3/2019	<a href="https://map.dfg.ca.gov/metadata/ds2768.html?5.80.28">https://map.dfg.ca.gov/metadata/ds2768.html?5.80.28</a>
25	Calfish Passage Assessment Database (“PAD”)	Calfish	10/3/2019	12/15/2019	<a href="https://map.dfg.ca.gov/metadata/ds0069.html?5.84.18vo">https://map.dfg.ca.gov/metadata/ds0069.html?5.84.18vo</a>
26	Terrestrial Biodiversity Summary – ACE [ds2739]	CDFW	2/24/2020	7/3/2019	<a href="https://map.dfg.ca.gov/metadata/ds2739.html?5.80.28">https://map.dfg.ca.gov/metadata/ds2739.html?5.80.28</a>
27	U.S. Army Corps of Engineers (“Corps”) Regulatory In-lieu Fee and Bank Information Tracking System	Mitigation Service Banks	Not available	1/28/2019	<a href="https://ribits.ops.usace.army.mil/ords/f?p=107:2">https://ribits.ops.usace.army.mil/ords/f?p=107:2</a>
28	CDFW-approved Mitigation Service Areas	Mitigation Service Banks	7/23/2018	1/28/2019	<a href="https://map.dfg.ca.gov/metadata/ds2782.html?5.76.22">https://map.dfg.ca.gov/metadata/ds2782.html?5.76.22</a>
29	National Hydrology Dataset Plus	U.S. Environmental Protection Agency (“EPA”)	3/13/2019	4/29/2021	<a href="https://www.epa.gov/waterdata/get-nhdplus-national-hydrography-dataset-plus-data">https://www.epa.gov/waterdata/get-nhdplus-national-hydrography-dataset-plus-data</a>
30	Fire Hazard Severity Zones in State Responsibility Area	California Department of Forestry and Fire Protection	11/1/2007	6/1/2022	<a href="https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/">https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/</a>
31	Vernal Pools - ACE [ds2732]	CDFW	2/13/2020	1/29/2021	<a href="https://map.dfg.ca.gov/metadata/ds2732.html?5.94.01">https://map.dfg.ca.gov/metadata/ds2732.html?5.94.01</a>
32	Regional Conservation Investment Strategies Draft Boundaries	CDFW	12/22/2021	12/22/2021	<a href="https://wildlife.ca.gov/Conservation/Planning/Regional-Conservation/RCIS">https://wildlife.ca.gov/Conservation/Planning/Regional-Conservation/RCIS</a>



ID	GIS Layer	Source Agency	Source Date	Download Date	Website
33	Conservation Plan Boundaries, Habitat Conservation Plan (“HCP”) and Natural Community Conservation Plan (“NCCP”)	CDFW	12/12/2017	1/28/2019	<a href="https://map.dfg.ca.gov/metadata/ds0760.html?5.80.28">https://map.dfg.ca.gov/metadata/ds0760.html?5.80.28</a>
34	Linkage Design for the California Bay Area Linkage Network [ds852]	CDFW	4/23/2014	1/25/2022	<a href="https://map.dfg.ca.gov/metadata/DS0852.html">https://map.dfg.ca.gov/metadata/DS0852.html</a>
35	Landscape Blocks for the California Bay Area Linkage Network [ds853]	CDFW	4/24/2014	1/25/2022	<a href="https://map.dfg.ca.gov/metadata/DS0853.html">https://map.dfg.ca.gov/metadata/DS0853.html</a>
36	Essential Fish Habitat	National Oceanic and Atmospheric Administration (“NOAA”) Fisheries	3/10/2021	5/25/2022	<a href="https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper">https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper</a>
37	Wildlife Movement Barrier Priorities - 2022 [ds3025]	CDFW	10/5/2022	2/27/2024	<a href="https://map.dfg.ca.gov/metadata/DS3025.html">https://map.dfg.ca.gov/metadata/DS3025.html</a>
38	303(d) List for Impaired Waterbodies	State Water Resources Control Board (“SWRCB”)	6/9/2021	5/13/2022	<a href="https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html">https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html</a>
39	Zip Codes	US Postal Service	2/11/2020	3/11/2020	<a href="https://www.arcgis.com/home/item.html?id=8d2012a2016e484dafaac0451f9aea24">https://www.arcgis.com/home/item.html?id=8d2012a2016e484dafaac0451f9aea24</a>

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## **APPENDIX B: TRANSPORTATION PROJECTS PLANNED FOR THE GAI DURING THE PLANNING PERIOD**

To identify the list of State Highway Operation and Protection Program (“SHOPP”) projects planned for the geographic area of interest (“GAI”), the California Department of Transportation (“Caltrans”) consulted the *State Highway Operation and Protection Program Ten-Year Project Book Fiscal Years 2021/22—2030/31* (“SHOPP Ten-Year Book”) for fiscal years 2021/22 to 2030/31 (Caltrans 2023). The intent of the SHOPP Ten-Year Book is to raise awareness of planned future transportation projects, and detailed transportation project information is not provided. The SHOPP Ten-Year Book includes 15 SHOPP transportation projects within the GAI that are currently in the planning and conceptual phases (Table B-1).

Each transportation project’s potential impact was defined using a buffer from the edge of pavement. Different buffer widths were used depending on the transportation project’s activity or activities, since many transportation projects consist of multiple activities. Most of the planned activities are to replace/install culverts. See Table 1 of Caltrans (2023) for the range of buffers relevant to the transportation projects listed in the SHOPP Ten-Year Book.

The subset of the Caltrans District 1 transportation projects that are planned within the GAI during the planning period covered by this Regional Advance Mitigation Needs Assessment (“RAMNA”), as well as the hydrologic unit code eight-digit (HUC-8) and ecoregion section, advertised year, and planned activities for each planned transportation project, are listed in Table B-1.

**Table B-1. SHOPP Transportation Projects Planned within the GAI and Planning Period**

ID Number	HUC-8	Ecoregion Section	Advertised Year	Caltrans District	County	Route <sup>a</sup>	Begin Mile <sup>a</sup>	End Mile <sup>a</sup>	Activity
20872	Upper Cache	Northern California Coast Ranges	2021/22	1	Lake	20	2	2.8	Reactive Safety
23144	Upper Cache	Northern California Coast Ranges	2030/31	1	Lake	20	4	R43.5	Drainage
23144	Upper Putah	Northern California Coast Ranges	2030/31	1	Lake	20	4	R43.5	Drainage
23144	Upper Cache	Northern California Interior Coast Ranges	2030/31	1	Lake	20	4	R43.5	Drainage
23457	Upper Cache	Northern California Interior Coast Ranges	2025/26	1	Lake	20	R43.9	R44.2	Reactive Safety
20277	Upper Cache	Northern California Coast Ranges	2025/26	1	Lake	29	11.89	23.6	Pavement
20277	Upper Putah	Northern California Coast Ranges	2025/26	1	Lake	29	11.89	23.6	Pavement
20909	Upper Cache	Northern California Coast Ranges	2021/22	1	Lake	29	R34.9	R35.23	Reactive Safety
22813	Upper Cache	Northern California Coast Ranges	2025/26	1	Lake	29	17.6	18	Reactive Safety
23199	Upper Putah	Northern California Coast Ranges	2025/26	1	Lake	29	5	5.9	Reactive Safety
23144	Upper Cache	Northern California Coast Ranges	2030/31	1	Lake	53	0	7	Drainage
23144	Upper Putah	Northern California Coast Ranges	2030/31	1	Lake	53	0	7	Drainage
23144	Upper Cache	Northern California Interior Coast Ranges	2030/31	1	Lake	53	0	7	Drainage

ID Number	HUC-8	Ecoregion Section	Advertised Year	Caltrans District	County	Route <sup>a</sup>	Begin Mile <sup>a</sup>	End Mile <sup>a</sup>	Activity
19029	Upper Cache	Northern California Coast Ranges	2021/22	1	Lake	175	0.26	0.42	Reactive Safety
23144	Upper Cache	Northern California Coast Ranges	2030/31	1	Lake	175	1	23	Drainage
23144	Upper Putah	Northern California Coast Ranges	2030/31	1	Lake	175	1	23	Drainage
23144	Upper Cache	Northern California Interior Coast Ranges	2030/31	1	Lake	175	1	23	Drainage
22035	Upper Putah	Northern California Coast Ranges	2029/30	4	Napa	121	13.2	22	Drainage
20324	Upper Putah	Northern California Coast Ranges	2027/28	4	Napa	128	4.56	19.1	Pavement
22041	Upper Putah	Northern California Coast Ranges	2029/30	4	Napa	128	15.7	24.1	Drainage
22045	Upper Putah	Northern California Coast Ranges	2028/29	4	Napa	128	24.7	33.3	Drainage
22045	Upper Putah	Northern California Interior Coast Ranges	2028/29	4	Napa	128	24.7	33.3	Drainage
18555	Upper Putah	Northern California Interior Coast Ranges	2023/24	4	Solano	128	0.72	0.73	Proactive Safety
20445	Upper Cache	Great Valley	2026/27	3	Yolo	16	40.5	R43.42	Pavement
16921	Upper Putah	Great Valley	2029/30	3	Yolo	128	0	9.8	Pavement
16921	Upper Putah	Northern California Interior Coast Ranges	2029/30	3	Yolo	128	0	9.8	Pavement

Source: Caltrans 2023

Notes: L = left, R = right

<sup>a</sup> Routes and begin and end postmiles are representative of the project and are not necessarily associated with the County, Ecoregion, or HUC-8 specified in the row.

## References

Caltrans (California Department of Transportation). 2023. *State Highway Operation and Protection Program Ten-Year Project Book Fiscal Years 2021/22–2030/31*. State Highway Operation and Protection Program Fiscal Year 2021/22 (Quarter 4). In process. Sacramento, California. Available upon request.

## APPENDIX C: LAND COVER TYPES

Land cover types within the geographic area of interest (“GAI”) were excerpted from the SAMNA Reporting Tool’s vegetation layer, which was developed by merging California Department of Fish and Wildlife’s (“CDFW’s”) California Wildlife Habitat Relationships (“CWHHR”) Vegetation Classification and Mapping Program Geographic Information System (“GIS”) database (CDFW 2021), the U.S. Forest Service (“USFS”) Classification and Assessment with Landsat of Visible Ecological Groupings, and the California Department of Forestry and Fire Protection vegetation layer (Caltrans 2023a, 2023b). A general description of each land cover type found within the GAI is provided below; complete descriptions can be found in Mayer and Laudenslayer (1988). Table 2-3 in the main text indicates the acreages of each habitat type that are mapped in the Central California Coast, Great Valley, Northern California Coast, Northern California Coast Ranges, and Northern California Interior Coast Ranges Ecoregion Sections.

A key map, provided after the list of habitat types, references mapbook pages, including zoomed-in views of locations within the GAI and mapped land cover types (page C-3). These 11 maps correspond with the aquatic resources maps in Appendix F, *Aquatic Resource Locations*.

**Tree-dominated Habitats:** Tree-dominated habitats have at least 10 percent total tree canopy crown closure. Within the GAI, tree-dominated habitats include blue oak woodland, blue oak-foothill pine, closed-cone pine-cypress, coastal oak woodland, desert riparian, Douglas fir, eucalyptus, juniper, Klamath mixed conifer, montane hardwood, montane hardwood-conifer, montane riparian, ponderosa pine, redwood, Sierran mixed conifer, valley foothill riparian, valley oak woodland, and white fir.

**Shrub-dominated Habitats:** Shrub-dominated habitats have at least 10 percent total cover by shrub species and less than 10 percent cover by tree species. Within the GAI, shrub-dominated habitats include chamise-redshank chaparral, coastal scrub, mixed chaparral, and montane chaparral.

**Herbaceous-dominated Habitats:** Herbaceous-dominated habitats have at least 2 percent total cover by herbaceous species and less than 10 percent total cover by tree or shrub species. Within the GAI, herbaceous-dominated habitats include annual grassland, fresh emergent wetland, freshwater emergent marsh, pasture, perennial grassland, saline emergent wetland, and wet meadow.

**Aquatic Habitats:** Aquatic habitats have at least 98 percent total cover by open water and no more than 2 percent total cover by vegetation within the continually exposed shore zone. Within the GAI, aquatic habitats include lacustrine and riverine.

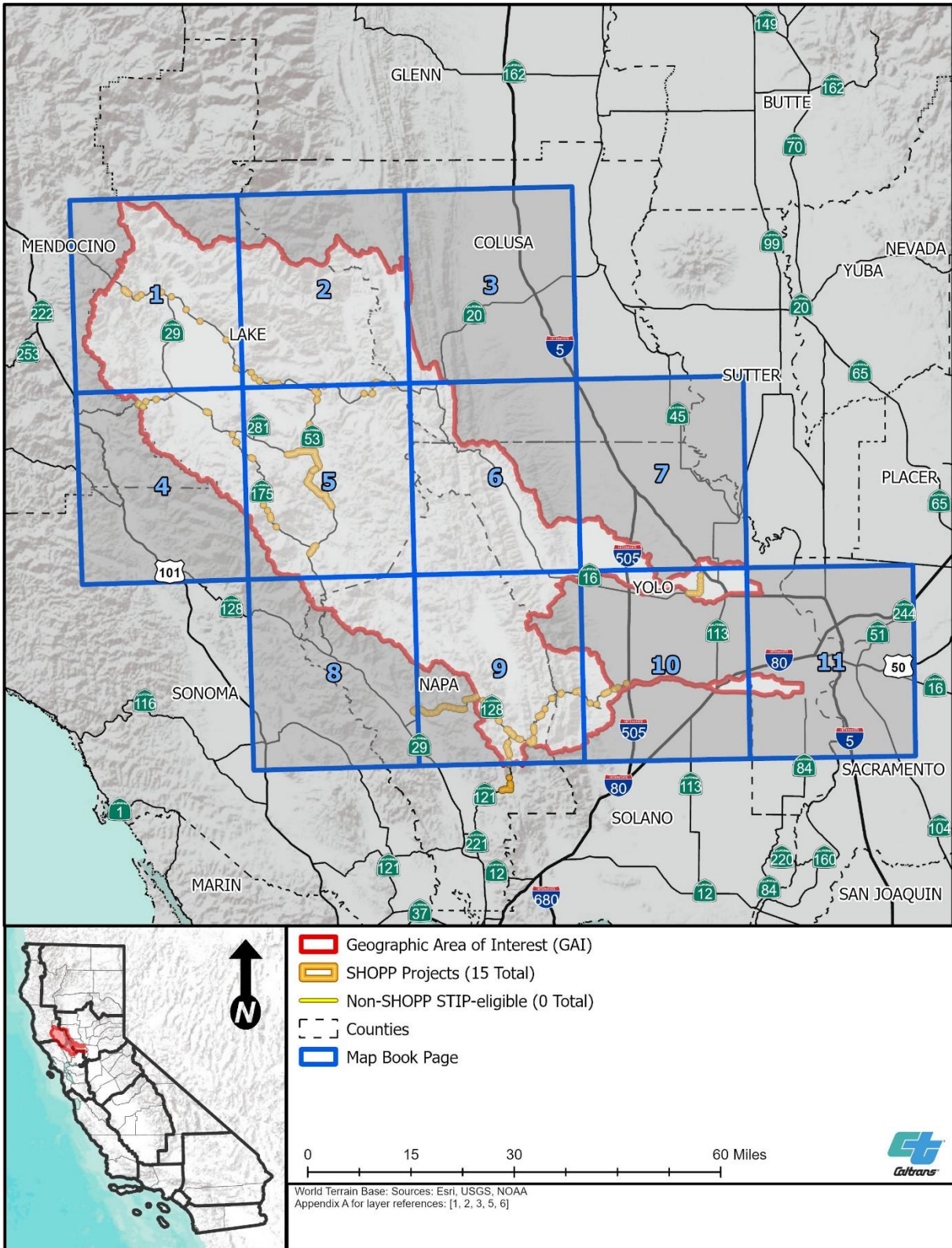
**Developed Habitats:** Developed habitats have at least 2 percent total cover by non-wildland vegetation grown for food, fiber, or landscaping, and do not meet criteria for any wildland habitat. Within the GAI, developed habitats include cropland, deciduous orchard, irrigated row and field crops, orchard-vineyard, urban, and vineyard.

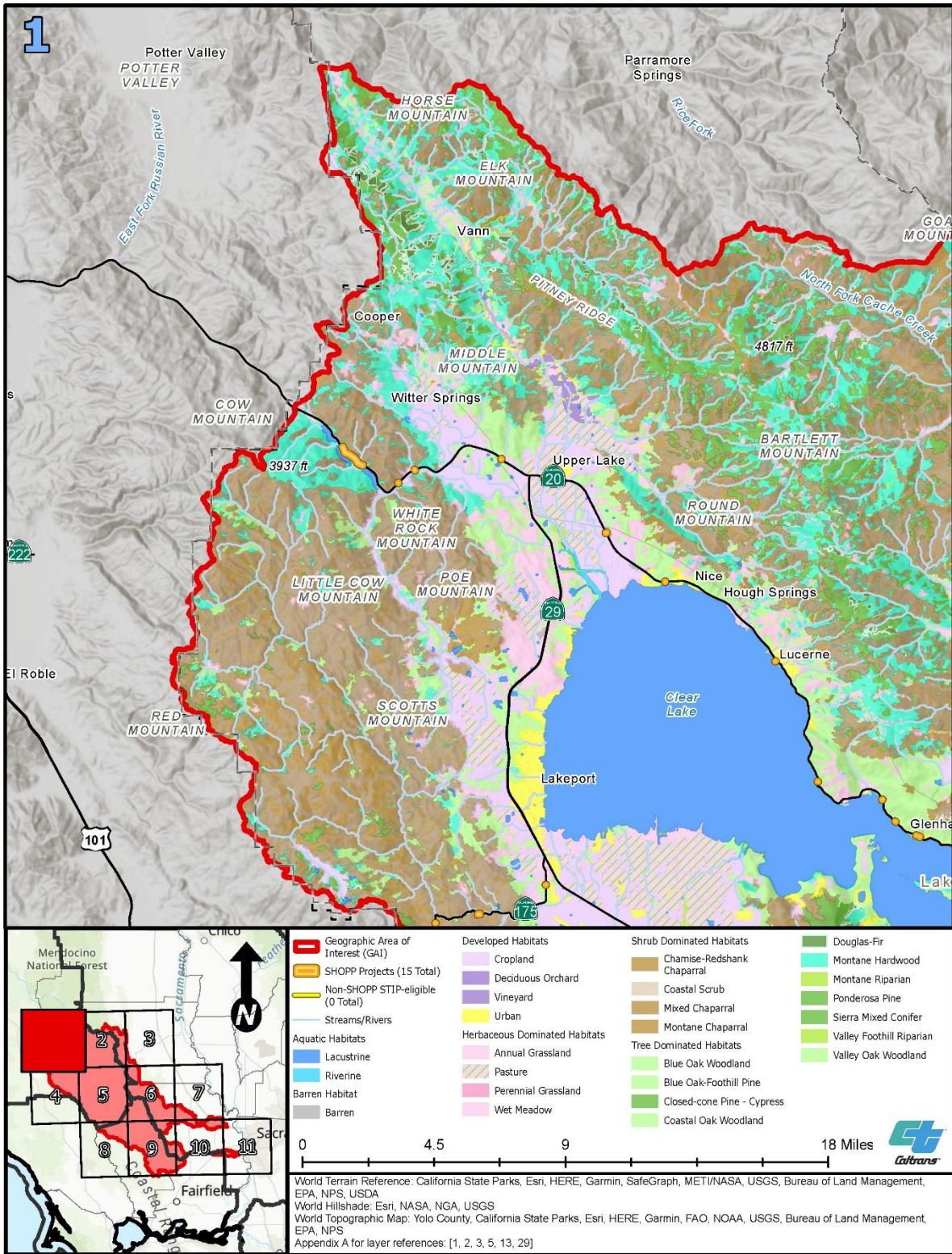
**Non-vegetated Habitats:** Non-vegetated habitats include barren areas, characterized by less than 2 percent cover by herbaceous species. Within the GAI, non-vegetated habitats consist of barren areas.

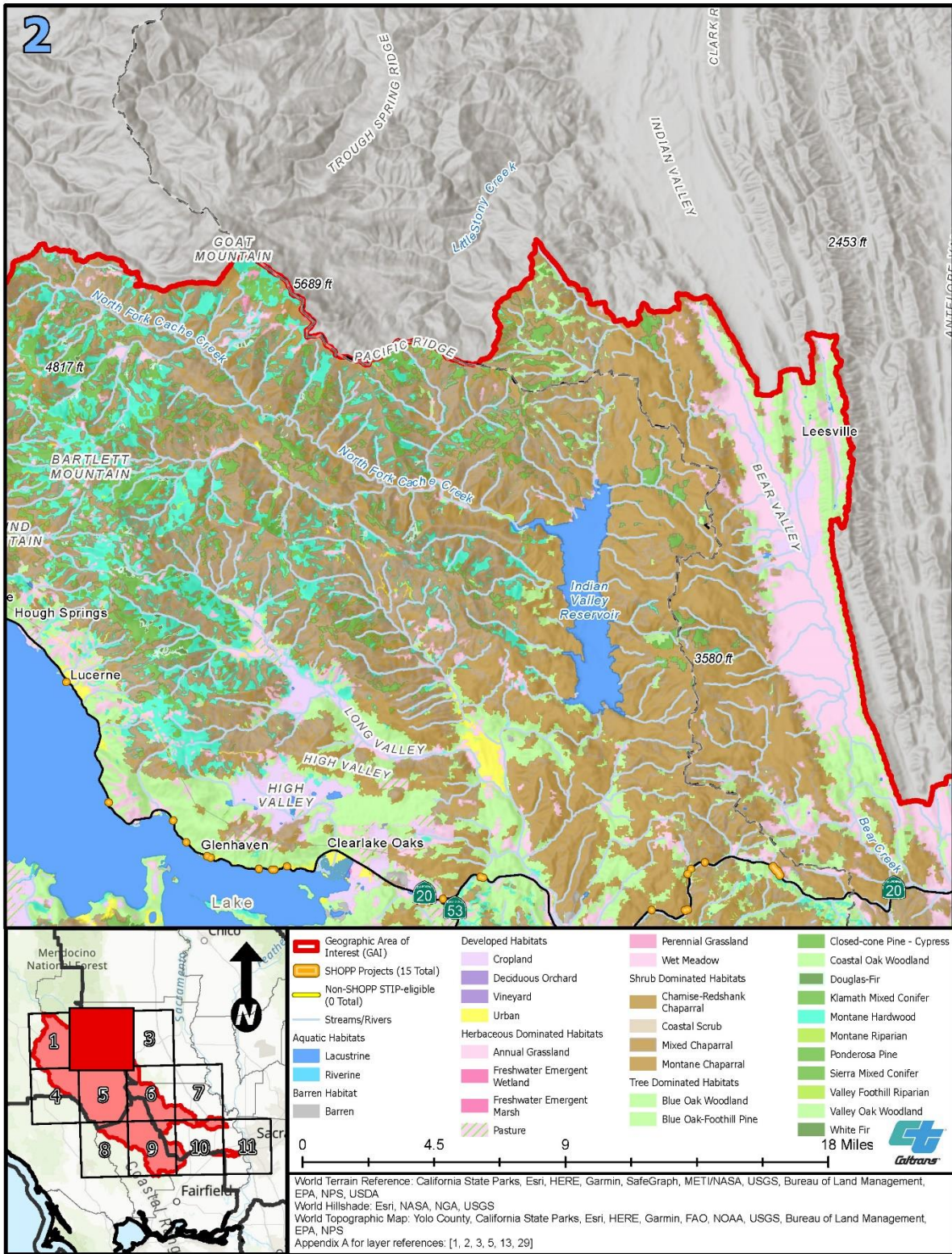
## References

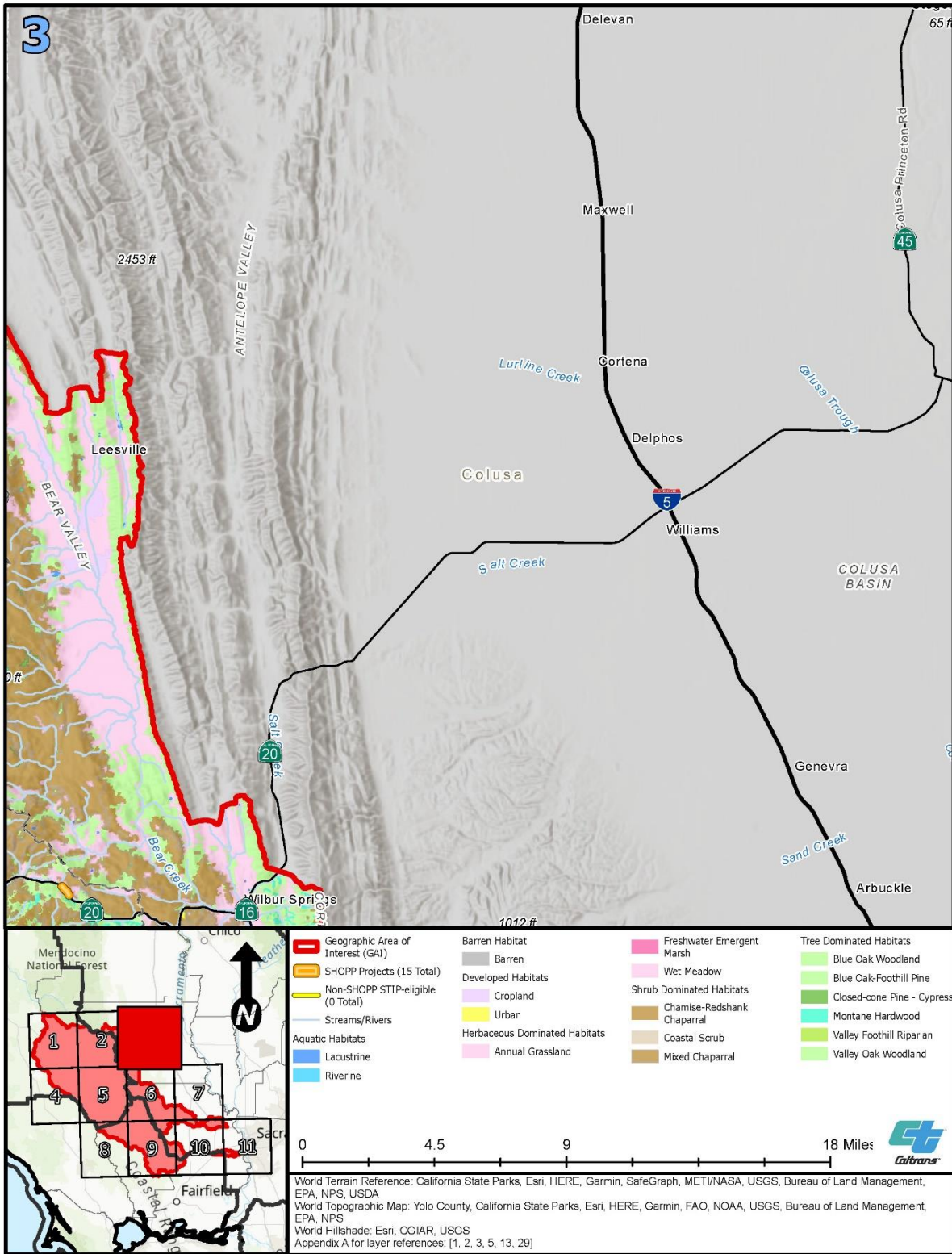
- Caltrans (California Department of Transportation). 2023a. "Vegetation\_ D01/D03/D04 in Caltrans District 1 Geospatial Data for the Advance Mitigation Needs Assessment for the Fourth Quarter of FY 2021/2022" (data file). Accessed August 8, 2023. <https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation>.
- . 2023b. "Statewide Advance Mitigation Needs Assessment Report." State Highway Operation and Protection Program. Ten-Year Project Book. Second Quarter 2021/2022 Fiscal Year. February. Sacramento, California. Report updates for subsequent FY 2021/2022 quarters available upon request. <https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation>.
- CDFW (California Department of Fish and Wildlife). 2021. *California Wildlife Habitat Relationships (CWHR) System*. Supported by the California Interagency Wildlife Task Group and maintained by the CDFW. Database Version 9.0.
- Mayer, Kenneth E., and William F. Laudenslayer, Jr., eds. 1988. "A Guide to Wildlife Habitats of California." State of California, Resources Agency, Department of Fish and Game. Sacramento, California. Including Revisions and Updates. Accessed August 17, 2023. <https://www.wildlife.ca.gov/Data/CWHR/Wildlife-Habitats>.

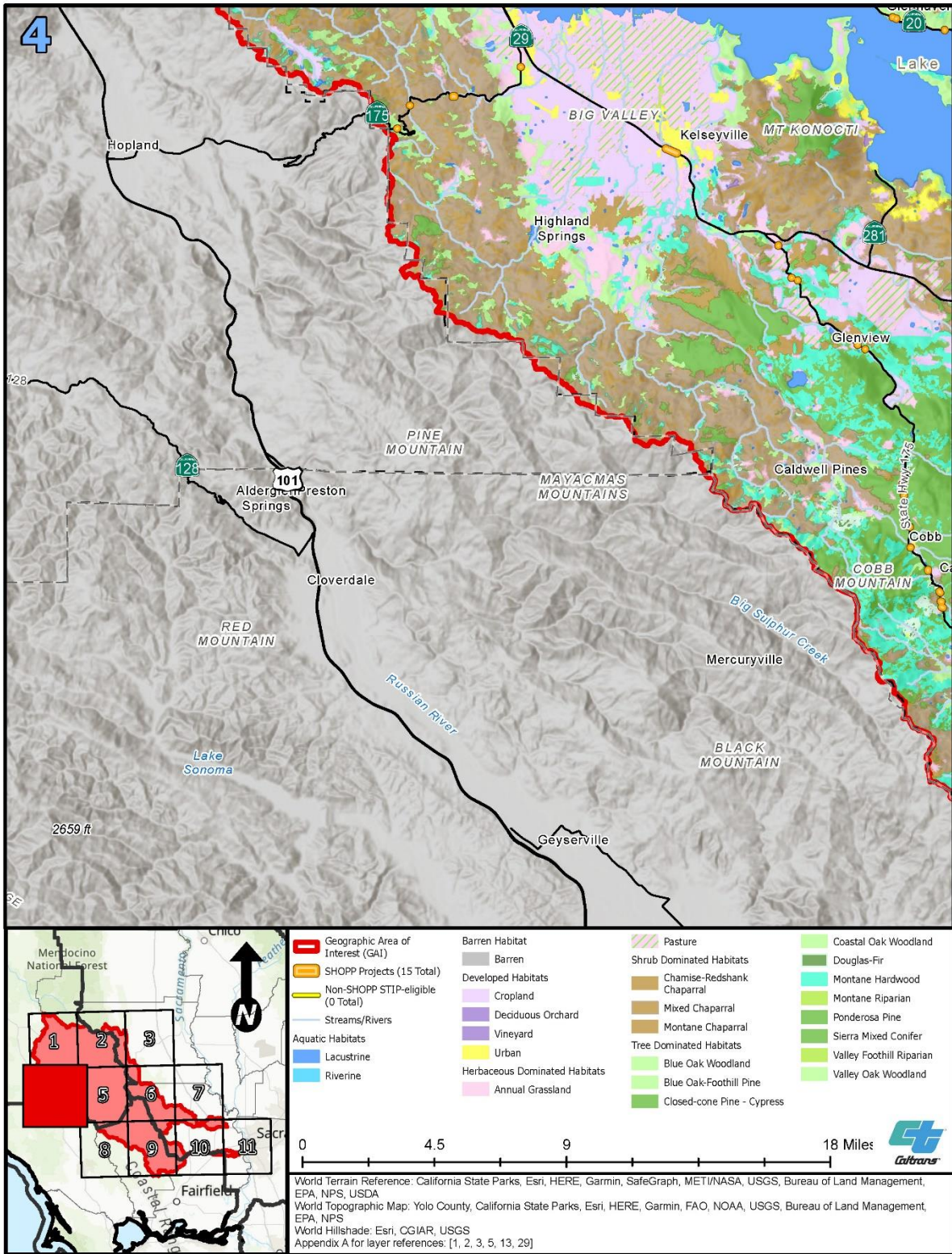


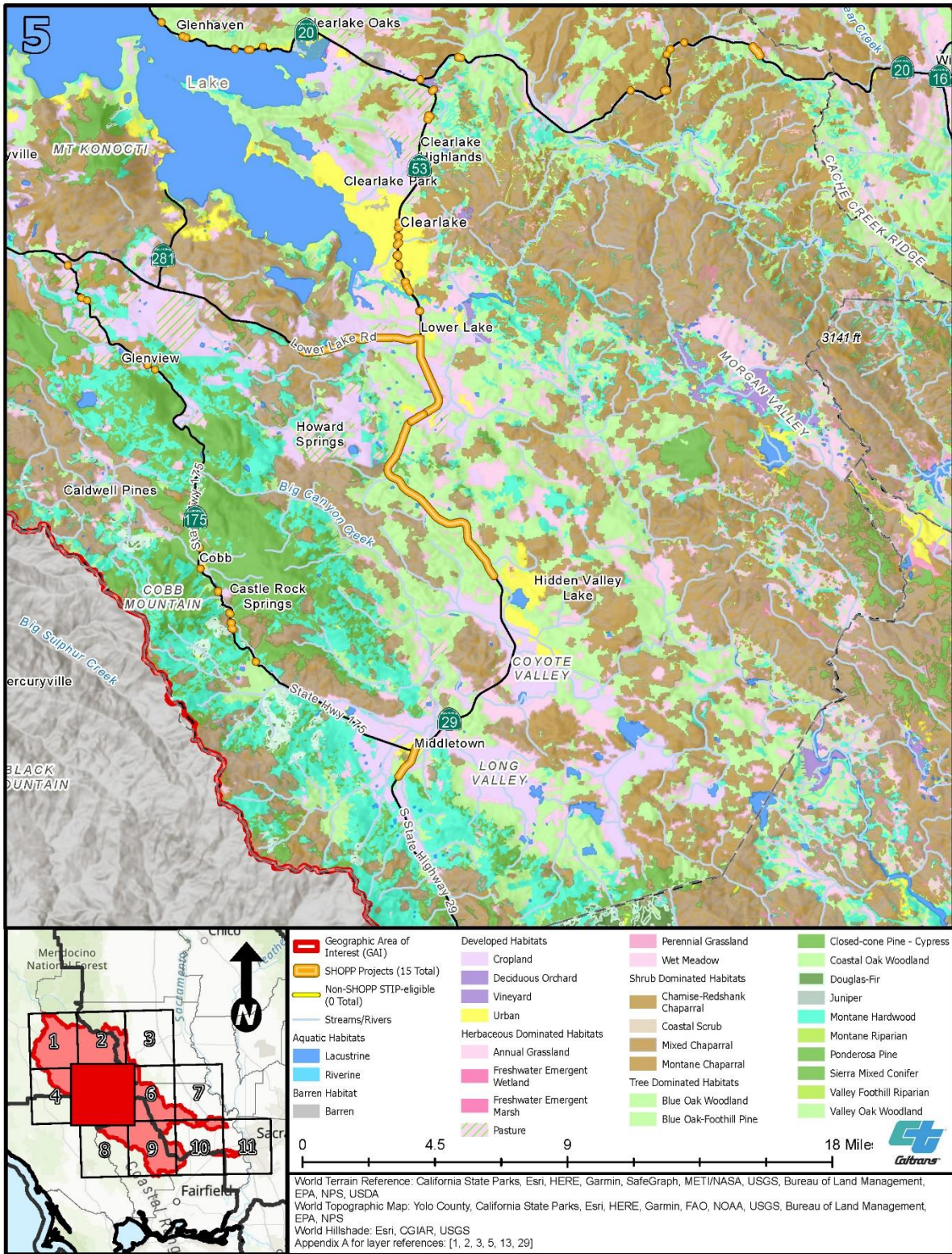


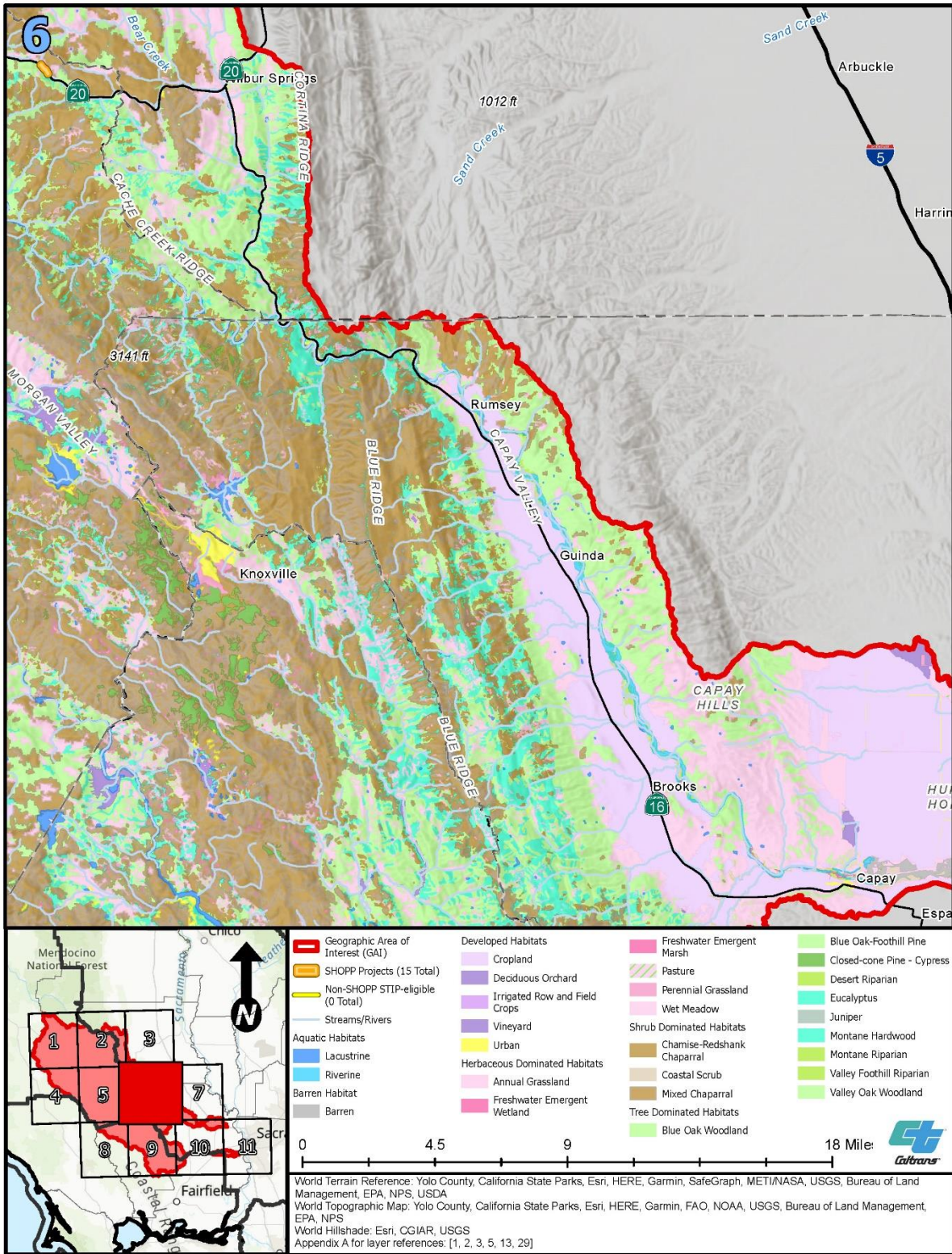


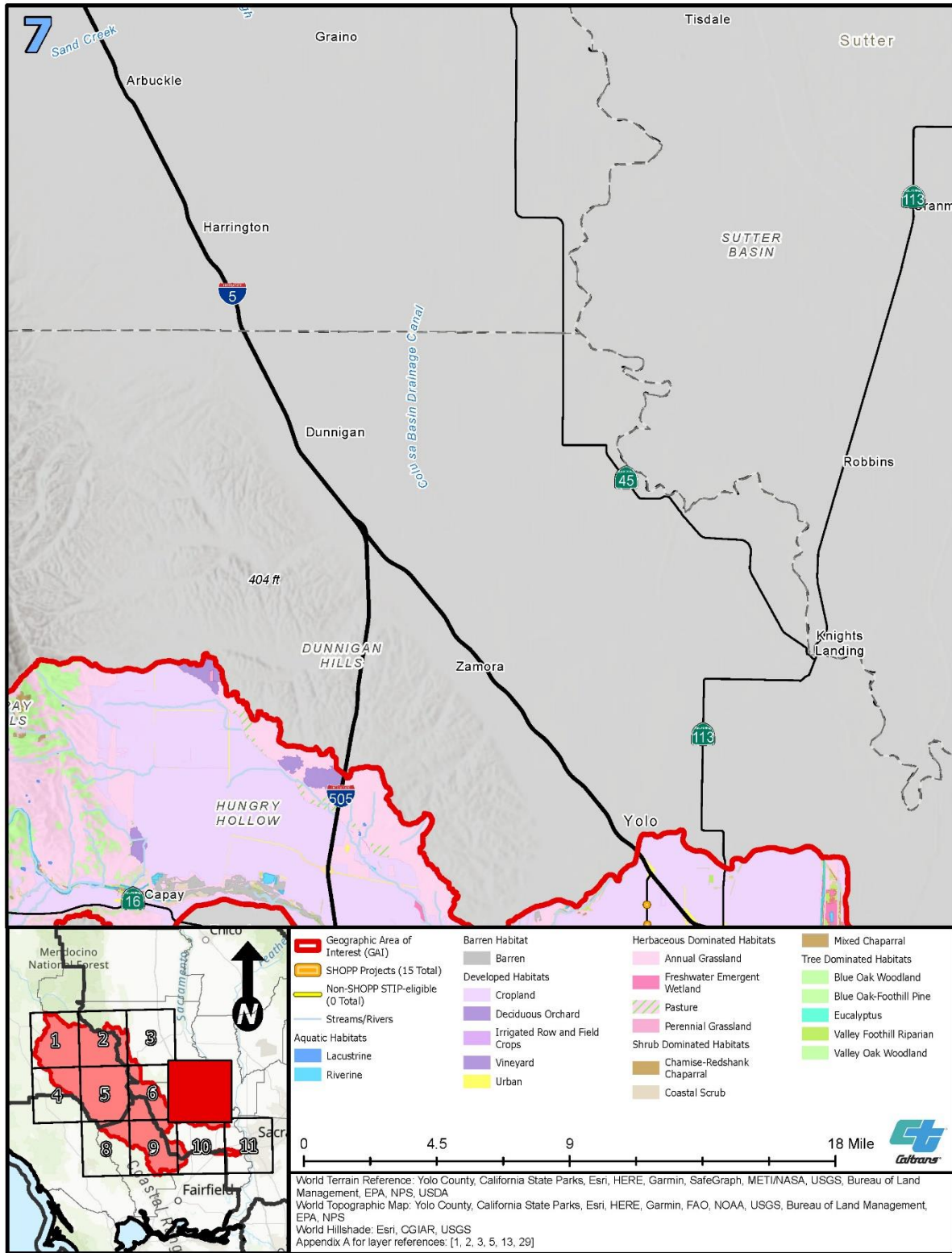




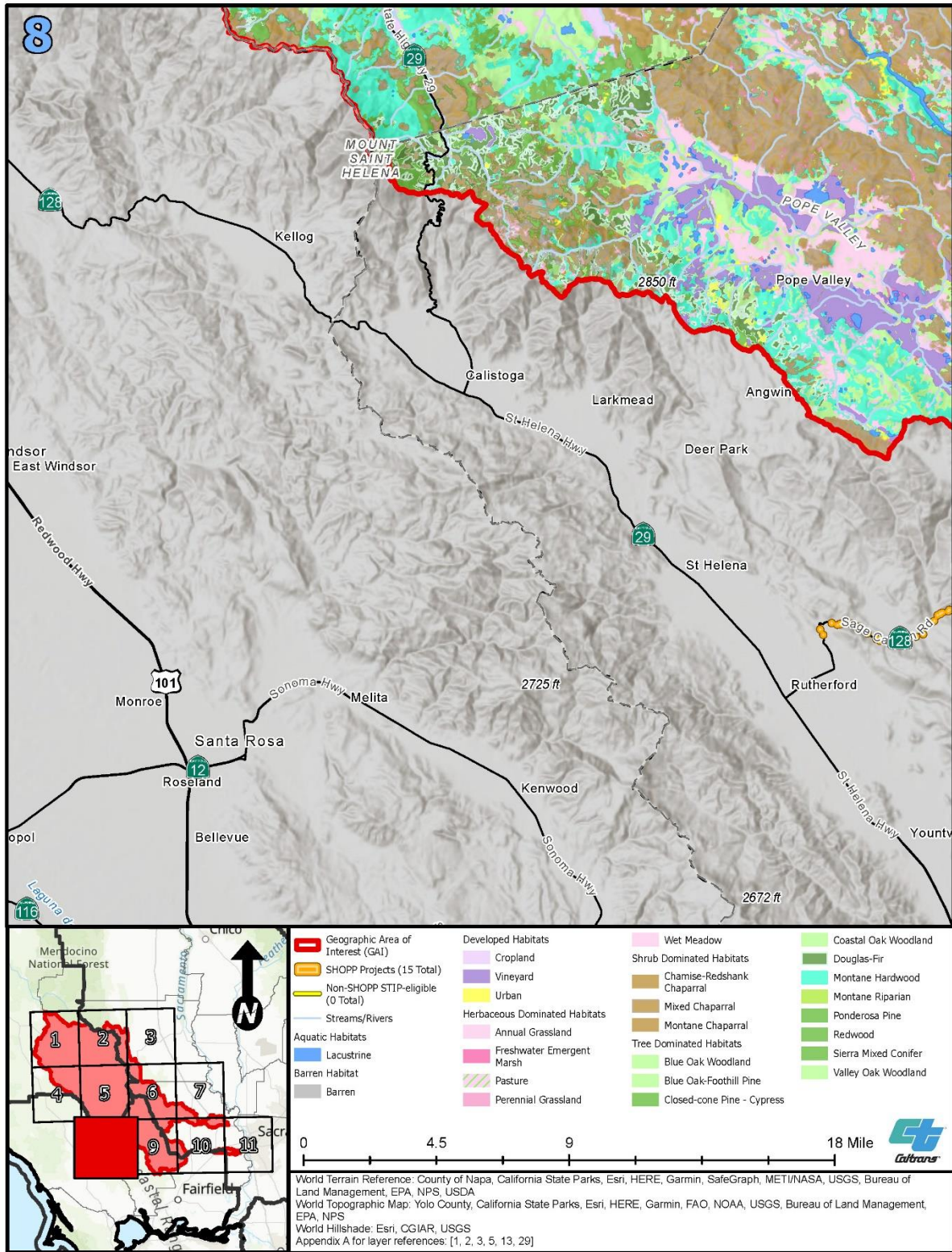


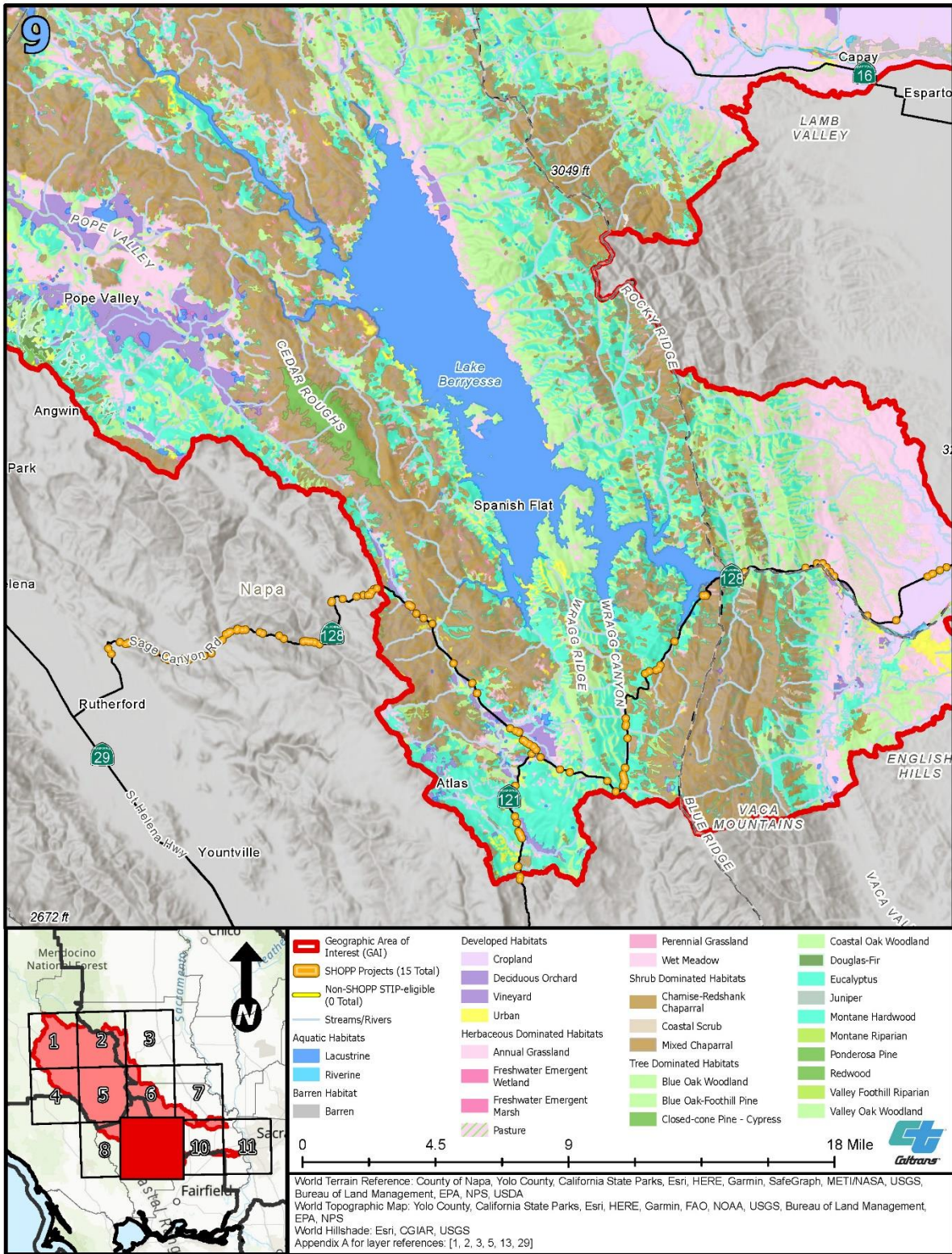


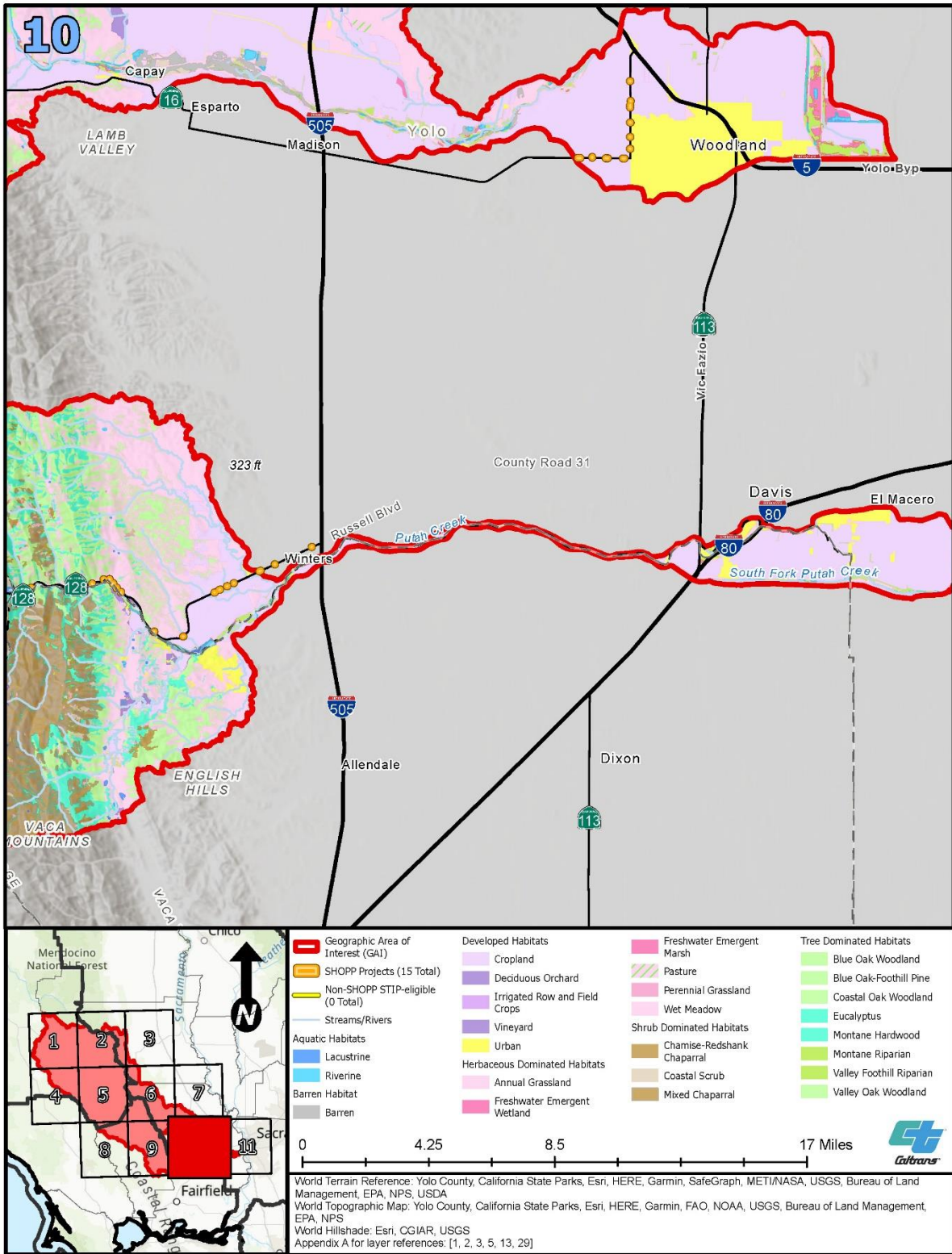


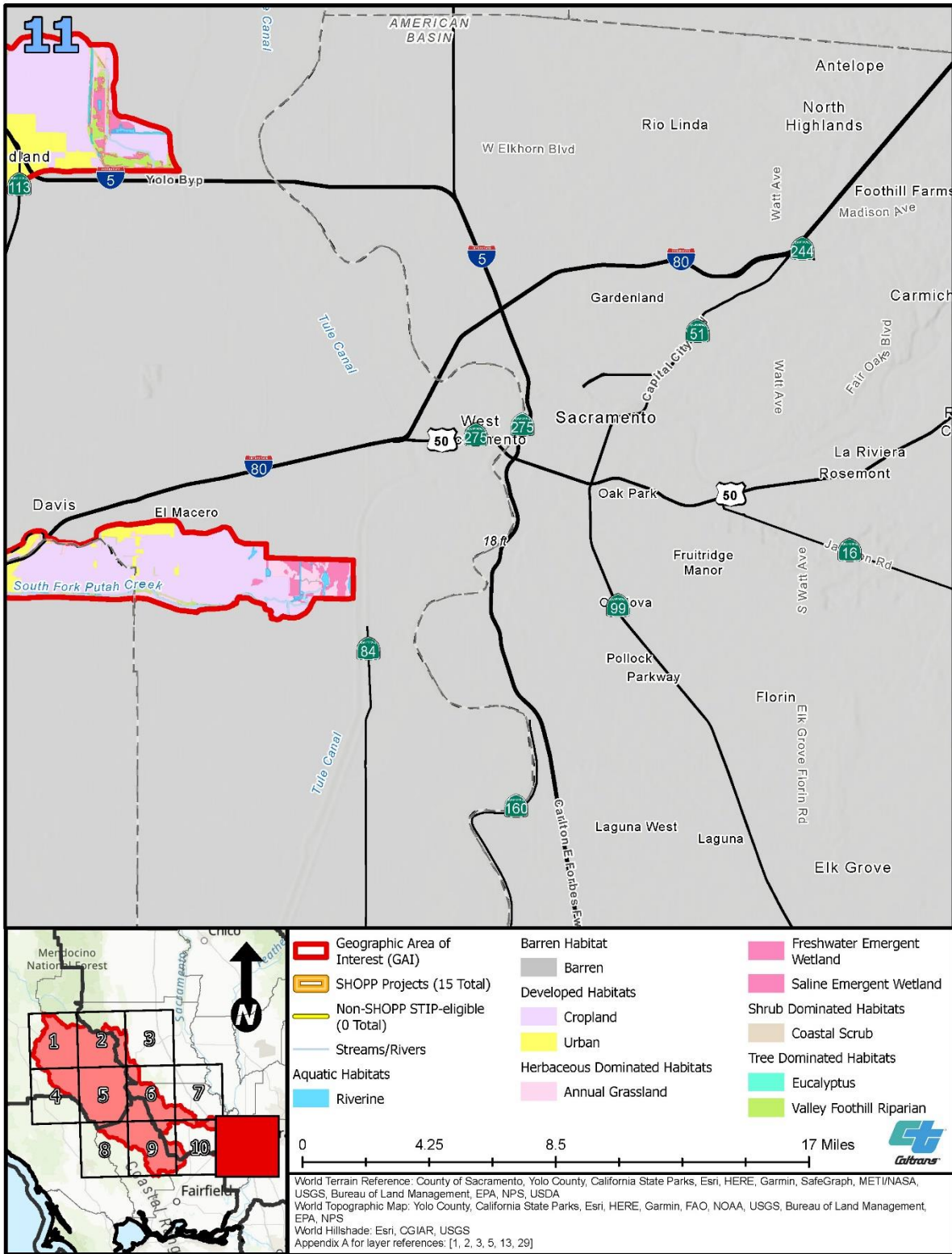












## APPENDIX D: COMPLETE SAMNA SPECIES RESULTS

Complete terrestrial species Statewide Advance Mitigation Needs Assessment (“SAMNA”) results for the geographic area of interest (“GAI”) are provided in Tables D-1 through D-3, which include SAMNA results for the portions of the Great Valley Ecoregion Section (starts on page D-3), Northern California Coast Ranges Ecoregion Section (starts on page D-7), and Northern California Interior Coast Ranges Ecoregion Section (starts on page D-12) within the GAI. The tables list the species for which the SAMNA has enough and the right kind of information to forecast potential impacts from transportation projects conceptualized in long-range transportation plans (Caltrans 2023). SAMNA results are only as accurate as their foundational data and have not been ground-truthed. Regarding these results:

- Species without California Wildlife Habitat Relationships (“CWHR”) system-supplied home ranges but identified by the California Natural Diversity Database as potentially present will be incorporated into the analysis of specific advance mitigation projects and future transportation projects.
- Subspecies may or may not have CWHR-supplied or other documented sources showing their home ranges. When a subspecies did not have home range information that could not be incorporated into the SAMNA model (that is, from a geographically based, available dataset), SAMNA results are provided at the species level, which may include both special-status and non-special-status species; therefore, the number of species with the potential to be affected may be overestimated.
- If impacts were estimated, additional information sources<sup>1</sup> were consulted to determine whether special-status subspecies are located within the GAI, and the SAMNA results are usable for this analysis. Footnotes have been added to the tables where data input limitations and modeling assumptions resulted in identification of potential impacts on species or subspecies that are not present within the GAI.
- When no impacts are estimated for a specific habitat, for any species, the habitat was excluded from this appendix.
- When no impacts for a species are estimated for any habitat, the species is included. Based on available information, it is potentially present within the GAI, but not in the habitats forecast to be affected by transportation projects.

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<sup>1</sup> For plants, this includes California Native Plant Society (“CNPS”) and the California Consortium of Herbaria. For federally listed species, this includes recent 5-year reviews, FWS species profiles, recovery plans, and Environmental Conservation Online System range maps. For birds, this includes *California Species of Special Concern* (Shuford and Gardali 2008). For amphibians and reptiles, this includes California Herps online, habitat conservation plans (“HCPs”)/ natural community conservation plans (“NCCPs”), and National Park Service documents.

Total habitat impacts for each special-status species are indicated in the far-right column of the table. Total habitat impacts in the bottom row of the table indicate the total anticipated impacts for each habitat type. These totals are not additive across all special-status species because each habitat type may provide suitable habitat for more than one special-status species or subspecies.

Habitats referenced in Tables D-1 through D-3 are mapped in Appendix C, *Land Cover Types*. The species of mitigation need for this GAI include Clear Lake hitch (*Lavinia exilicauda chi*), California red-legged frog (*Rana draytonii*), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). Several other special-status species share habitat with these species of mitigation need and may be affected by Caltrans' future transportation projects. Advance mitigation planning will consider the special-status species that co-occur in habitats that may also benefit from advance mitigation project planning and scoping to improve the conservation benefits of compensatory mitigation within the GAI. For example, advance mitigation established for California red-legged frog impacts may also provide mitigation to compensate for impacts on other species such as foothill yellow-legged frog (*Rana boylei*), tricolored blackbird (*Agelaius tricolor*), and yellow-breasted chat (*Icteria virens*). The types of habitats for the species of mitigation need with the potential to be affected within the GAI, and the other special-status species that may share these habitats, were excerpted from Tables D-1 through D-3 and are provided in Tables 5-8 through 5-10 in Chapter 5, *Modeled Estimated Impacts*, of the main text.

## References

- Caltrans (California Department of Transportation). 2023. "Statewide Advance Mitigation Needs Assessment Report." State Highway Operation and Protection Program. Ten-Year Project Book. Second Quarter 2021/2022 Fiscal Year. February. Sacramento, California. Report updates for subsequent FY 2021/2022 quarters available upon request. <https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation>.
- Shuford, W. D., and T. Gardali, editors. 2008. *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conversation Concern in California*.

**Table D-1. Complete SAMNA Results for the Great Valley Ecoregion Section within the GAI, by Land Cover**

Common Name	Scientific Name	Status	Annual Grassland (acres)	Montane Riparian (acres)	Total (acres)
<b>Plants</b>	See below	See below	See below	See below	See below
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	FS, SE	0.02	0.00	<b>0.02</b>
Burke's goldfields	<i>Lasthenia burkei</i>	FE, SE	0.02	0.00	<b>0.02</b>
Calistoga popcornflower	<i>Plagiobothrys strictus</i>	FE, ST	0.02	0.00	<b>0.02</b>
Clara Hunt's milk-vetch	<i>Astragalus claranus</i>	FE, SE	0.02	0.00	<b>0.02</b>
Few-flowered navarretia	<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	FE, FS, ST	0.02	0.00	<b>0.02</b>
Geysers panicum	<i>Panicum acuminatum</i> var. <i>thermale</i>	SE	0.02	0.07	<b>0.09</b>
Indian Valley brodiaea	<i>Brodiaea rosea</i>	FS, SE	0.02	0.00	<b>0.02</b>
Keck's checkerbloom	<i>Sidalcea keckii</i>	FE	0.02	0.00	<b>0.02</b>
Lake County stonecrop	<i>Sedella leiocarpa</i>	FE, SE	0.02	0.00	<b>0.02</b>
Lake County western flax	<i>Hesperolinon didymocarpum</i>	SE	0.02	0.00	<b>0.02</b>
Loch Lomond button-celery	<i>Eryngium constancei</i>	FE, SE	0.02	0.00	<b>0.02</b>
Many-flowered navarretia	<i>Navarretia leucocephala</i> ssp. <i>plieantha</i>	FE, SE	0.02	0.00	<b>0.02</b>
Roderick's fritillary <sup>a</sup>	<i>Fritillaria roderickii</i>	SE	0.02	0.00	<b>0.02</b>
Slender Orcutt grass <sup>a</sup>	<i>Orcuttia tenuis</i>	FT, SE	0.02	0.00	<b>0.02</b>
Tiburon paintbrush <sup>a</sup>	<i>Castilleja affinis</i> var. <i>neglecta</i>	FE, ST	0.02	0.00	<b>0.02</b>
Two-fork clover	<i>Trifolium amoenum</i>	FE	0.02	0.00	<b>0.02</b>
<b>Invertebrates</b>	See below	See below	See below	See below	See below
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	0.00	0.07	<b>0.07</b>
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	0.02	0.00	<b>0.02</b>

Common Name	Scientific Name	Status	Annual Grassland (acres)	Montane Riparian (acres)	Total (acres)
<b>Amphibians</b>	See below	See below	See below	See below	See below
California red-legged frog	<i>Rana draytonii</i>	FT, SSC	0.97	0.73	<b>2.17</b>
California tiger salamander	<i>Ambystoma californiense</i>	FE, FT, ST	0.00	1.02	<b>15.48</b>
Foothill yellow-legged frog <sup>b</sup>	<i>Rana boylei</i>	FCE, FCT, FS, SE, ST, SSC	4.91	1.11	<b>21.42</b>
Western spadefoot	<i>Spea hammondi</i>	FS, SSC	0.00	1.02	<b>15.07</b>
<b>Reptiles</b>	See below	See below	See below	See below	See below
Blainville's horned lizard	<i>Phrynosoma blainvillii</i>	FS, SSC	0.02	0.00	<b>0.02</b>
Common gartersnake <sup>c</sup>	<i>Thamnophis sirtalis</i>	SSC	0.02	0.07	<b>0.09</b>
Gophersnake	<i>Pituophis catenifer</i>	None	0.02	0.07	<b>0.09</b>
Ring-necked snake <sup>d</sup>	<i>Diadophis punctatus</i>	FS, SSC	0.02	0.07	<b>0.09</b>
Western skink <sup>e</sup>	<i>Plestiodon skiltonianus</i>	FS	0.02	0.07	<b>0.09</b>
<b>Birds</b>	See below	See below	See below	See below	See below
Bald eagle	<i>Haliaeetus leucocephalus</i>	FS, SE, SFP, SFS	0.02	0.07	<b>0.09</b>
Bewick's wren <sup>f</sup>	<i>Thryomanes bewickii</i>	SSC	0.00	0.07	<b>0.07</b>
Burrowing owl	<i>Athene cunicularia</i>	FS, SSC	0.02	0.00	<b>0.02</b>
California quail <sup>g</sup>	<i>Callipepla californica</i>	SSC	0.02	0.07	<b>0.09</b>
California towhee	<i>Pipilo crissalis</i>	None	0.00	0.07	<b>0.07</b>
Common yellowthroat <sup>h</sup>	<i>Geothlypis trichas</i>	SSC	0.02	0.07	<b>0.09</b>
Golden eagle	<i>Aquila chrysaetos</i>	FS, SFS, SFP	0.02	0.07	<b>0.09</b>
Grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	0.02	0.00	<b>0.02</b>
Great blue heron	<i>Ardea herodias</i>	SFS	0.02	0.07	<b>0.09</b>
Great egret	<i>Ardea alba</i>	SFS	0.02	0.07	<b>0.09</b>
Greater white-fronted goose	<i>Anser albifrons</i>	SSC	0.02	0.00	<b>0.02</b>



Common Name	Scientific Name	Status	Annual Grassland (acres)	Montane Riparian (acres)	Total (acres)
Hutton's vireo <sup>i</sup>	<i>Vireo huttoni</i>	SSC	0.00	0.07	<b>0.07</b>
Loggerhead shrike	<i>Lanius ludovicianus</i>	SE, SSC	0.02	0.07	<b>0.09</b>
Marsh wren <sup>j</sup>	<i>Cistothorus palustris</i>	SSC	0.00	0.07	<b>0.07</b>
Modesto song sparrow	<i>Melospiza melodia mailliardi</i>	SSC	0.02	0.07	<b>0.09</b>
Northern harrier	<i>Circus cyaneus</i>	SSC	0.02	0.07	<b>0.09</b>
Osprey	<i>Pandion haliaetus</i>	FS	0.02	0.07	<b>0.09</b>
Peregrine falcon	<i>Falco peregrinus</i>	SFS, SFP	0.02	0.07	<b>0.09</b>
Red-winged blackbird <sup>k</sup>	<i>Agelaius phoeniceus</i>	SSC	0.02	0.07	<b>0.09</b>
Savannah sparrow <sup>l</sup>	<i>Passerculus sandwichensis</i>	SE, SSC	0.02	0.00	<b>0.02</b>
Short-eared owl	<i>Asio flammeus</i>	SSC	0.02	0.07	<b>0.09</b>
Song sparrow	<i>Melospiza melodia</i>	SSC	0.02	0.07	<b>0.09</b>
Spotted towhee <sup>m</sup>	<i>Pipilo maculatus</i>	SSC	0.00	0.07	<b>0.07</b>
Tricolored blackbird	<i>Agelaius tricolor</i>	FS, ST, SSC	0.02	0.00	<b>0.02</b>
Vesper sparrow	<i>Poocetes gramineus</i>	SSC	0.02	0.00	<b>0.02</b>
White-tailed kite	<i>Elanus leucurus</i>	FS, SFP	0.02	0.00	<b>0.02</b>
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	SSC	0.02	0.00	<b>0.02</b>
<b>Mammals</b>	See below	See below	See below	See below	See below
American badger	<i>Taxidea taxus</i>	SSC	0.02	0.07	<b>0.09</b>
Black-tailed jackrabbit	<i>Lepus californicus</i>	None	0.02	0.07	<b>0.09</b>
California vole <sup>n</sup>	<i>Microtus californicus</i>	FE, FS, SE, SSC	0.02	0.07	<b>0.09</b>
Deer mouse <sup>o</sup>	<i>Peromyscus maniculatus</i>	SSC	0.02	0.07	<b>0.09</b>
Fringed myotis	<i>Myotis thysanodes</i>	FS	0.02	0.03	<b>0.05</b>
Ornate shrew <sup>p</sup>	<i>Sorex ornatus</i>	FE, SSC	0.02	0.07	<b>0.09</b>
Pallid bat	<i>Antrozous pallidus</i>	FS, SSC	0.02	0.07	<b>0.09</b>

Common Name	Scientific Name	Status	Annual Grassland (acres)	Montane Riparian (acres)	Total (acres)
Red fox <sup>q</sup>	<i>Vulpes vulpes</i>	FE, FS, ST	0.02	0.07	0.09
Ringtail	<i>Bassariscus astutus</i>	SFP	0.02	0.07	0.09
Sacramento Valley red fox	<i>Vulpes vulpes patwin</i>	None	0.02	0.07	0.09
San Joaquin pocket mouse	<i>Perognathus inornatus</i>	FS	0.02	0.00	0.02
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	0.02	0.07	0.09
Western red bat	<i>Lasiurus blossevillii</i>	SSC	0.02	0.07	0.09
Western spotted skunk <sup>r</sup>	<i>Spilogale gracilis</i>	SSC	0.02	0.07	0.09
Yuma myotis	<i>Myotis yumanensis</i>	FS	0.02	0.07	0.09
<b>Total</b>	Not applicable	Not applicable	<b>0.02</b>	<b>0.07</b>	<b>0.09</b>

Notes: FE = federally endangered; FS = federally sensitive (U.S. Forest Service ["USFS"] and/or Bureau of Land Management ["BLM"] sensitive); FT = federally threatened; SE = state endangered; SFP = state fully protected; SFS = state fire sensitive; SR = state rare; SSC = species of special concern (California Department of Fish and Wildlife ["CDFW"]); ST = state threatened

<sup>a</sup> Plant species does not occur in the Great Valley Ecoregion Section within the GAI.

<sup>b</sup> Foothill yellow-legged frog: Does not occur in the Great Valley Ecoregion Section within the GAI.

<sup>c</sup> Common gartersnake: Only the San Francisco subspecies (*Thamnophis sirtalis tetrataenia*) and south coast population (*T. sirtalis*, population 1) are special status, and they do not occur within the GAI.

<sup>d</sup> Ring-necked snake: Only the regal (Great Basin), San Bernardino, and San Diego subspecies are considered special status, and they do not occur within the GAI.

<sup>e</sup> Western skink: Only the Coronado subspecies (*Plestiodon skiltonianus interparietalis*) is special status, and it does not occur within the GAI (restricted to San Diego and Riverside Counties).

<sup>f</sup> Bewick's wren: Only the San Clemente subspecies (*Thryomanes bewickii leucophrys*) is considered special status, and it does not occur within the GAI (endemic to San Clemente Island).

<sup>g</sup> California quail: Only the Catalina subspecies (*Callipepla californica catalinensis*) is considered special status, and it does not occur within the GAI (endemic to the Channel Islands).

<sup>h</sup> Common yellowthroat: Only the San Francisco/saltmarsh subspecies (*Geothlypis trichas sinuosa*) is considered special status, and it does not occur within the GAI (occurs in Sonoma County but only in the far southern parts of the county near San Pablo Bay).

<sup>i</sup> Hutton's vireo: Only the Catalina subspecies (*Vireo huttoni unitti*) is considered special status, and it does not occur within the GAI (endemic to the Channel Islands).

<sup>j</sup> Marsh wren: Only the Clark's subspecies (*Cistothorus palustris clarkae*) is considered special status, and it does not occur within the GAI (does not occur north of Los Angeles County).

<sup>k</sup> Red-winged blackbird: Only the Kern subspecies (*Agelaius phoeniceus aciculatus*) is considered special status, and it does not occur within the GAI (endemic to Kern County).

<sup>l</sup> Savannah sparrow: There are 3 special status subspecies of savannah sparrow, but none of them occur in the GAI.

<sup>m</sup> Spotted towhee: Only the San Clemente subspecies (*Pipilo maculatus clementae*) is considered special status, and it does not occur within the GAI (endemic to the Channel Islands).

<sup>n</sup> California vole: Six special-status subspecies of California vole exists, none of which occur within the GAI (*M.c. sanpabloensis* comes the closest to the GAI but does not occur north of San Pablo Bay).

<sup>o</sup> Deer mouse: Two special-status subspecies exist, neither of which occur within the GAI (restricted to the Channel Islands).

<sup>p</sup> Ornate shrew: Five special-status subspecies exist, and none occur within the GAI (*S. o. sinuosus* comes the closest to the GAI, but does not occur north of the San Pablo Bay tidal wetlands).

<sup>q</sup> Red fox: Only the Sierra Nevada subspecies is considered special status, and it does not occur within the GAI.

<sup>r</sup> Western spotted skunk: Only the Channel Islands subspecies (*Spilogale gracilis amphiala*) is special status, and it does not occur within the GAI (endemic to Channel Islands).

**Table D-2. Complete SAMNA Results for the Northern California Coast Ranges Ecoregion Section within the GAI, by Land Cover**

Common Name	Scientific Name	Status	Annual Grassland (acres)	Barren (acres)	Blue Oak Woodland (acres)	Blue Oak-Foothill Pine (acres)	Chamise-Redshank Chaparral (acres)	Lacustrine (acres)	Mixed Chaparral (acres)	Montane Hardwood (acres)	Montane Hardwood-Conifer (acres)	Montane Riparian (acres)	Orchard-Vineyard (acres)	Pasture (acres)	Ponderosa Pine (acres)	Sierran Mixed Conifer (acres)	Valley Oak Woodland (acres)	Wet Meadow (acres)	Total (acres)
<b>Plants</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	FS, SE	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	<b>4.96</b>
Burke's goldfields	<i>Lasthenia burkei</i>	FE, SE	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>4.92</b>
Calistoga popcornflower	<i>Plagiobothrys strictus</i>	FE, ST	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	<b>4.96</b>
Clara Hunt's milk-vetch	<i>Astragalus claranus</i>	FE, SE	4.92	0.00	0.00	0.00	0.00	0.00	5.71	2.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>12.93</b>
Few-flowered navarretia	<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	FE, FS, ST	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>4.92</b>
Geysers panicum	<i>Panicum acuminatum</i> var. <i>thermale</i>	SE	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	<b>5.53</b>
Indian Valley brodiaea	<i>Brodiaea rosea</i>	FS, SE	4.92	0.00	0.00	0.00	0.00	0.00	5.71	2.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>12.93</b>
Keck's checkerbloom	<i>Sidalcea keckii</i>	FE	4.92	0.00	0.00	0.00	0.00	0.00	0.00	2.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>7.21</b>
Lake County stonecrop	<i>Sedella leiocarpa</i>	FE, SE	4.92	0.00	0.00	0.00	0.00	0.00	0.00	2.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>7.21</b>
Lake County western flax	<i>Hesperolinon didymocarpum</i>	SE	4.92	0.00	0.00	0.00	0.00	0.00	5.71	2.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>12.93</b>
Loch Lomond button-celery	<i>Eryngium constancei</i>	FE, SE	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>4.92</b>
Many-flowered navarretia	<i>Navarretia leucocephala</i> ssp. <i>plieantha</i>	FE, SE	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>4.92</b>
North Coast semaphore grass	<i>Pleuropogon hooverianus</i>	ST	0.00	0.00	0.00	0.00	NULL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	<b>0.04</b>
Roderick's fritillary <sup>a</sup>	<i>Fritillaria roderickii</i>	SE	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>4.92</b>
Slender Orcutt grass	<i>Orcuttia tenuis</i>	FT, SE	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>4.92</b>
Tiburon paintbrush <sup>a</sup>	<i>Castilleja affinis</i> var. <i>neglecta</i>	FE, ST	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>4.92</b>
Two-fork clover	<i>Trifolium amoenum</i>	FE	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>4.92</b>
<b>Invertebrates</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	0.00	NULL	0.00	NULL	0.00	NULL	0.00	0.00	NULL	0.05	0.00	NULL	NULL	NULL	NULL	NULL	<b>0.05</b>

Common Name	Scientific Name	Status	Annual Grassland (acres)	Barren (acres)	Blue Oak Woodland (acres)	Blue Oak-Foothill Pine (acres)	Chamise-Redshank Chaparral (acres)	Lacustrine (acres)	Mixed Chaparral (acres)	Montane Hardwood (acres)	Montane Hardwood-Conifer (acres)	Montane Riparian (acres)	Orchard-Vineyard (acres)	Pasture (acres)	Ponderosa Pine (acres)	Sierran Mixed Conifer (acres)	Valley Oak Woodland (acres)	Wet Meadow (acres)	Total (acres)
<b>Amphibians</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
California newt <sup>b</sup>	<i>Taricha torosa</i>	SSC	4.92	0.00	13.10	6.95	0.00	0.27	5.71	0.00	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>35.11</b>
California red-legged frog	<i>Rana draytonii</i>	FT, SSC	4.84	0.00	13.00	6.95	0.00	0.12	1.21	1.94	0.22	0.61	0.00	0.00	1.96	0.00	1.16	0.04	<b>32.05</b>
Ensatina <sup>c</sup>	<i>Ensatina eschscholtzii</i>	FS	0.00	0.00	13.10	6.95	0.00	0.00	5.71	2.29	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>32.21</b>
Foothill yellow-legged frog	<i>Rana boylei</i>	FCE, FCT, FS, SE, ST, SSC	4.92	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>37.22</b>
<b>Reptiles</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
California mountain kingsnake <sup>d</sup>	<i>Lampropeltis zonata</i>	None	4.92	0.00	13.10	6.95	0.00	0.00	5.71	2.29	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>37.13</b>
Common gartersnake <sup>e</sup>	<i>Thamnophis sirtalis</i>	SSC	4.92	0.00	13.10	6.95	0.09	0.27	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>37.79</b>
Common sagebrush lizard <sup>f</sup>	<i>Sceloporus graciosus</i>	FS	0.00	0.00	0.00	0.00	0.00	0.00	5.71	2.29	0.22	0.00	0.00	0.00	1.96	0.16	0.00	0.00	<b>10.35</b>
Gophersnake	<i>Pituophis catenifer</i>	None	4.92	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>37.53</b>
Northern rubber boa	<i>Charina bottae</i>	None	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.29	0.22	0.61	0.00	0.00	1.96	0.16	0.00	0.04	<b>5.28</b>
Ring-necked snake <sup>g</sup>	<i>Diadophis punctatus</i>	FS, SSC	4.92	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.00	0.12	1.96	0.16	1.16	0.00	<b>37.30</b>
Striped racer <sup>h</sup>	<i>Coluber lateralis</i>	FT, ST	0.00	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>32.30</b>
Western skink <sup>i</sup>	<i>Plestiodon skiltonianus</i>	FS	4.92	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.00	<b>37.49</b>
<b>Birds</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
American white pelican <sup>j</sup>	<i>Pelecanus erythrorhynchos</i>	SSC	0.00	4.52	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>4.65</b>
Bald eagle	<i>Haliaeetus leucocephalus</i>	FS, SE, SFP, SFS	4.92	4.52	13.10	6.95	0.09	0.27	5.71	2.29	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>42.01</b>
Barrow's goldeneye <sup>k</sup>	<i>Bucephala islandica</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.01</b>
Bell's sparrow <sup>l</sup>	<i>Artemisiospiza belli</i>	SSC	0.00	0.00	0.00	0.00	0.09	0.00	3.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>3.24</b>
Bewick's wren <sup>m</sup>	<i>Thryomanes bewickii</i>	SSC	0.00	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.00	1.96	0.00	1.16	0.00	<b>32.29</b>
Burrowing owl	<i>Athene cunicularia</i>	FS, SSC	1.75	4.52	0.44	0.60	0.00	0.00	4.53	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.04	<b>12.00</b>

Common Name	Scientific Name	Status	Annual Grassland (acres)	Barren (acres)	Blue Oak Woodland (acres)	Blue Oak-Foothill Pine (acres)	Chamise-Redshank Chaparral (acres)	Lacustrine (acres)	Mixed Chaparral (acres)	Montane Hardwood (acres)	Montane Hardwood-Conifer (acres)	Montane Riparian (acres)	Orchard-Vineyard (acres)	Pasture (acres)	Ponderosa Pine (acres)	Sierran Mixed Conifer (acres)	Valley Oak Woodland (acres)	Wet Meadow (acres)	Total (acres)
California quail <sup>n</sup>	<i>Callipepla californica</i>	SSC	4.92	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.00	1.96	0.16	1.16	0.04	<b>37.41</b>
California towhee <sup>o</sup>	<i>Pipilo crissalis</i>	FT, SE	0.00	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.00	1.96	0.00	1.16	0.00	<b>32.29</b>
Common loon <sup>p</sup>	<i>Gavia immer</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.11</b>
Common yellowthroat <sup>q</sup>	<i>Geothlypis trichas</i>	SSC	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.00	0.00	1.96	0.00	0.00	0.04	<b>7.53</b>
Golden eagle	<i>Aquila chrysaetos</i>	FS, SFS, SFP	4.92	4.52	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.00	0.12	1.96	0.16	1.16	0.04	<b>41.86</b>
Grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	<b>4.96</b>
Great blue heron	<i>Ardea herodias</i>	SFS	4.92	0.00	13.10	6.95	0.00	0.27	0.00	2.29	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>31.68</b>
Great egret	<i>Ardea alba</i>	SFS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.05</b>
Hutton's vireo <sup>r</sup>	<i>Vireo huttoni</i>	SSC	0.00	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.00	1.96	0.16	1.16	0.00	<b>32.45</b>
Least bittern	<i>Ixobrychus exilis</i>	SSC	0.00	0.00	0.00	0.00	NULL	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.11</b>
Loggerhead shrike	<i>Lanius ludovicianus</i>	SE, SSC	4.92	4.52	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.00	1.96	0.00	1.16	0.04	<b>41.77</b>
Long-eared owl	<i>Asio otus</i>	SSC	4.92	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.00	0.12	1.96	0.16	1.16	0.04	<b>37.34</b>
Marsh wren <sup>s</sup>	<i>Cistothorus palustris</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.04	<b>0.64</b>
Northern harrier	<i>Circus cyaneus</i>	SSC	4.92	4.52	13.10	6.95	0.09	0.27	5.71	2.29	0.22	0.61	0.19	0.00	1.96	0.16	1.16	0.04	<b>42.20</b>
Northern spotted owl	<i>Strix occidentalis caurina</i>	FT, ST, SFS	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.11	0.13	0.00	0.00	<b>0.55</b>
Olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	0.00	0.00	0.00	6.83	0.09	0.00	5.50	2.18	0.22	0.58	0.00	0.00	1.96	0.16	0.00	0.00	<b>17.53</b>
Osprey	<i>Pandion haliaetus</i>	FS	4.92	4.52	13.10	6.95	0.00	0.27	5.71	2.29	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>41.92</b>
Peregrine falcon	<i>Falco peregrinus</i>	SFS, SFP	4.92	4.52	13.10	6.95	0.09	0.27	5.71	2.29	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>42.01</b>
Purple martin	<i>Progne subis</i>	SSC	4.92	0.00	13.10	6.95	0.00	0.27	0.00	2.29	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>31.68</b>
Red-winged blackbird <sup>l</sup>	<i>Agelaius phoeniceus</i>	SSC	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.19	0.00	0.00	0.00	0.00	0.04	<b>5.76</b>
Rufous-crowned sparrow <sup>u</sup>	<i>Aimophila ruficeps</i>	SSC	4.92	0.00	0.00	6.95	0.09	0.00	5.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>17.67</b>
Savannah sparrow <sup>v</sup>	<i>Passerculus sandwichensis</i>	SE, SSC	4.92	0.00	13.10	6.95	0.09	0.00	5.71	0.00	0.00	0.00	0.19	0.12	0.00	0.00	1.16	0.04	<b>32.28</b>
Short-eared owl <sup>w</sup>	<i>Asio flammeus</i>	SSC	0.29	0.00	0.07	0.00	0.09	0.00	0.13	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.00	0.00	<b>1.16</b>

Common Name	Scientific Name	Status	Annual Grassland (acres)	Barren (acres)	Blue Oak Woodland (acres)	Blue Oak-Foothill Pine (acres)	Chamise-Redshank Chaparral (acres)	Lacustrine (acres)	Mixed Chaparral (acres)	Montane Hardwood (acres)	Montane Hardwood-Conifer (acres)	Montane Riparian (acres)	Orchard-Vineyard (acres)	Pasture (acres)	Ponderosa Pine (acres)	Sierran Mixed Conifer (acres)	Valley Oak Woodland (acres)	Wet Meadow (acres)	Total (acres)
Song sparrow	<i>Melospiza melodia</i>	SSC	4.92	0.00	13.10	6.95	0.09	0.27	5.71	2.29	0.22	0.61	0.19	0.00	1.96	0.16	1.16	0.04	<b>37.68</b>
Spotted owl	<i>Strix occidentalis</i>	FT, FS, ST, SFS, SSC	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.11	0.13	0.00	0.00	<b>0.55</b>
Spotted towhee <sup>x</sup>	<i>Pipilo maculatus</i>	SSC	0.00	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.00	1.96	0.16	1.16	0.00	<b>32.45</b>
Tricolored blackbird	<i>Agelaius tricolor</i>	FS, ST, SSC	3.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.04	<b>3.34</b>
Vaux's swift	<i>Chaetura vauxi</i>	SSC	0.00	0.00	0.00	0.02	0.00	0.15	4.32	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>4.85</b>
White-tailed kite	<i>Elanus leucurus</i>	FS, SFP	4.92	4.52	13.10	6.95	0.09	0.00	5.71	0.00	0.00	0.00	0.19	0.00	0.00	0.00	1.16	0.04	<b>36.69</b>
Yellow warbler	<i>Setophaga petechia</i>	SSC	0.00	0.00	13.03	6.95	0.00	0.00	5.58	2.01	0.22	0.02	0.04	0.00	1.96	0.16	1.16	0.00	<b>31.14</b>
Yellow-breasted chat	<i>Icteria virens</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.02</b>
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	SSC	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.05</b>
<b>Mammals</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
American badger	<i>Taxidea taxus</i>	SSC	4.92	4.52	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>42.05</b>
Black-tailed jackrabbit	<i>Lepus californicus</i>	None	4.92	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>37.53</b>
Broad-footed mole <sup>y</sup>	<i>Scapanus latimanus</i>	SSC	4.92	0.00	13.10	6.95	0.00	0.00	0.00	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>31.72</b>
Brush rabbit <sup>z</sup>	<i>Sylvilagus bachmani</i>	FE, SE	4.92	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.00	<b>37.49</b>
California kangaroo rat <sup>aa</sup>	<i>Dipodomys californicus</i>	SSC	4.92	0.00	13.10	6.95	0.00	0.00	5.71	2.29	0.00	0.00	0.19	0.00	0.00	0.00	1.16	0.00	<b>34.33</b>
California vole <sup>bb</sup>	<i>Microtus californicus</i>	FE, FS, SE, SSC	4.92	0.00	13.10	6.95	0.00	0.00	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>37.44</b>
Deer mouse <sup>cc</sup>	<i>Peromyscus maniculatus</i>	SSC	4.92	4.52	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>42.05</b>
Dusky-footed woodrat <sup>dd</sup>	<i>Neotoma fuscipes</i>	FE, SSC	0.00	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>32.30</b>
Fringed myotis	<i>Myotis thysanodes</i>	FS	4.92	4.52	13.10	6.95	0.09	0.27	5.71	2.29	0.22	0.61	0.00	0.12	1.96	0.16	1.16	0.00	<b>42.09</b>
Long-eared myotis	<i>Myotis evotis</i>	FS	0.00	4.52	13.10	6.95	0.09	0.27	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>37.40</b>
Marten	<i>Martes caurina</i>	FS	0.00	0.37	0.00	0.00	NULL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.37</b>
Mountain lion <sup>ee</sup>	<i>Puma concolor</i>	SSC	4.92	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>37.53</b>
Northern river otter <sup>ff</sup>	<i>Lontra canadensis</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.04	<b>0.22</b>

Common Name	Scientific Name	Status	Annual Grassland (acres)	Barren (acres)	Blue Oak Woodland (acres)	Blue Oak-Foothill Pine (acres)	Chamise-Redshank Chaparral (acres)	Lacustrine (acres)	Mixed Chaparral (acres)	Montane Hardwood (acres)	Montane Hardwood-Conifer (acres)	Montane Riparian (acres)	Orchard-Vineyard (acres)	Pasture (acres)	Ponderosa Pine (acres)	Sierran Mixed Conifer (acres)	Valley Oak Woodland (acres)	Wet Meadow (acres)	Total (acres)
Ornate shrew <sup>99</sup>	<i>Sorex ornatus</i>	FE, SSC	4.84	0.00	13.00	6.95	0.00	0.00	1.21	0.00	0.22	0.61	0.00	0.00	1.96	0.16	1.16	0.04	<b>30.15</b>
Pallid bat	<i>Antrozous pallidus</i>	FS, SSC	4.92	4.52	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>42.05</b>
Ringtail	<i>Bassariscus astutus</i>	SFP	4.92	4.52	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.00	0.12	1.96	0.16	1.16	0.04	<b>41.86</b>
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	4.92	4.52	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>42.05</b>
Western red bat	<i>Lasiurus blossevillii</i>	SSC	4.92	0.00	13.10	6.95	0.09	0.27	5.71	2.29	0.22	0.61	0.00	0.12	1.96	0.16	1.16	0.04	<b>37.61</b>
Western spotted skunk <sup>hh</sup>	<i>Spilogale gracilis</i>	SSC	4.92	0.00	13.10	6.95	0.09	0.00	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>37.53</b>
Yuma myotis	<i>Myotis yumanensis</i>	FS	4.92	0.00	13.10	6.95	0.09	0.27	5.71	2.29	0.22	0.61	0.19	0.12	1.96	0.16	1.16	0.04	<b>37.79</b>
<b>Total</b>	Not applicable	Not applicable	<b>4.92</b>	<b>4.52</b>	<b>13.10</b>	<b>6.95</b>	<b>0.09</b>	<b>0.27</b>	<b>5.71</b>	<b>2.29</b>	<b>0.22</b>	<b>0.61</b>	<b>0.19</b>	<b>0.12</b>	<b>1.96</b>	<b>0.16</b>	<b>1.16</b>	<b>0.04</b>	<b>42.32</b>

Notes: FE = federally endangered; FS = federally sensitive (USFS and/or BLM sensitive); FT = federally threatened; SE = state endangered; SFP = state fully protected; SFS = state fire sensitive; SR = state rare; SSC = species of special concern (CDFW); ST = state threatened

<sup>a</sup> Plant species does not occur in the Northern California Coast Ranges Ecoregion Section within the GAI.

<sup>b</sup> California newt: Only the Coast Range population is special status, and it does not occur within the GAI (only occurs from Monterey County south).

<sup>c</sup> Ensatina: Only the yellow-blotched subspecies (*Ensatina eschscholtzii croceater*) and large-blotched subspecies (*E. e. klauberi*) are special status, and they do not occur within the GAI (neither occurs north of Kern County).

<sup>d</sup> California mountain kingsnake: Following recent taxonomic rearrangements, no special-status kingsnakes currently occur within the GAI.

<sup>e</sup> Common gartersnake: Only the San Francisco subspecies (*Thamnophis sirtalis tetrataenia*) and south coast population (*T. sirtalis*, population 1) are special status, and they do not occur within the GAI.

<sup>f</sup> Common sagebrush lizard: Only the northern subspecies (*Sceloporus graciosus graciosus*) is considered special status, and it does not occur within the GAI (restricted to the Great Basin).

<sup>g</sup> Ring-necked snake: Only the regal (Great Basin), San Bernardino, and San Diego subspecies are considered special status, and they do not occur within the GAI.

<sup>h</sup> Striped racer: Only the Alameda subspecies (*Coluber lateralis euryxanthus*) is considered special status, and it does not occur within the GAI (restricted to the East Bay Area).

<sup>i</sup> Western skink: Only the Coronado subspecies (*Plestiodon skiltonianus interparietalis*) is special status, and it does not occur within the GAI (restricted to San Diego and Riverside Counties).

<sup>j</sup> American white pelican: Only considered special status in its breeding range, and the GAI is not within the known breeding range of the species (northeastern part of the state from Siskiyou County to Tahoe Basin).

<sup>k</sup> Barrow's goldeneye: Only considered special status in its breeding range, and the GAI is not within the known breeding range of the species (formerly nested in the Cascades and Sierra Ranges, but no confirmed nests in many decades).

<sup>l</sup> Bell's sparrow: Only the San Clemente subspecies is considered special status, and it does not occur within the GAI (endemic to San Clemente Island). Also, this subspecies has been delisted and is no longer considered federally threatened.

<sup>m</sup> Bewick's wren: Only the San Clemente subspecies (*Thryomanes bewickii leucophrys*) is considered special status, and it does not occur within the GAI (endemic to San Clemente Island).

<sup>n</sup> California quail: Only the Catalina subspecies (*Callipepla californica catalinensis*) is considered special status, and it does not occur within the GAI (endemic to the Channel Islands).

<sup>o</sup> California towhee: Only the Inyo subspecies (*Pipilo crissalis eremophilus*) is considered special status, and it does not occur within the GAI (endemic to Inyo County).

<sup>p</sup> Common loon: Only considered special status in its breeding range, and the GAI is not within the known breeding range of the species (formerly nested in Shasta and Lassen counties, now rarely, if ever, nests there).

<sup>q</sup> Common yellowthroat: Only the San Francisco/saltmarsh subspecies (*Geothlypis trichas sinuosa*) is considered special status, and it does not occur within the GAI (occurs in Sonoma County but only in the far southern parts of the county near San Pablo Bay).

<sup>r</sup> Hutton's vireo: Only the Catalina subspecies (*Vireo huttoni unitti*) is considered special status, and it does not occur within the GAI (endemic to the Channel Islands).

<sup>s</sup> Marsh wren: Only the Clark's subspecies (*Cistothorus palustris clarkae*) is considered special status, and it does not occur within the GAI (does not occur north of Los Angeles County).

<sup>t</sup> Red-winged blackbird: Only the Kern subspecies (*Agelaius phoeniceus aciculatus*) is considered special status, and it does not occur within the GAI (endemic to Kern County).

<sup>u</sup> Rufous-crowned sparrow: Only the Santa Cruz Island subspecies (*Aimophila ruficeps obscura*) is considered special status, and it does not occur within the GAI (endemic to the Channel Islands).

<sup>v</sup> Savannah sparrow: Three special status subspecies of savannah sparrow exist, but none of them occur within the GAI.

<sup>w</sup> Short-eared owl: Occurs within the GAI but does not occur in the Northern California Coast Ranges Ecoregion Section.

<sup>x</sup> Spotted towhee: Only the San Clemente subspecies (*Pipilo maculatus clementae*) is considered special status, and it does not occur within the GAI (endemic to the Channel Islands).

<sup>y</sup> Broad-footed mole: Only the Alameda Island subspecies (*Scapanus latimanus parvus*) is special status, and it does not occur within the GAI (endemic to Alameda Island).

<sup>z</sup> Brush rabbit: Only the riparian subspecies (*Sylvilagus bachmani riparius*) is special status, and it does not occur within the GAI (restricted to San Joaquin and Stanislaus Counties).

<sup>aa</sup> California kangaroo rat: Only the Marysville subspecies (*Dipodomys californicus eximius*) is special status, and it does not occur within the GAI (restricted to the Sutter Buttes).

<sup>bb</sup> California vole: Six special-status subspecies of California vole exist, none of which occur within the GAI (*M.c. sanpabloensis* comes the closest to the GAI but does not occur north of San Pablo Bay).

<sup>cc</sup> Deer mouse: Two special-status subspecies exist, neither of which occur within the GAI (restricted to the Channel Islands).

<sup>dd</sup> Dusky-footed woodrat: Only the San Francisco subspecies (*Neotoma fuscipes annectens*) and the riparian subspecies (*N. f. riparia*) are considered special status, and neither occur within the GAI (do not occur north of Contra Costa and San Joaquin counties, respectively).

<sup>ee</sup> Mountain lion: Only the Yuma subspecies (*Puma concolor browni*) is considered special status, and it does not occur within the GAI (restricted to the Lower Colorado River Valley).

<sup>ff</sup> Northern river otter: Only the southwestern subspecies (*Lontra canadensis sonora*) is considered special status, and it does not occur within the GAI (formerly occurred in southeasternmost California along the Colorado River, but not observed there since the 1930s, and now considered likely extirpated from the state).

<sup>99</sup> Ornate shrew: Five special-status subspecies exist, and none occur within the GAI (*S. o. sinuosus* comes the closest to the GAI but does not occur north of the San Pablo Bay tidal wetlands).

<sup>hh</sup> Western spotted skunk: Only the Channel Islands subspecies (*Spilogale gracilis amphiala*) is special status, and it does not occur within the GAI (endemic to Channel Islands).

**Table D-3. Complete SAMNA Results for the Northern California Interior Coast Ranges Ecoregion Section within the GAI, by Land Cover**

Common Name	Scientific Name	Status	Annual Grassland (acres)	Blue Oak Woodland (acres)	Chamise-Redshank Chaparral (acres)	Lacustrine (acres)	Mixed Chaparral (acres)	Montane Hardwood (acres)	Montane Riparian (acres)	Valley Oak Woodland (acres)	Total (acres)
<b>Plants</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	FS, SE	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
Burke's goldfields	<i>Lasthenia burkei</i>	FE, SE	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
Calistoga popcornflower	<i>Plagiobothrys strictus</i>	FE, ST	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
Clara Hunt's milk-vetch	<i>Astragalus claranus</i>	FE, SE	1.75	0.00	0.00	0.00	0.38	0.50	0.00	0.00	2.64
Few-flowered navarretia	<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	FE, FS, ST	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
Geysers panicum	<i>Panicum acuminatum</i> var. <i>thermale</i>	SE	1.75	0.00	0.00	0.00	0.00	0.00	1.07	0.00	2.82
Indian Valley brodiaea	<i>Brodiaea rosea</i>	FS, SE	1.75	0.00	0.00	0.00	0.38	0.50	0.00	0.00	2.64
Keck's checkerbloom	<i>Sidalcea keckii</i>	FE	1.75	0.00	0.00	0.00	0.00	0.50	0.00	0.00	2.26
Lake County stonecrop	<i>Sedella leiocarpa</i>	FE, SE	1.75	0.00	0.00	0.00	0.00	0.50	0.00	0.00	2.26
Lake County western flax	<i>Hesperolinon didymocarpum</i>	SE	1.75	0.00	0.00	0.00	0.38	0.50	0.00	0.00	2.64
Loch Lomond button-celery	<i>Eryngium constancei</i>	FE, SE	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
Many-flowered navarretia	<i>Navarretia leucocephala</i> ssp. <i>pliantha</i>	FE, SE	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
Roderick's fritillary <sup>a</sup>	<i>Fritillaria roderickii</i>	SE	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
Slender Orcutt grass	<i>Orcuttia tenuis</i>	FT, SE	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
Tiburon paintbrush <sup>a</sup>	<i>Castilleja affinis</i> var. <i>neglecta</i>	FE, ST	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
Two-fork clover	<i>Trifolium amoenum</i>	FE	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
<b>Invertebrates</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	0.00	0.00	NULL	0.00	NULL	0.00	1.07	0.00	1.07
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	0.21	0.00	NULL	0.00	NULL	0.00	0.00	0.00	0.21
<b>Amphibians</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
California newt	<i>Taricha torosa</i>	SSC	1.75	1.67	0.00	0.07	0.38	0.00	1.07	0.04	4.99



Common Name	Scientific Name	Status	Annual Grassland (acres)	Blue Oak Woodland (acres)	Chamise-Redshank Chaparral (acres)	Lacustrine (acres)	Mixed Chaparral (acres)	Montane Hardwood (acres)	Montane Riparian (acres)	Valley Oak Woodland (acres)	Total (acres)
California red-legged frog	<i>Rana draytonii</i>	FT, SSC	1.75	1.67	0.00	0.07	0.38	0.50	1.07	0.04	5.49
California tiger salamander	<i>Ambystoma californiense</i>	FE, FT, ST	0.21	0.00	NULL	0.00	NULL	0.00	0.00	0.00	0.21
Ensatina <sup>b</sup>	<i>Ensatina eschscholtzii</i>	FS	0.00	1.67	0.00	0.00	0.38	0.50	1.07	0.04	3.66
Foothill yellow-legged frog	<i>Rana boylei</i>	FCE, FCT, FS, SE, ST, SSC	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
Western spadefoot	<i>Spea hammondi</i>	FS, SSC	0.21	0.00	NULL	0.00	NULL	0.00	0.00	0.00	0.21
<b>Reptiles</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Blainville's horned lizard	<i>Phrynosoma blainvillii</i>	FS, SSC	0.21	0.00	NULL	0.00	NULL	0.00	0.00	0.00	0.21
California mountain kingsnake <sup>c</sup>	<i>Lampropeltis zonata</i>	None	0.15	0.00	0.00	0.00	0.08	0.00	0.64	0.00	0.87
Common gartersnake <sup>d</sup>	<i>Thamnophis sirtalis</i>	SSC	1.75	1.67	0.18	0.07	0.38	0.50	1.07	0.04	5.67
Common sagebrush lizard <sup>e</sup>	<i>Sceloporus graciosus</i>	FS	0.00	0.00	0.00	0.00	0.38	0.50	0.00	0.00	0.89
Gophersnake	<i>Pituophis catenifer</i>	None	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
Northern rubber boa	<i>Charina bottae</i>	None	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.64
Ring-necked snake <sup>f</sup>	<i>Diadophis punctatus</i>	FS, SSC	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
Striped racer <sup>g</sup>	<i>Coluber lateralis</i>	FT, ST	0.00	1.67	0.18	0.00	0.38	0.50	1.07	0.04	3.84
Western skink <sup>h</sup>	<i>Plestiodon skiltonianus</i>	FS	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
<b>Birds</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
American white pelican <sup>i</sup>	<i>Pelecanus erythrorhynchos</i>	SSC	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.07
Bald eagle	<i>Haliaeetus leucocephalus</i>	FS, SE, SFP, SFS	1.75	1.67	0.18	0.07	0.38	0.50	1.07	0.04	5.67
Bell's sparrow <sup>j</sup>	<i>Artemisospiza belli</i>	SSC	0.00	0.00	0.18	0.00	0.38	0.00	0.00	0.00	0.56
Bewick's wren <sup>k</sup>	<i>Thryomanes bewickii</i>	SSC	0.00	1.67	0.18	0.00	0.38	0.50	1.07	0.04	3.84
Burrowing owl	<i>Athene cunicularia</i>	FS, SSC	1.75	1.67	0.18	0.00	0.38	0.00	0.00	0.04	4.03
California quail <sup>l</sup>	<i>Callipepla californica</i>	SSC	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
California towhee <sup>m</sup>	<i>Pipilo crissalis</i>	FT, SE	0.00	1.67	0.18	0.00	0.38	0.50	1.07	0.04	3.84

Common Name	Scientific Name	Status	Annual Grassland (acres)	Blue Oak Woodland (acres)	Chamise-Redshank Chaparral (acres)	Lacustrine (acres)	Mixed Chaparral (acres)	Montane Hardwood (acres)	Montane Riparian (acres)	Valley Oak Woodland (acres)	Total (acres)
Common loon <sup>n</sup>	<i>Gavia immer</i>	SSC	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.07
Common yellowthroat <sup>o</sup>	<i>Geothlypis trichas</i>	SSC	1.75	0.00	0.00	0.00	0.00	0.00	1.07	0.00	2.82
Golden eagle	<i>Aquila chrysaetos</i>	FS, SFS, SFP	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
Grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
Great blue heron	<i>Ardea herodias</i>	SFS	1.75	1.67	0.00	0.07	0.00	0.50	1.07	0.04	5.11
Great egret	<i>Ardea alba</i>	SFS	1.75	1.67	0.00	0.07	0.00	0.00	1.07	0.04	4.60
Greater white-fronted goose	<i>Anser albifrons</i>	SSC	0.21	0.00	NULL	0.00	NULL	0.00	0.00	0.00	0.21
Hutton's vireo <sup>p</sup>	<i>Vireo huttoni</i>	SSC	0.00	1.67	0.18	0.00	0.38	0.50	1.07	0.04	3.84
Loggerhead shrike	<i>Lanius ludovicianus</i>	SE, SSC	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
Long-eared owl	<i>Asio otus</i>	SSC	0.15	0.00	0.16	0.00	0.08	0.00	0.64	0.00	1.03
Marsh wren <sup>q</sup>	<i>Cistothorus palustris</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.00	1.07	0.00	1.07
Modesto song sparrow	<i>Melospiza melodia mailliardi</i>	SSC	0.21	0.00	NULL	0.00	NULL	0.00	0.17	0.00	0.37
Northern harrier <sup>r</sup>	<i>Circus cyaneus</i>	SSC	1.75	1.67	0.18	0.07	0.38	0.50	1.07	0.04	5.67
Olive-sided flycatcher <sup>s</sup>	<i>Contopus cooperi</i>	SSC	0.00	0.00	0.16	0.00	0.08	0.00	0.64	0.00	0.89
Osprey	<i>Pandion haliaetus</i>	FS	1.75	1.67	0.00	0.07	0.38	0.50	1.07	0.04	5.49
Peregrine falcon	<i>Falco peregrinus</i>	SFS, SFP	1.75	1.67	0.18	0.07	0.38	0.50	1.07	0.04	5.67
Purple martin <sup>t</sup>	<i>Progne subis</i>	SSC	0.15	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.78
Red-winged blackbird <sup>u</sup>	<i>Agelaius phoeniceus</i>	SSC	1.75	0.00	0.00	0.00	0.00	0.00	1.07	0.00	2.82
Rufous-crowned sparrow <sup>v</sup>	<i>Aimophila ruficeps</i>	SSC	0.04	0.00	0.16	0.00	0.08	0.00	0.00	0.00	0.29
Savannah sparrow <sup>w</sup>	<i>Passerculus sandwichensis</i>	SE, SSC	1.75	1.67	0.18	0.00	0.38	0.00	0.00	0.04	4.03
Short-eared owl	<i>Asio flammeus</i>	SSC	0.39	0.18	0.00	0.00	0.00	0.00	1.07	0.04	1.68
Song sparrow	<i>Melospiza melodia</i>	SSC	1.75	1.67	0.18	0.07	0.38	0.50	1.07	0.04	5.67
Sooty grouse <sup>x</sup>	<i>Dendragapus fuliginosus</i>	SSC	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11

Common Name	Scientific Name	Status	Annual Grassland (acres)	Blue Oak Woodland (acres)	Chamise-Redshank Chaparral (acres)	Lacustrine (acres)	Mixed Chaparral (acres)	Montane Hardwood (acres)	Montane Riparian (acres)	Valley Oak Woodland (acres)	Total (acres)
Spotted towhee <sup>y</sup>	<i>Pipilo maculatus</i>	SSC	0.00	1.67	0.18	0.00	0.38	0.50	1.07	0.04	3.84
Tricolored blackbird	<i>Agelaius tricolor</i>	FS, ST, SSC	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
Vaux's swift	<i>Chaetura vauxi</i>	SSC	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.08
Vesper sparrow	<i>Pooecetes gramineus</i>	SSC	0.21	0.00	0.00	NULL	0.00	0.00	0.00	NULL	0.21
White-tailed kite	<i>Elanus leucurus</i>	FS, SFP	1.75	1.67	0.18	0.00	0.38	0.00	0.00	0.04	4.03
Yellow warbler	<i>Setophaga petechia</i>	SSC	0.00	0.00	0.16	0.00	0.08	0.00	0.00	0.00	0.25
Yellow-breasted chat	<i>Icteria virens</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.43
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	SSC	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
<b>Mammals</b>	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
American badger	<i>Taxidea taxus</i>	SSC	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
Black-tailed jackrabbit	<i>Lepus californicus</i>	None	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
Broad-footed mole <sup>z</sup>	<i>Scapanus latimanus</i>	SSC	1.75	1.67	0.00	0.00	0.00	0.50	1.07	0.04	5.03
Brush rabbit <sup>aa</sup>	<i>Sylvilagus bachmani</i>	FE, SE	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
California kangaroo rat <sup>bb</sup>	<i>Dipodomys californicus</i>	SSC	1.75	1.67	0.00	0.00	0.38	0.50	0.00	0.04	4.35
California vole <sup>cc</sup>	<i>Microtus californicus</i>	FE, FS, SE, SSC	1.75	1.67	0.00	0.00	0.38	0.50	1.07	0.04	5.42
Deer mouse <sup>dd</sup>	<i>Peromyscus maniculatus</i>	SSC	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
Dusky-footed woodrat <sup>ee</sup>	<i>Neotoma fuscipes</i>	FE, SSC	0.00	1.67	0.18	0.00	0.38	0.50	1.07	0.04	3.84
Fringed myotis	<i>Myotis thysanodes</i>	FS	1.75	1.67	0.18	0.07	0.38	0.50	1.07	0.04	5.67
Long-eared myotis	<i>Myotis evotis</i>	FS	0.00	1.67	0.18	0.07	0.38	0.50	1.07	0.04	3.91
Mountain lion <sup>ff</sup>	<i>Puma concolor</i>	SSC	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
Ornate shrew <sup>gg</sup>	<i>Sorex ornatus</i>	FE, SSC	1.75	1.67	0.00	0.00	0.38	0.00	1.07	0.04	4.92
Pallid bat	<i>Antrozous pallidus</i>	FS, SSC	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60

Common Name	Scientific Name	Status	Annual Grassland (acres)	Blue Oak Woodland (acres)	Chamise-Redshank Chaparral (acres)	Lacustrine (acres)	Mixed Chaparral (acres)	Montane Hardwood (acres)	Montane Riparian (acres)	Valley Oak Woodland (acres)	Total (acres)
Ringtail	<i>Bassariscus astutus</i>	SFP	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
San Joaquin pocket mouse	<i>Perognathus inornatus</i>	FS	1.61	1.67	0.00	0.00	0.30	0.00	0.00	0.04	3.62
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
Western red bat	<i>Lasiurus blossevillii</i>	SSC	1.75	1.67	0.18	0.07	0.38	0.50	1.07	0.04	5.67
Western spotted skunk <sup>hh</sup>	<i>Spilogale gracilis</i>	SSC	1.75	1.67	0.18	0.00	0.38	0.50	1.07	0.04	5.60
Yuma myotis	<i>Myotis yumanensis</i>	FS	1.75	1.67	0.18	0.07	0.38	0.50	1.07	0.04	5.67
<b>Total</b>	Not applicable	Not applicable	<b>1.75</b>	<b>1.67</b>	<b>0.18</b>	<b>0.07</b>	<b>0.38</b>	<b>0.50</b>	<b>1.07</b>	<b>0.04</b>	<b>5.67</b>

Notes: FE = federally endangered; FS = federally sensitive (USFS and/or BLM sensitive); FT = federally threatened; SE = state endangered; SFP = state fully protected; SFS = state fire sensitive; SR = state rare; SSC = species of special concern (CDFW); ST = state threatened

<sup>a</sup> Plant species does not occur in the Northern California Interior Coast Ranges Ecoregion Section within the GAI.

<sup>b</sup> Ensatina: Only the yellow-blotched subspecies (*Ensatina eschscholtzii croceater*) and large-blotched subspecies (*E. e. klauberi*) are special status, and they do not occur within the GAI (neither occurs north of Kern County).

<sup>c</sup> California mountain kingsnake: Following recent taxonomic rearrangements, no special-status kingsnakes currently occur within the GAI.

<sup>d</sup> Common gartersnake: Only the San Francisco subspecies (*Thamnophis sirtalis tetrataenia*) and south coast population (*T. sirtalis*, population 1) are special status, and they do not occur within the GAI.

<sup>e</sup> Common sagebrush lizard: Only the northern subspecies (*Sceloporus graciosus graciosus*) is considered special status, and it does not occur within the GAI (restricted to the Great Basin).

<sup>f</sup> Ring-necked snake: Only the regal (Great Basin), San Bernardino, and San Diego subspecies are considered special status, and they do not occur within the GAI.

<sup>g</sup> Striped racer: Only the Alameda subspecies (*Coluber lateralis euryxanthus*) is considered special status, and it does not occur within the GAI (restricted to the East Bay Area).

<sup>h</sup> Western skink: Only the Coronado subspecies (*Plestiodon skiltonianus interparietalis*) is special status, and it does not occur within the GAI (restricted to San Diego and Riverside Counties).

<sup>i</sup> American white pelican: Only considered special status in its breeding range, and the GAI is not within the known breeding range of the species (northeastern part of the state from Siskiyou County to Tahoe Basin).

<sup>j</sup> Bell's sparrow: Only the San Clemente subspecies is considered special status, and it does not occur within the GAI (endemic to San Clemente Island). Also, this subspecies has been delisted and is no longer considered federally threatened.

<sup>k</sup> Bewick's wren: Only the San Clemente subspecies (*Thryomanes bewickii leucophrys*) is considered special status, and it does not occur within the GAI (endemic to San Clemente Island).

<sup>l</sup> California quail: Only the Catalina subspecies (*Callipepla californica catalinensis*) is considered special status, and it does not occur within the GAI (endemic to the Channel Islands).

<sup>m</sup> California towhee: Only the Inyo subspecies (*Pipilo crissalis eremophilus*) is considered special status, and it does not occur within the GAI (endemic to Inyo County).

<sup>n</sup> Common loon: Only considered special status in its breeding range, and the GAI is not within the known breeding range of the species (formerly nested in Shasta and Lassen counties, now rarely, if ever, nests there).

<sup>o</sup> Common yellowthroat: Only the San Francisco/saltmarsh subspecies (*Geothlypis trichas sinuosa*) is considered special status, and it does not occur within the GAI (occurs in Napa and Solano counties but only in the far southern parts of those counties near San Pablo Bay).

<sup>p</sup> Hutton's vireo: Only the Catalina subspecies (*Vireo huttoni unitti*) is considered special status, and it does not occur within the GAI (endemic to the Channel Islands).

<sup>q</sup> Marsh wren: Only the Clark's subspecies (*Cistothorus palustris clarkae*) is considered special status, and it does not occur within the GAI (does not occur north of Los Angeles County).

<sup>r</sup> Northern harrier: Occurs within the GAI but not in the Northern California Interior Coast Ranges Ecoregion Section.

<sup>s</sup> Olive-sided flycatcher: Occurs within the GAI but not in the Northern California Interior Coast Ranges Ecoregion Section.

<sup>t</sup> Purple martin: Occurs within the GAI but not in the Northern California Interior Coast Ranges Ecoregion Section.

<sup>u</sup> Red-winged blackbird: Only the Kern subspecies (*Agelaius phoeniceus aciculatus*) is considered special status, and it does not occur within the GAI (endemic to Kern County).

<sup>v</sup> Rufous-crowned sparrow: Only the Santa Cruz Island subspecies (*Aimophila ruficeps obscura*) is considered special status, and it does not occur within the GAI (endemic to the Channel Islands).

<sup>w</sup> Savannah sparrow: Three special status subspecies of savannah sparrow exist, but none of them occur within the GAI.

<sup>x</sup> Sooty grouse: Only the Mount Pinos subspecies (*Dedragapus fuliginosus howardi*) is considered special status, and it does not occur within the GAI (does not occur north of Inyo County).

<sup>y</sup> Spotted towhee: Only the San Clemente subspecies (*Pipilo maculatus clementae*) is considered special status, and it does not occur within the GAI (endemic to the Channel Islands).

<sup>z</sup> Broad-footed mole: Only the Alameda Island subspecies (*Scapanus latimanus parvus*) is special status, and it does not occur within the GAI (endemic to Alameda Island).

<sup>aa</sup> Brush rabbit: Only the riparian subspecies (*Sylvilagus bachmani riparius*) is special status, and it does not occur within the GAI (restricted to San Joaquin and Stanislaus Counties).

<sup>bb</sup> California kangaroo rat: Only the Marysville subspecies (*Dipodomys californicus eximius*) is special status, and it does not occur within the GAI (restricted to the Sutter Buttes).

<sup>cc</sup> California vole: Six special-status subspecies of California vole exist, none of which occur within the GAI (*M.c. sanpabloensis* comes the closest to the GAI but does not occur north of San Pablo Bay).

<sup>dd</sup> Deer mouse: Two special-status subspecies exist, neither of which occur within the GAI (restricted to the Channel Islands).

<sup>ee</sup> Dusky-footed woodrat: Only the San Francisco subspecies (*Neotoma fuscipes annectens*) and the riparian subspecies (*N. f. riparia*) are considered special status, and neither occur within the GAI (do not occur north of Contra Costa and San Joaquin Counties, respectively).

<sup>ff</sup> Mountain lion: Only the Yuma subspecies (*Puma concolor browni*) is considered special status, and it does not occur within the GAI (restricted to the Lower Colorado River Valley).

<sup>gg</sup> Ornate shrew: Five special-status subspecies exist, and none occur within the GAI (*S. o. sinuosus* comes the closest to the GAI but does not occur north of the San Pablo Bay tidal wetlands).

<sup>hh</sup> Western spotted skunk: Only the Channel Islands subspecies (*Spilogale gracilis amphiala*) is special status, and it does not occur within the GAI (endemic to Channel Islands).

## APPENDIX E: HYDROLOGIC UNITS

### Sub-basin Descriptions

Three sub-basins overlap the geographic area of interest (“GAI”). A description of each sub-basin is provided in the following sections. A crosswalk between the hydrologic unit code eight-digit (“HUC-8”) sub-basins and hydrologic units (“HUs”) is provided in Table E-1 at the end of this appendix.

#### Upper Cache Sub-basin

Within the GAI, the Upper Cache sub-basin drains an area of 745,638 acres (1,165 square miles), and includes 1,268 rivers and streams that traverse 1,317 miles. As noted in Table E-1, the Upper Cache sub-basin includes portions of the Cache Creek, Colusa Basin, Cortina, Eel River, Putah Creek, Russian River, Stony Creek, Upper Elmira, and Valley Putah-Cache HUs.

The Cache Creek HU is associated with the Cache Creek watershed located within Lake County. Water flows from Clear Lake southeastward, eventually draining into the Yolo Bypass of the Sacramento River (Sacramento River Watershed Program 2023a). The part of the Cache Creek HU that lies within the Upper Cache sub-basin includes portions of the Bear Creek, Middle Cache Creek, North Fork Cache Creek, and Upper Cache Creek hydrologic areas.

The Colusa Basin HU is located on the western side of the Sacramento Valley along the natural levees of the Sacramento River, with gentle slopes that rise toward the Coast Range foothills. The area consists of complex, individual, smaller flood basins isolated by a meandering, intermingled network of floodplain channel ridges formed along adjacent slough channels. Streams that drain winter rainfall from the Coast Range foothills, portions of the Stony Creek alluvial fan, and overflow from the Sacramento River contribute to the regular seasonal flooding of the Colusa Basin (Colusa County Resource Conservation District 2008). The part of the Colusa Basin HU that lies within the Upper Cache sub-basin includes a portion of the Glen Colusa hydrologic area.

The Cortina HU includes Cortina Creek. The part of the Cortina HU that lies within the Upper Cache sub-basin includes portions of the Cortina Creek, Stone Corral Creek, and Whiskey Hill hydrologic areas.

The Eel River HU is associated with the Eel River watershed. The Eel River flows northward through the Coast Range and eventually out to the Pacific Ocean south of Humboldt Bay (Water Education Foundation 2023). The part of the Eel River HU that lies within the Upper Cache sub-basin includes a portion of the Upper Main Eel River hydrologic area.

The Putah Creek HU is associated with the Putah Creek watershed located within Lake County. Water flows from its headwaters in the Mayacamas Mountains within the Coast Ranges and merges with Butts Creek before emptying into Lake Berryessa in Napa County. Water flows out of Lake Berryessa through Monticello Dam, eventually draining

into the Yolo Bypass (Sacramento River Watershed Program 2023b). The part of the Putah Creek HU that lies within the Upper Cache sub-basin includes portions of the Berryessa and Upper Putah Creek hydrologic areas.

The Russian River HU is associated with the Russian River watershed in Mendocino and Sonoma Counties, bounded by the Coast Ranges on both the east and west. The mainstem of the Russian River flows south from Redwood and Potter Valleys to its confluence with Mark West Creek, eventually draining into the Pacific Ocean at Jenner (North Coast RWQCB 2017). The part of the Russian River HU that lies within the Upper Cache sub-basin includes portions of the Middle Russian River and Upper Russian River hydrologic areas.

The Stony Creek HU is associated with the Stony Creek watershed that spans Glenn, Colusa, Tehama, and Lake Counties. Water flows from the East Park and Stony Gorge Reservoirs, eventually draining into Black Butte Dam and outletting into the Sacramento River (Sacramento River Watershed Program 2023c). The part of the Stony Creek HU that lies within the Upper Cache sub-basin includes a portion of the Fouts Springs hydrologic area.

The Upper Elmira HU includes the Santa Cruz Mountains, South Santa Clara Valley, and Pacheco and Santa Ana Creeks. The part of the Upper Elmira HU that lies within the Upper Cache sub-basin includes portions of the East Blue Ridge and East Rocky Ridge hydrologic areas.

The Valley Putah-Cache HU is associated with the Lower Putah Creek watershed, which outlets to the Yolo Bypass and the Sacramento Bypass (EPA n.d.). The Lower Putah Creek watershed includes the Putah Creek reach from Monticello Dam east toward the Sacramento River. Tributaries for this reach include Thompson, Cold, Bray Canyon, and Pleasants Creeks (Lower Putah Creek Coordinating Committee 2005). The part of the Valley Putah-Cache HU that lies within the Upper Cache sub-basin includes portions of the Lower Cache Creek and Lower Putah Creek hydrologic areas.

### **Upper Putah Sub-basin**

Within the GAI, the Upper Putah sub-basin drains an area of 418,710 acres (654 square miles), and includes 550 rivers and streams that traverse 705 miles. As noted in Table E-1, the Upper Putah sub-basin includes portions of the Cache Creek, Putah Creek, Russian River, Sacramento Delta, San Pablo, Suisun, Upper Elmira, and Valley Putah-Cache HUs. Descriptions of the Cache Creek, Putah Creek, Russian River, Upper Elmira, and Valley Putah-Cache HUs are provided in the Upper Cache sub-basin section.

The part of the Cache Creek HU that lies within the Upper Putah sub-basin includes portions of the Middle Cache Creek and Upper Cache Creek hydrologic areas.

The part of the Putah Creek HU that lies within the Upper Putah sub-basin includes portions of the Berryessa and Upper Putah Creek hydrologic areas.

The part of the Russian River HU that lies within the Upper Putah sub-basin includes a portion of the Middle Russian River hydrologic area.

The Sacramento Delta HU includes the Sacramento River, Steamboat Slough, and Prospect Slough. The Sacramento River stretches for 400 miles, originating within the eastern slopes of the Coast Range, Mount Shasta, the western slopes of the southernmost region of the Cascades, and the northern portion of the Sierra Nevada (Rivers for Change 2014). The river then meets with the San Joaquin River to form the Sacramento Delta before flowing out to the Pacific Ocean.

The San Pablo HU is associated with the San Pablo Creek and San Pablo Bay watersheds within Marin County (CDFW 2013). The part of the San Pablo HU that lies within the Upper Putah sub-basin includes a portion of the Napa River hydrologic area.

The Suisun HU is associated with Suisun Bay within the San Francisco Bay Drainage Province. The Suisun Drainage Canal flows south to Peytonia Slough, Suisun Marsh, and Suisun Bay. Suisun Bay is located at the confluence of the Sacramento and San Joaquin Rivers, forming the entrance to the Sacramento Delta (City of Suisun 2015). The part of the Suisun HU that lies within the Upper Putah sub-basin includes a portion of the Fairfield hydrologic area.

The part of the Upper Elmira HU that lies within the Upper Putah sub-basin includes portions of the East Blue Ridge, East Rocky Ridge, and Upper Ulatis hydrologic areas.

The part of the Valley Putah-Cache HU that lies within the Upper Putah sub-basin includes portions of the Elmira and Lower Cache Creek hydrologic areas.

### Crosswalk: HUC-8s to HUs

The Statewide Advance Mitigation Needs Assessment Reporting Tool expresses the landscape in terms of U.S. Geological Survey HUC-8 sub-basins (Caltrans 2023; USGS 2014). However, the State Water Resources Control Board considers beneficial uses in terms of HUs (CDWR 2016). Table E-1 provides a crosswalk between the HUC-8 and HU classification systems for the GAI.

**Table E-1. Crosswalk Table of HUC-8 Sub-basins with HUs in the GAI**

HUC-8 #	HUC-8 Name	HUC-8 Acreage <sup>a</sup>	HU #	HU Name	HU Acreage <sup>a</sup>
18020116	Upper Cache	745,638	513	Cache Creek	273,052
18020116	Upper Cache	745,638	514	Cache Creek	1,426,353
18020116	Upper Cache	745,638	520	Colusa Basin	1,516,901
18020116	Upper Cache	745,638	561	Cortina	166,697
18020116	Upper Cache	745,638	112	Eel River	1,436,676
18020116	Upper Cache	745,638	512	Putah Creek	363,072
18020116	Upper Cache	745,638	114	Russian River	1,547,668
18020116	Upper Cache	745,638	522	Stony Creek	448,368
18020116	Upper Cache	745,638	560	Upper Elmira	101,682

HUC-8 #	HUC-8 Name	HUC-8 Acreage <sup>a</sup>	HU #	HU Name	HU Acreage <sup>a</sup>
18020116	Upper Cache	745,638	511	Valley Putah-Cache	498,605
18020162	Upper Putah	418,710	513	Cache Creek	273,052
18020162	Upper Putah	418,710	514	Cache Creek	1,426,353
18020162	Upper Putah	418,710	512	Putah Creek	363,072
18020162	Upper Putah	418,710	114	Russian River	1,547,668
18020162	Upper Putah	418,710	510	Sacramento Delta	488,596
18020162	Upper Putah	418,710	206	San Pablo	734,398
18020162	Upper Putah	418,710	207	Suisun	482,024
18020162	Upper Putah	418,710	560	Upper Elmira	101,682
18020162	Upper Putah	418,710	511	Valley Putah-Cache	498,605
18020116	Upper Cache	745,638	513	Cache Creek	273,052
18020116	Upper Cache	745,638	514	Cache Creek	1,426,353

Source: Caltrans 2023

<sup>a</sup> Numbers were rounded to the nearest whole number.

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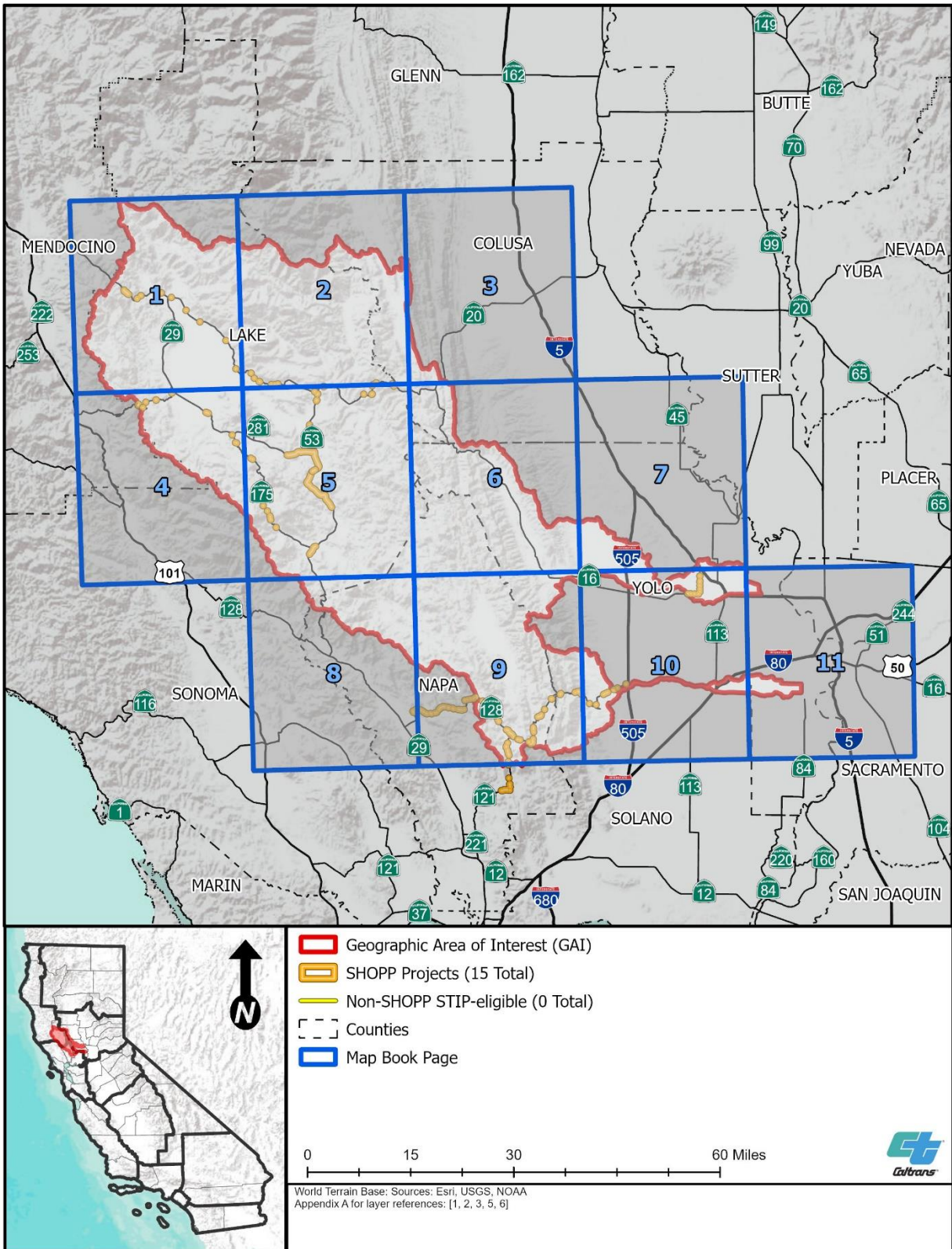
## APPENDIX F: AQUATIC RESOURCE LOCATIONS

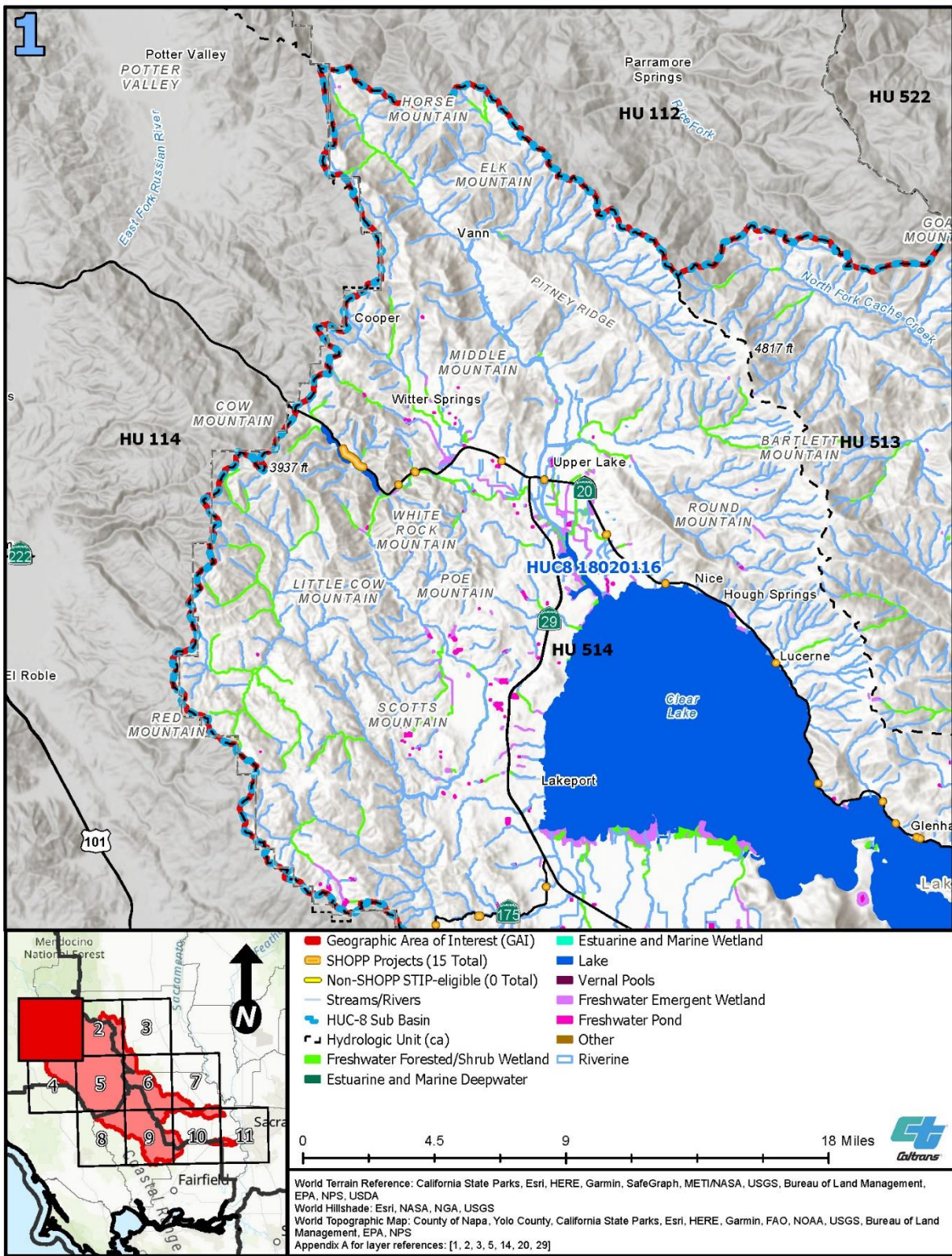
Aquatic resource locations are shown by hydrologic unit code eight-digit (“HUC-8”) sub-basin and hydrologic unit (“HU”) in the following maps, which also include major landmarks for perspective. These locations were excerpted from the Statewide Advance Mitigation Needs Assessment (“SAMNA”) Reporting Tool’s water and wetland layers (Caltrans 2023a, 2023b). HUs are described in Appendix E, *Hydrologic Units*, which includes a crosswalk table of HUC-8 subbasins and HUs. These 11 maps correspond with the land cover maps in Appendix C, *Land Cover Types*.

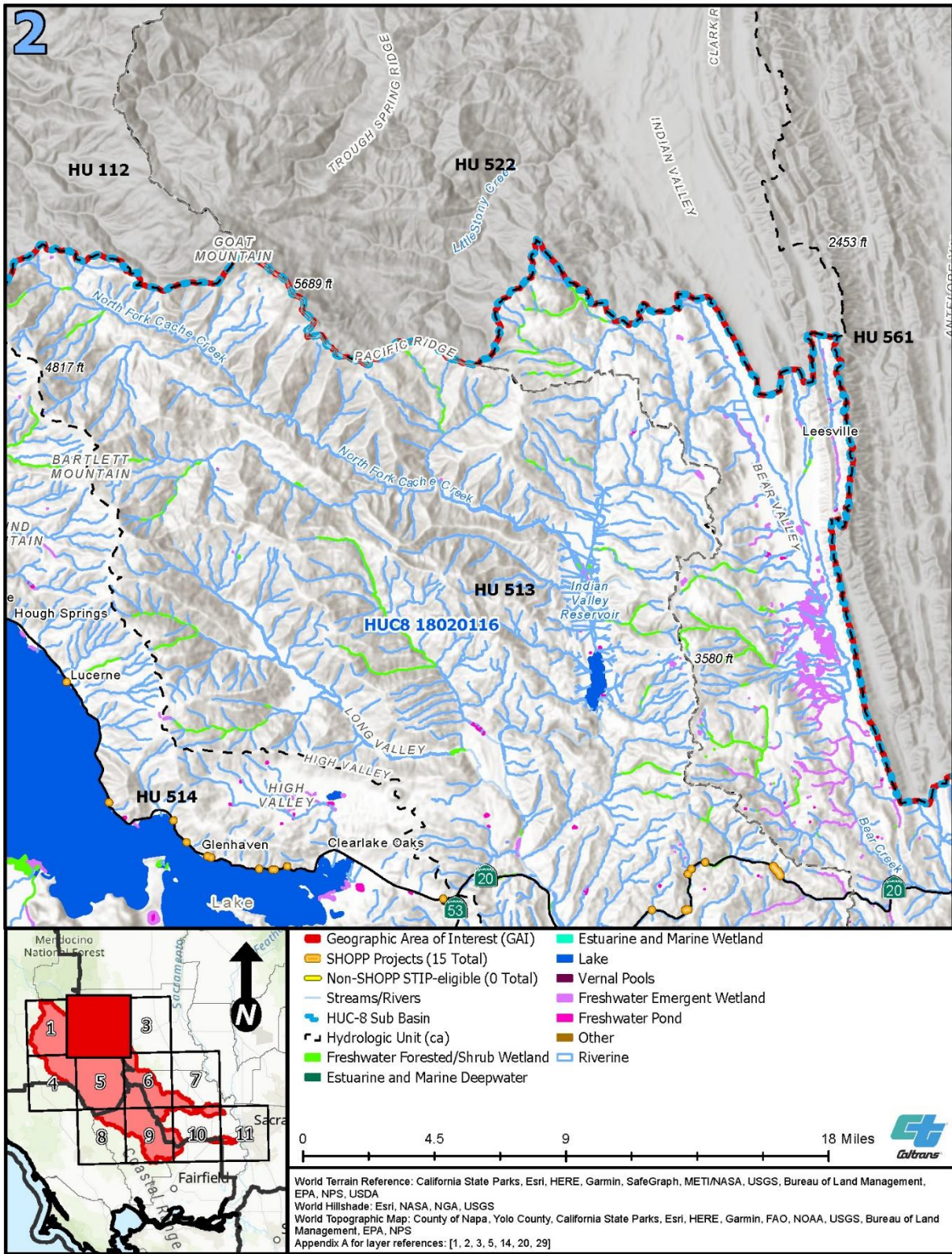
Few sources of information are known to be available that can be used to describe existing and relevant wetland, riparian, and littoral resources. The U.S. Fish and Wildlife Service National Wetlands Inventory (FWS 2021) and the San Francisco Estuary Institute (2022) California Aquatic Resource Inventory are the only known datasets that include the distribution, extent, and types of aquatic resources within the geographic area of interest (“GAI”), and the SAMNA Reporting Tool relies on them (Caltrans 2023a, 2023b).

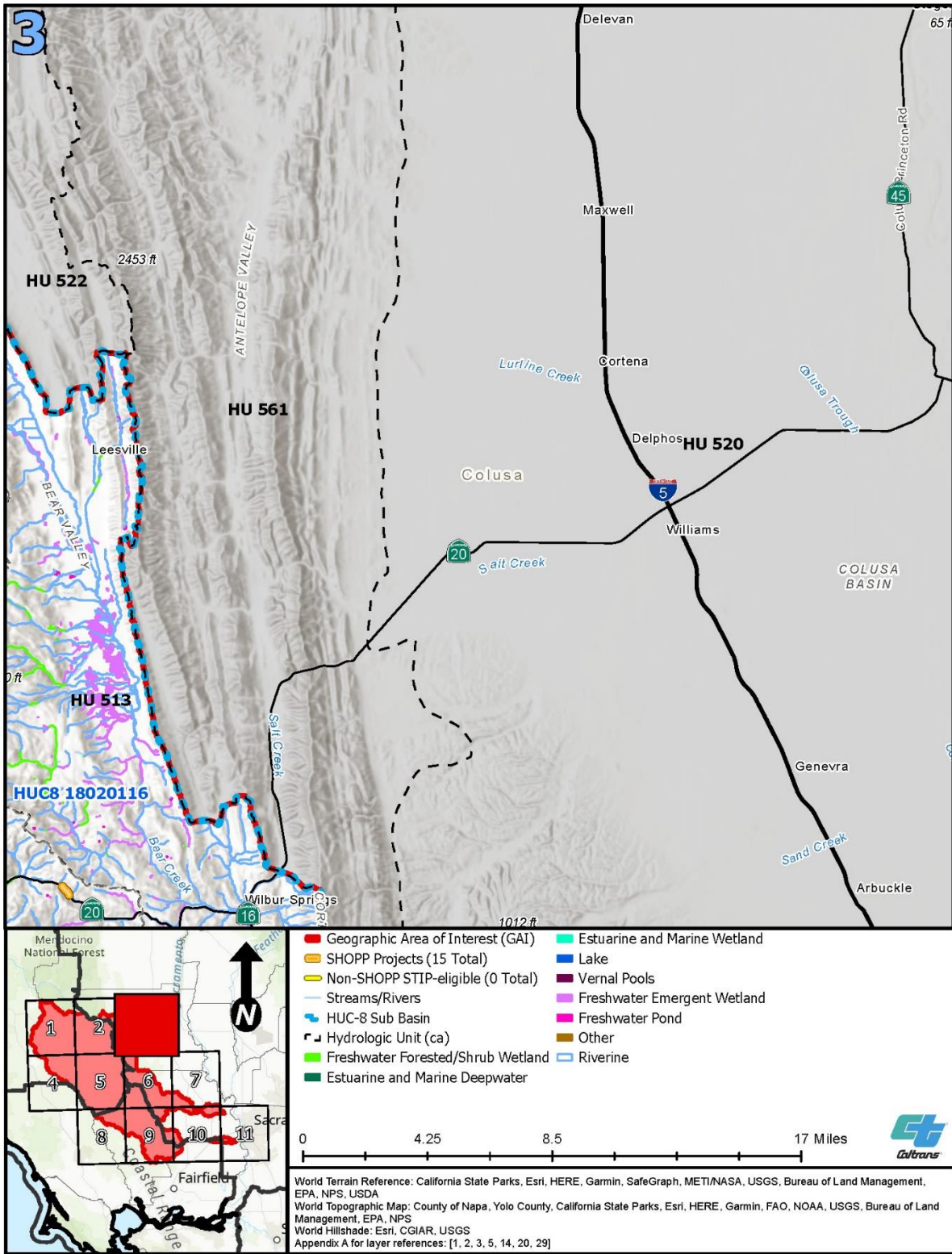
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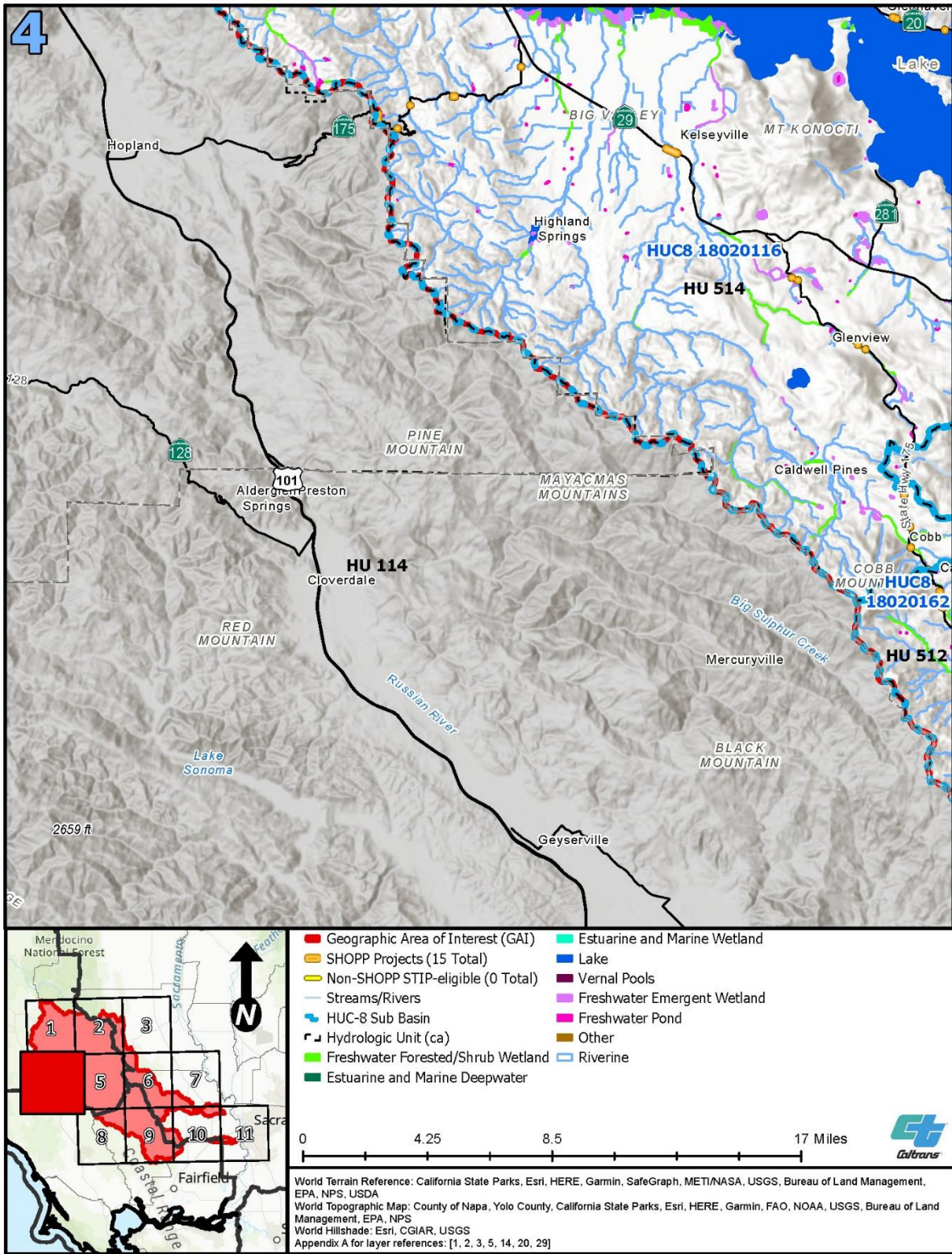
- Caltrans (California Department of Transportation). 2023a. “Waters\_ D01/D03/D04 in Caltrans District 1 Geospatial Data for the Advance Mitigation Needs Assessment for the Fourth Quarter of FY 2021/2022” (data file). Accessed August 8, 2023. <https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation>.
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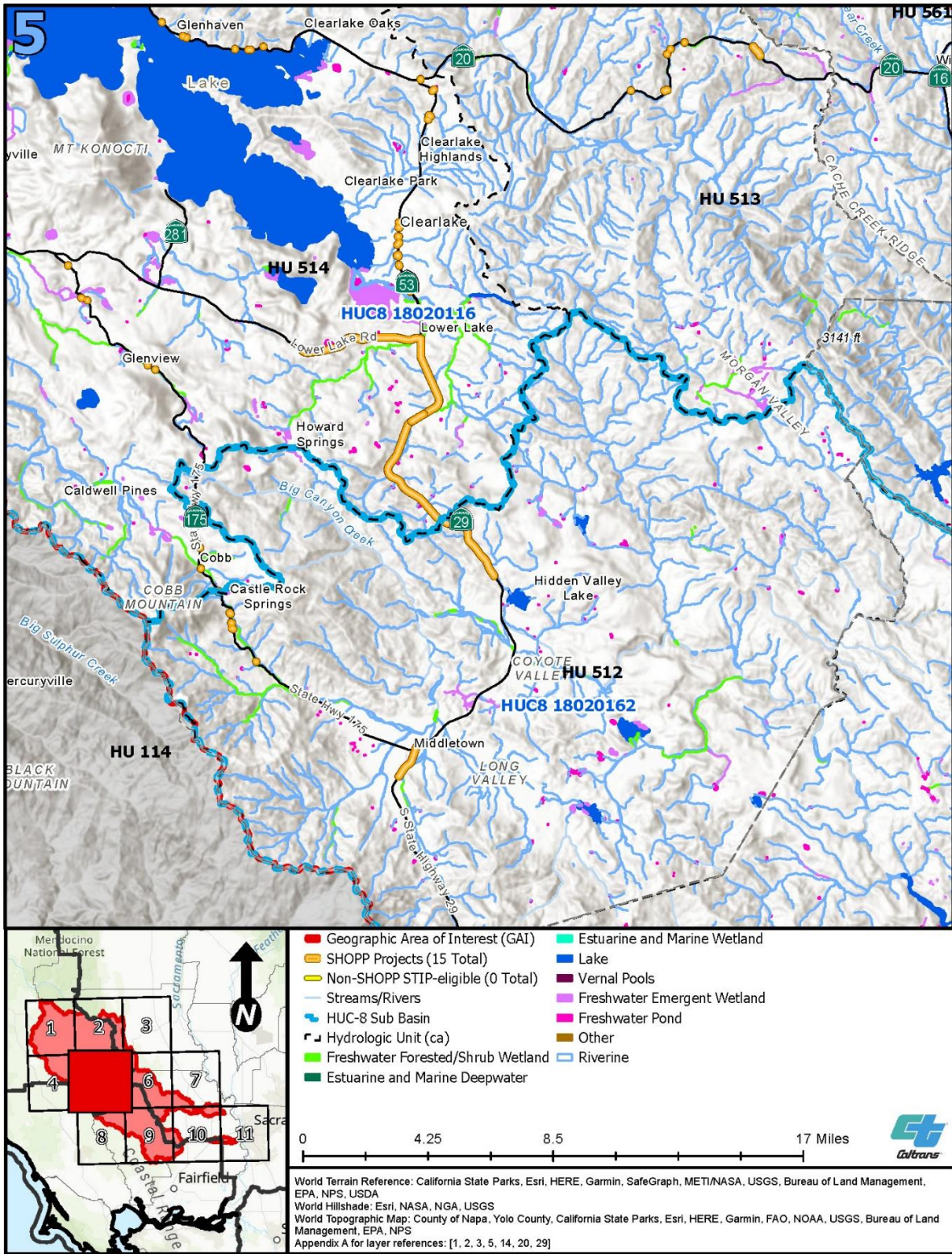


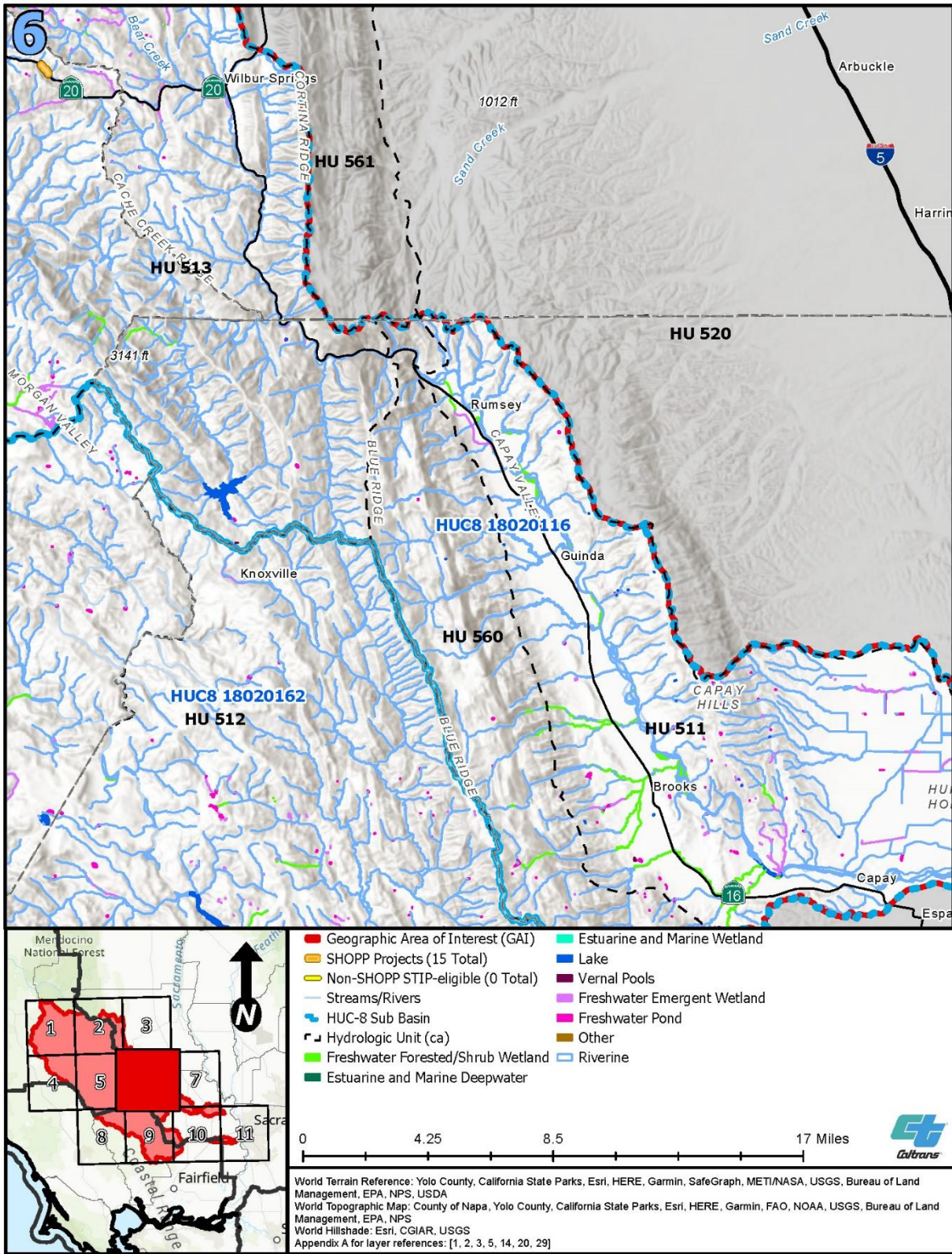


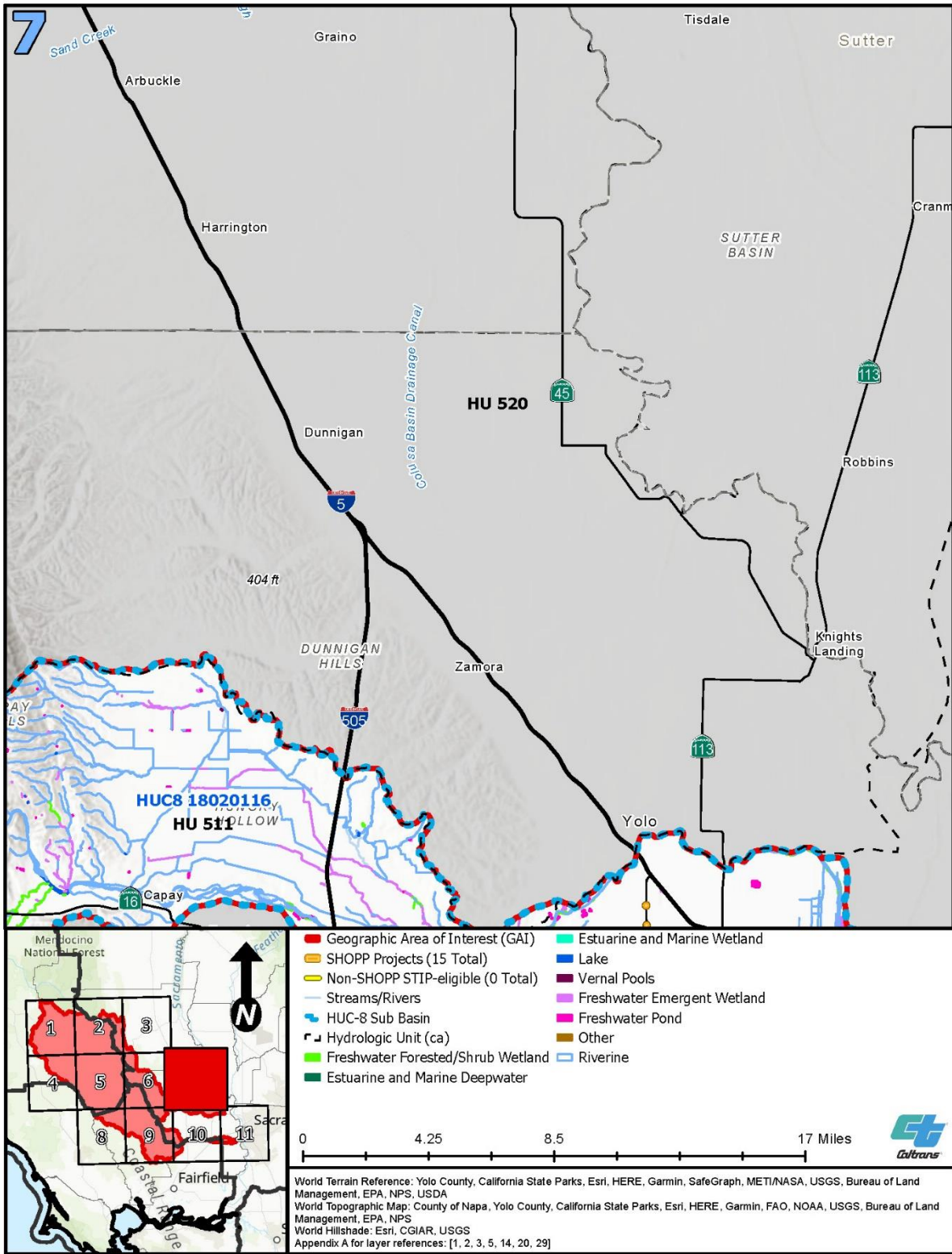


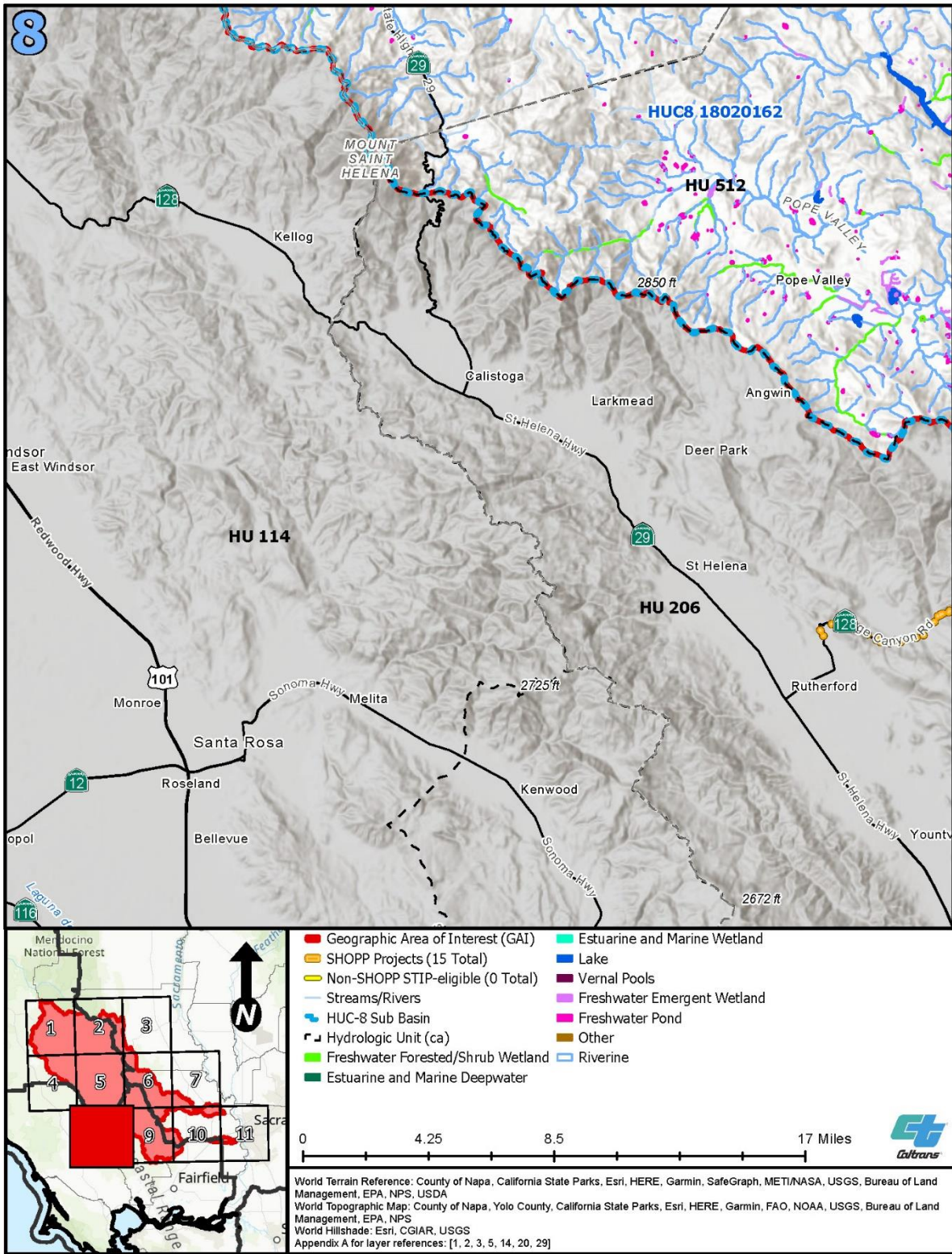


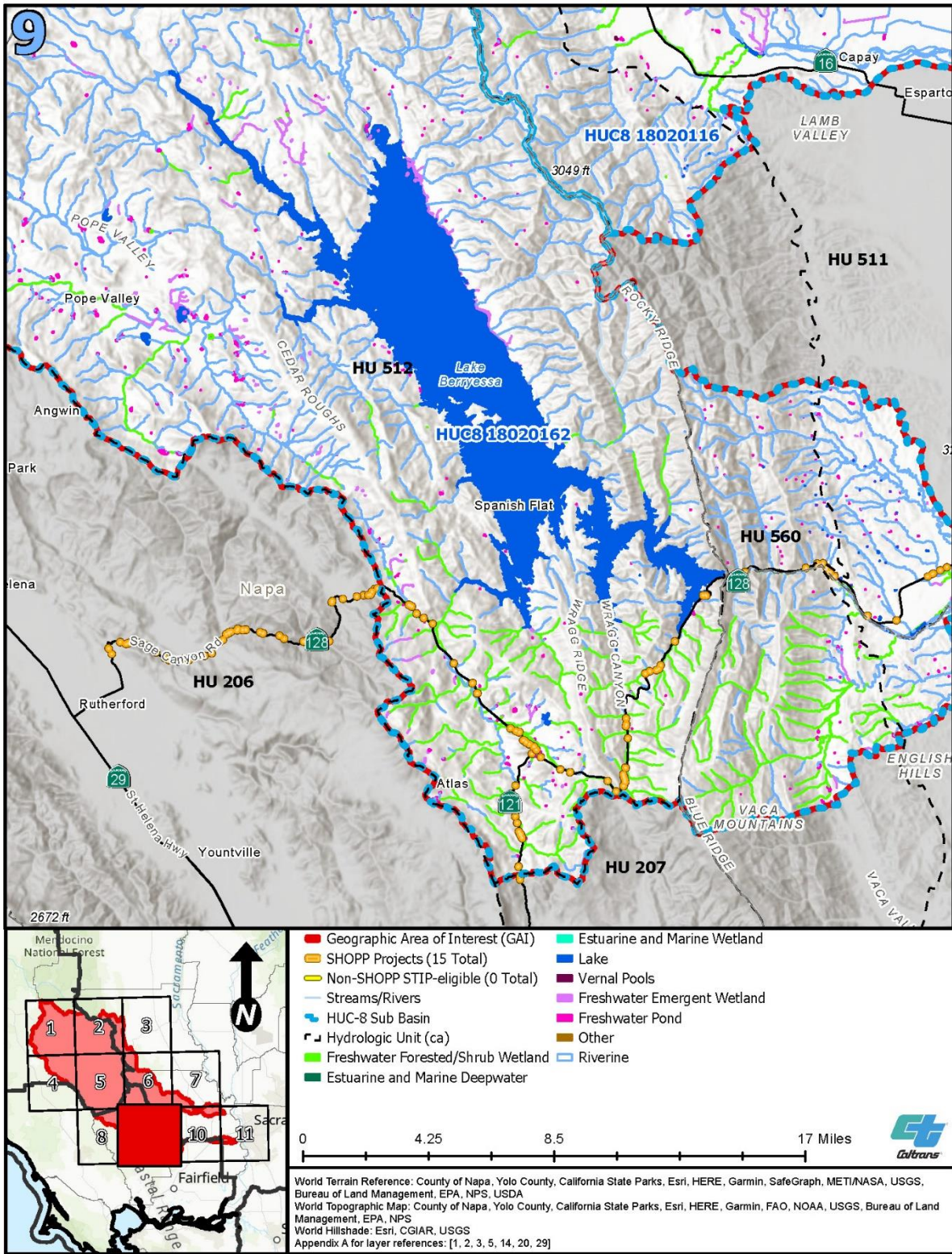


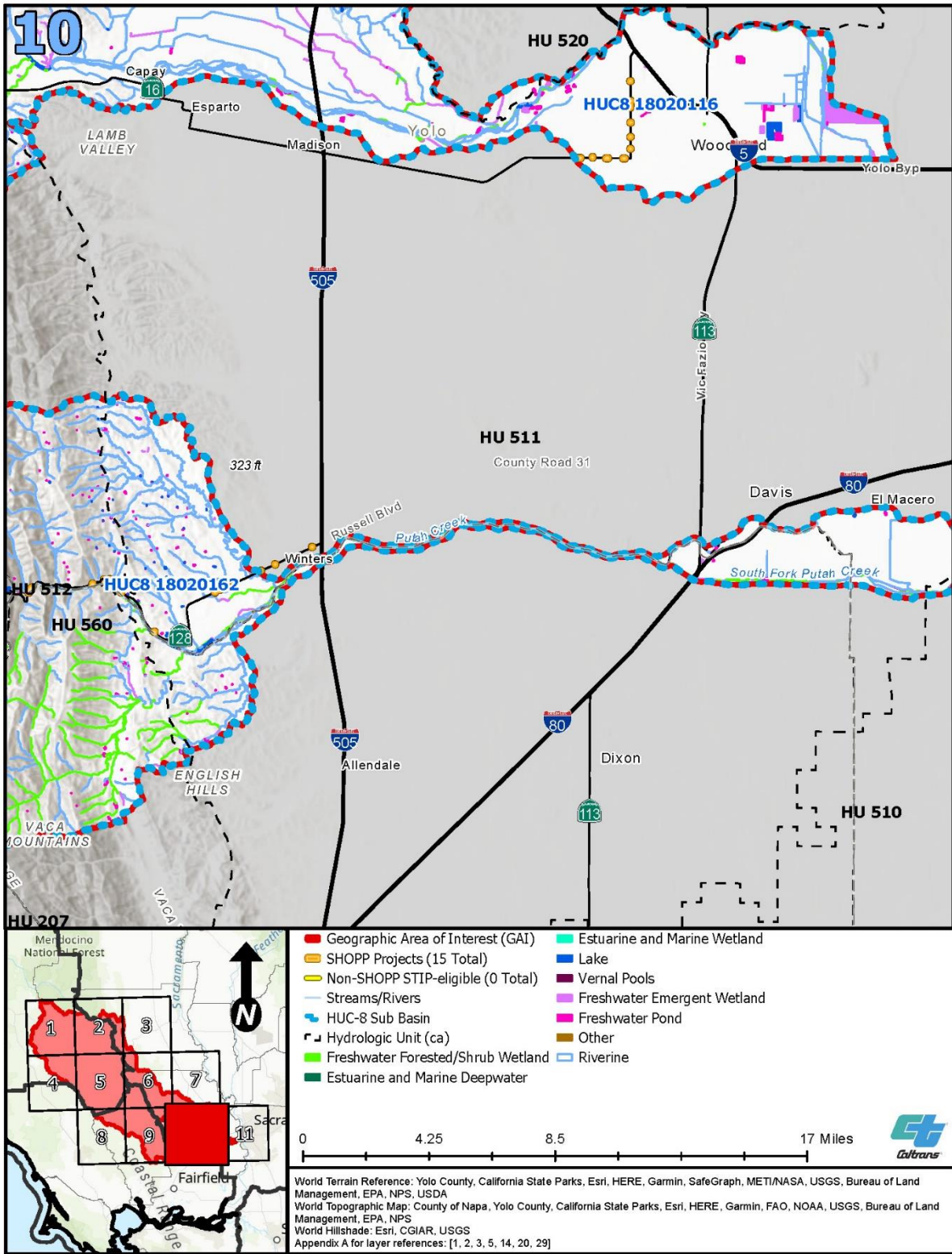


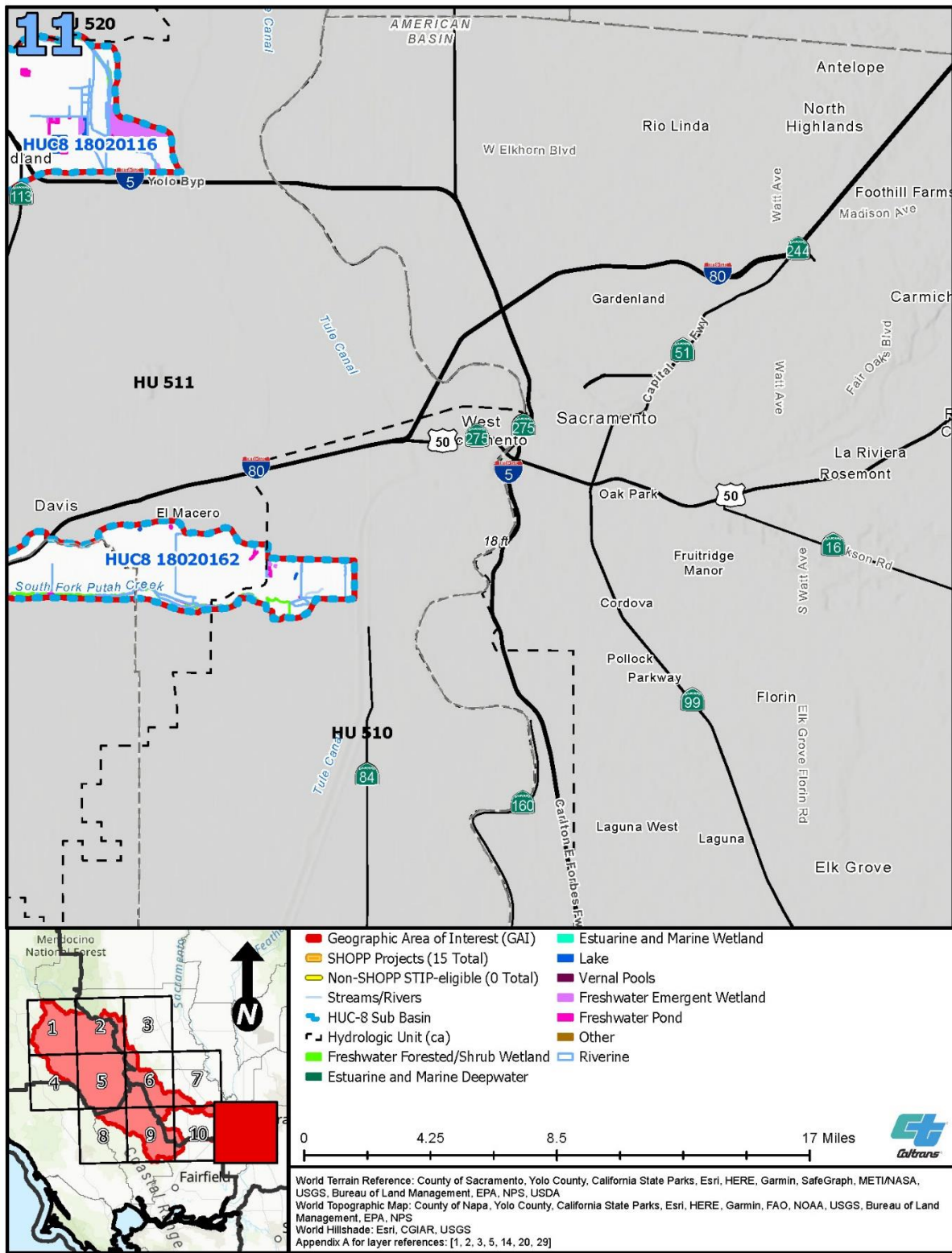












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## **APPENDIX G: CONSERVATION AND MITIGATION BANK SERVICE AREAS**

In the following pages, conservation and mitigation bank service areas that overlap the geographic area of interest (“GAI”) are provided. These figures are organized by the resource for which credits are available and are presented in the following order:

- Figure G-1. California Red-legged Frog Bank Service Areas (Map 1)
- Figure G-2. California Red-legged Frog Bank Service Areas (Map 2)
- Figure G-3. Valley Elderberry Longhorn Beetle Bank Service Areas
- Figure G-4. Other Terrestrial Species Bank Service Areas (Map 1)
- Figure G-5. Other Terrestrial Species Bank Service Areas (Map 2)
- Figure G-6. Other Terrestrial Species Bank Service Areas (Map 3)
- Figure G-7. Aquatic Resources and Vernal Pool Bank Service Areas (Map 1)
- Figure G-8. Aquatic Resources and Vernal Pool Bank Service Areas (Map 2)
- Figure G-9. Aquatic Resources and Vernal Pool Bank Service Areas (Map 3)
- Figure G-10. Aquatic Resources and Vernal Pool Bank Service Areas (Map 4)
- Figure G-11. Aquatic Resources and Vernal Pool Bank Service Areas (Map 5)

Because individual conservation and mitigation banks often offer credits for more than one species or resource, which may have separate service areas, the same bank may be found on multiple maps.

Refer to Table 4-3 in Chapter 4, *Existing Mitigation Opportunities*, for a full list of conservation and mitigation banks within the GAI.

Figure G-1. California Red-legged Frog Bank Service Areas (Map 1)

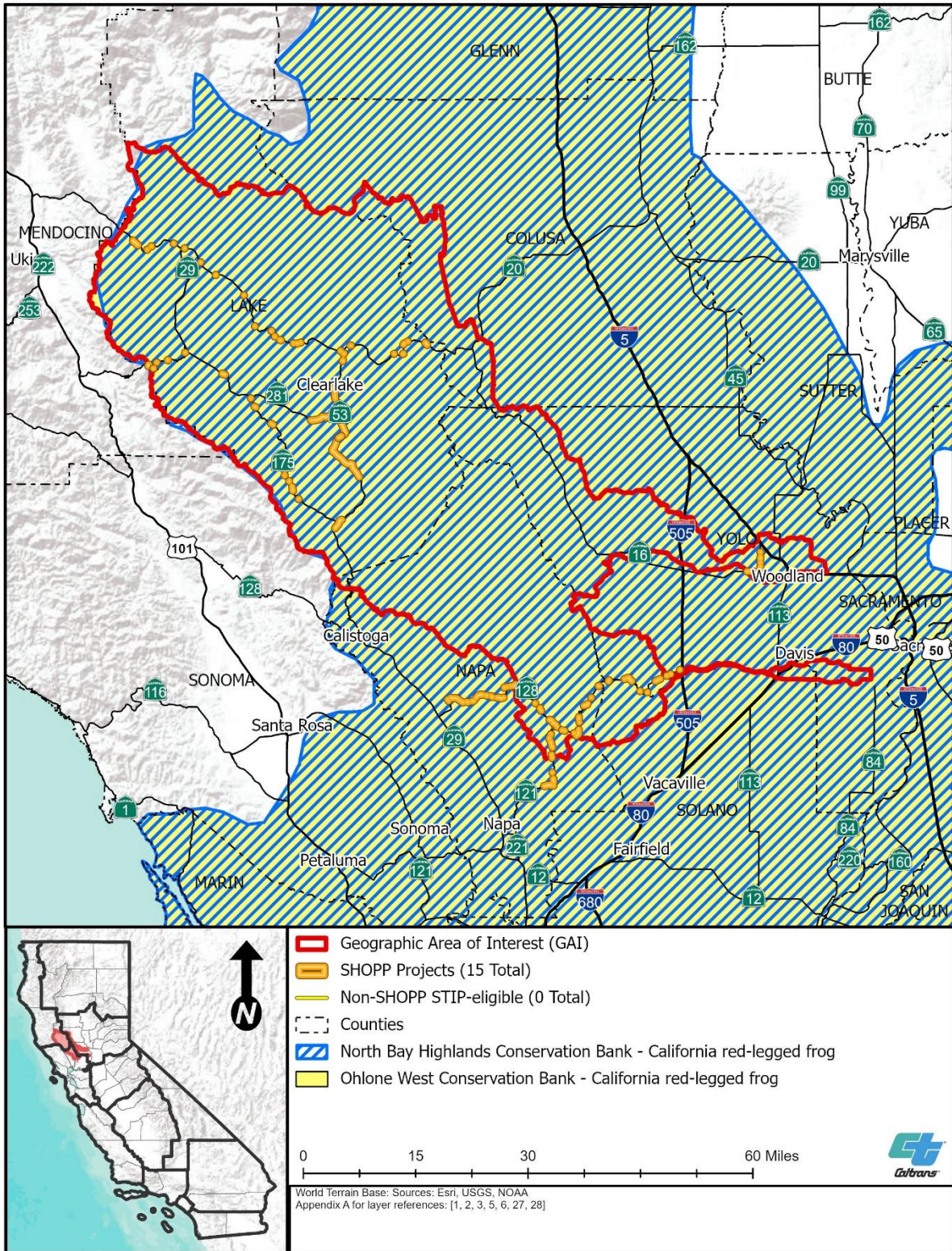


Figure G-2. California Red-legged Frog Bank Service Areas (Map 2)

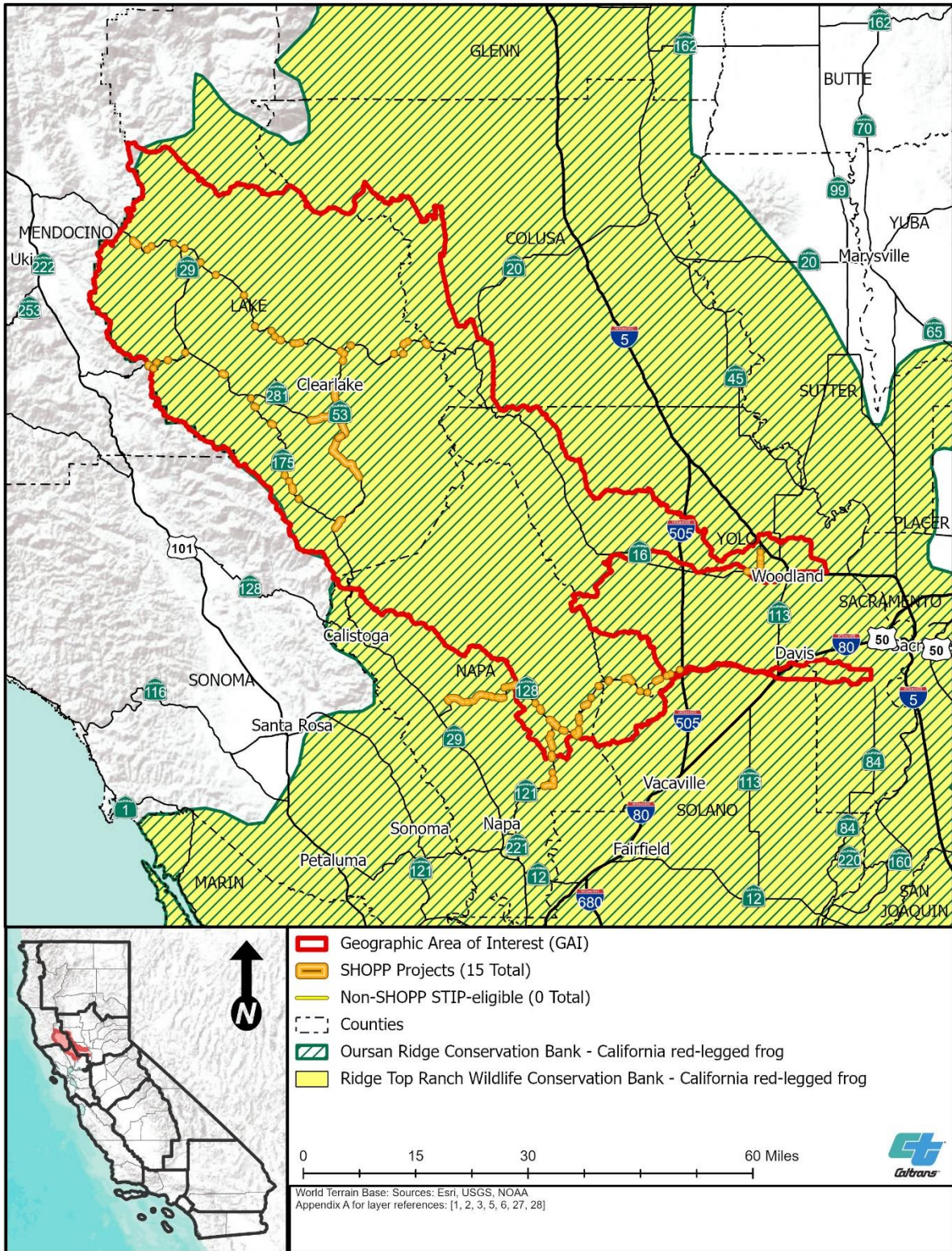


Figure G-3. Valley Elderberry Longhorn Beetle (VELB) Bank Service Areas

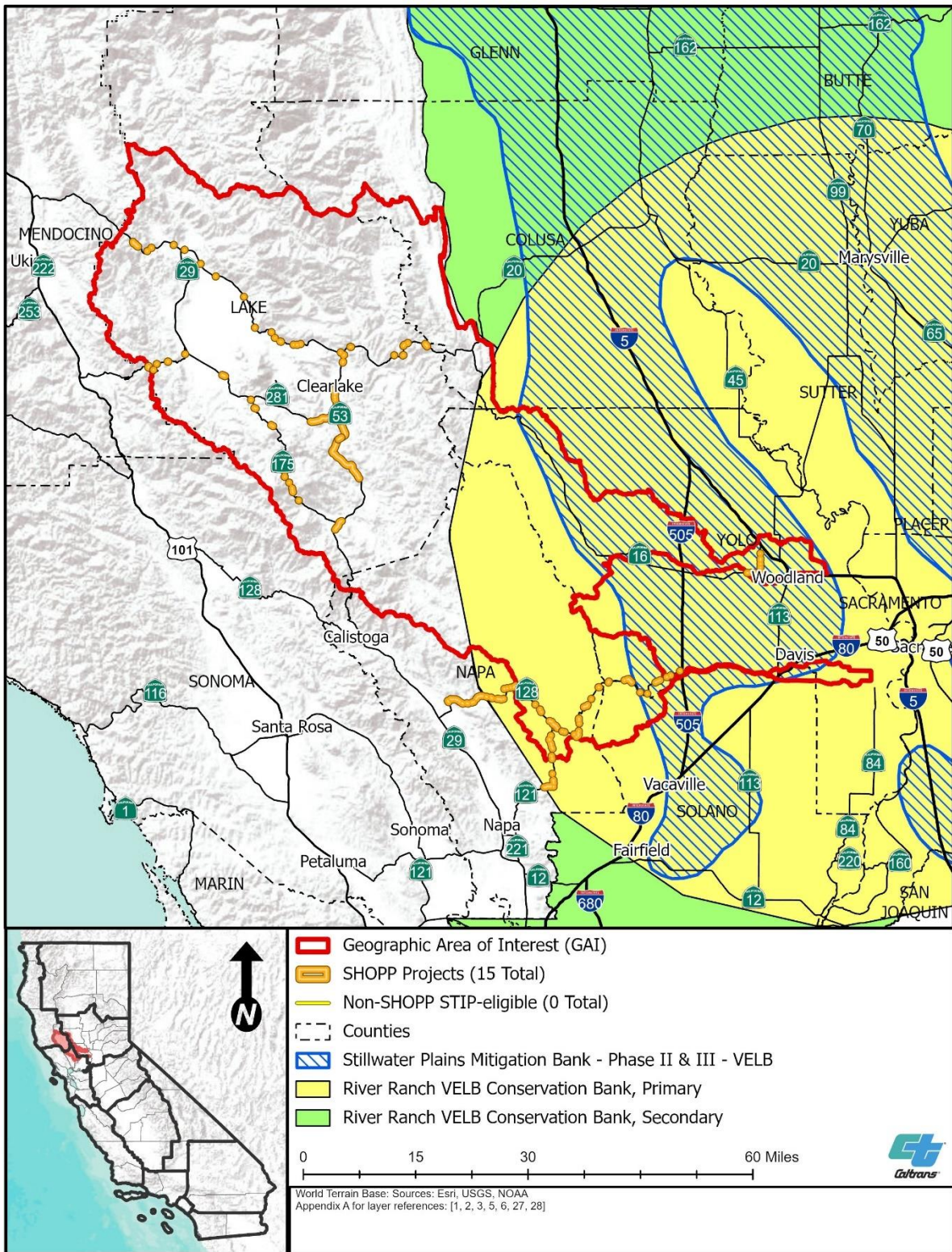


Figure G-4. Other Terrestrial Species Bank Service Areas (Map 1)

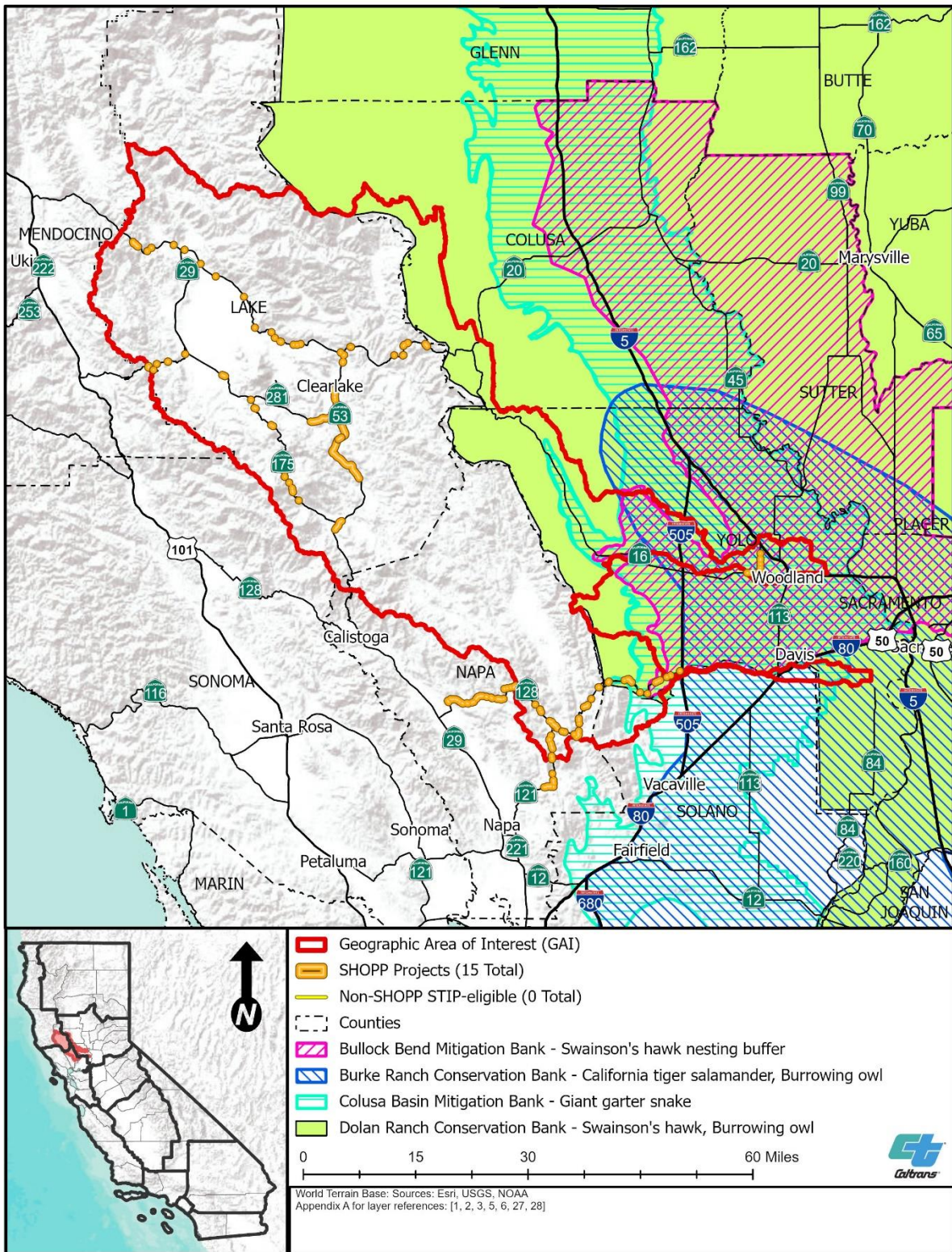


Figure G-5. Other Terrestrial Species Bank Service Areas (Map 2)

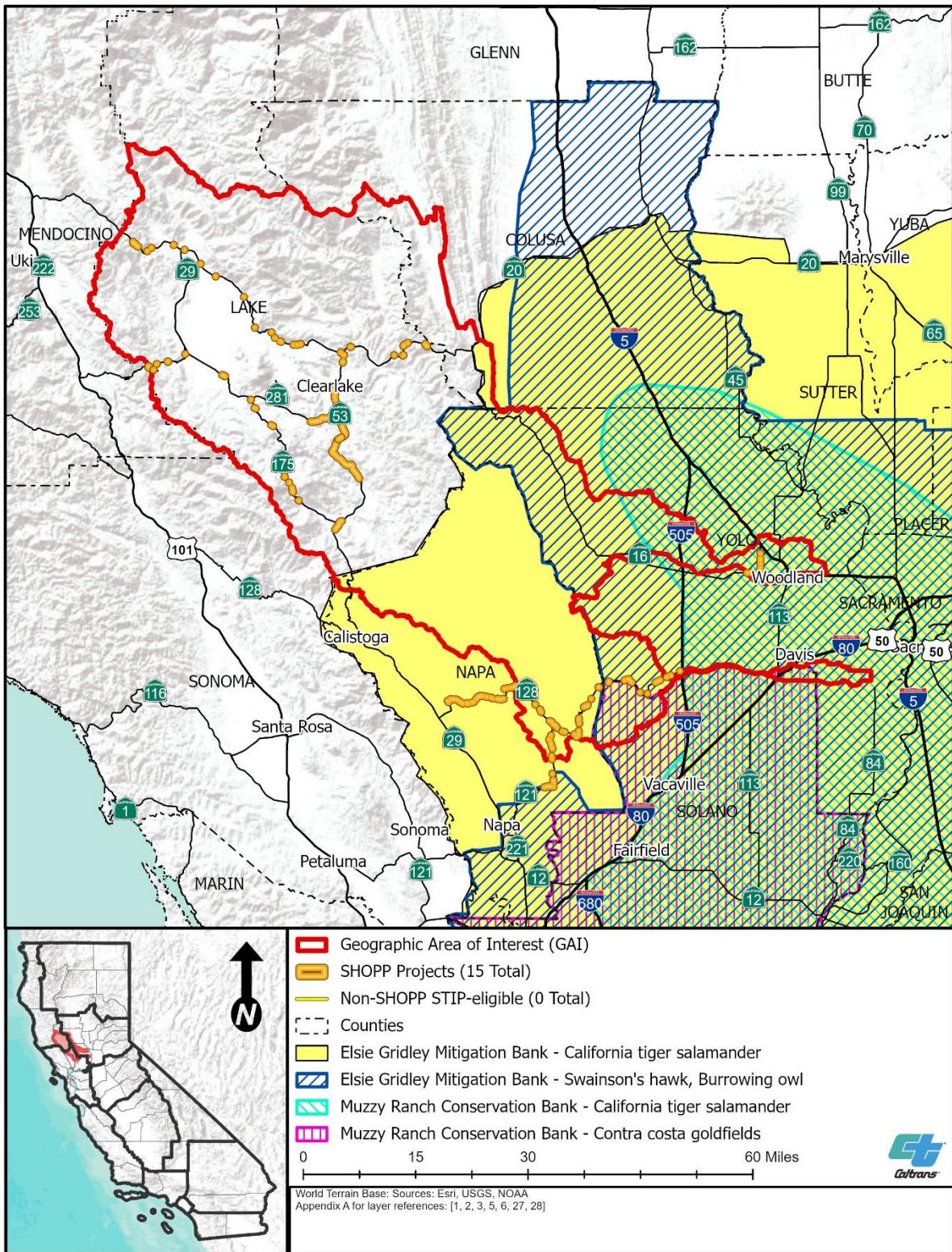


Figure G-6. Other Terrestrial Species Bank Service Areas (Map 3)

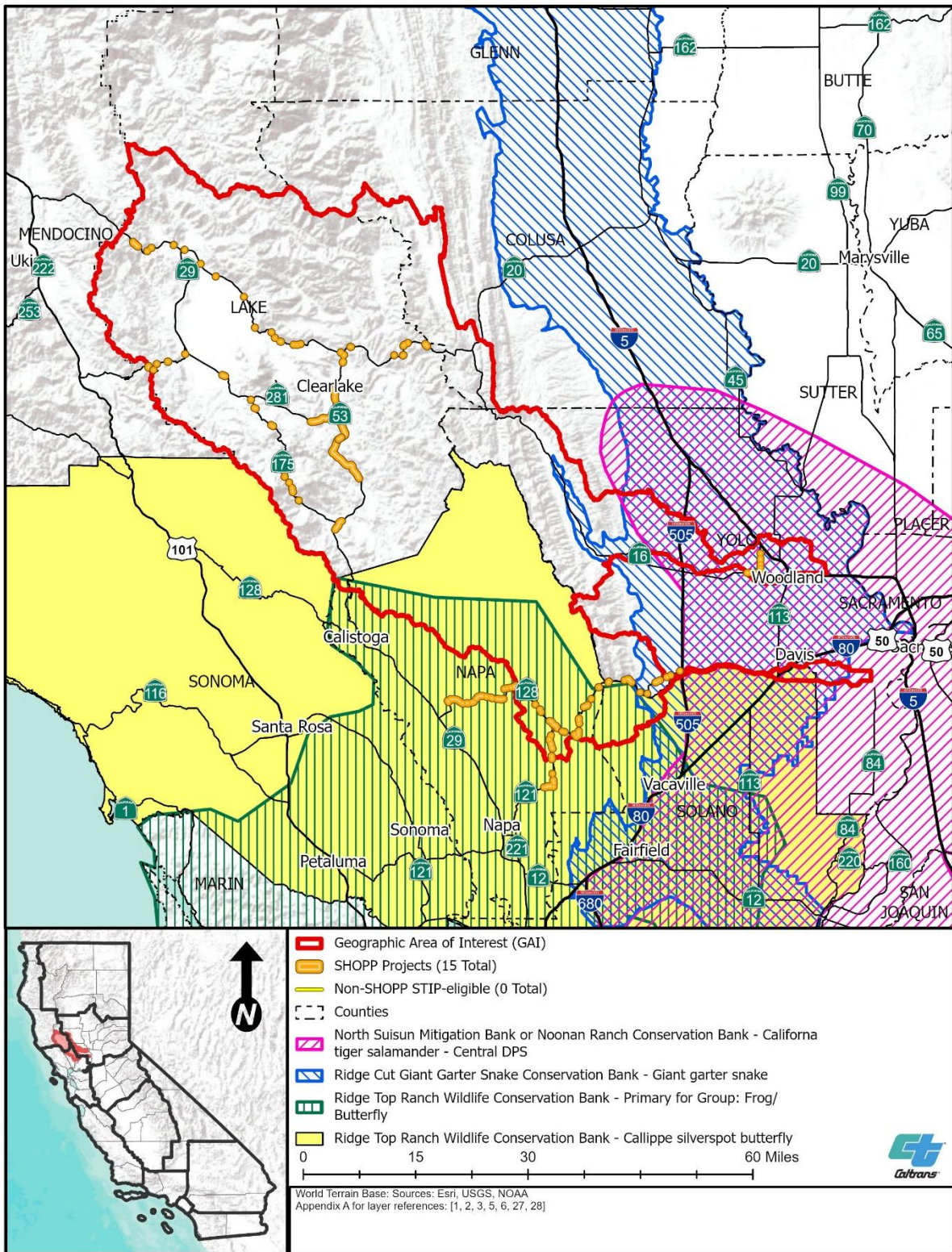


Figure G-7. Aquatic Resources and Vernal Pool Bank Service Areas (Map 1)

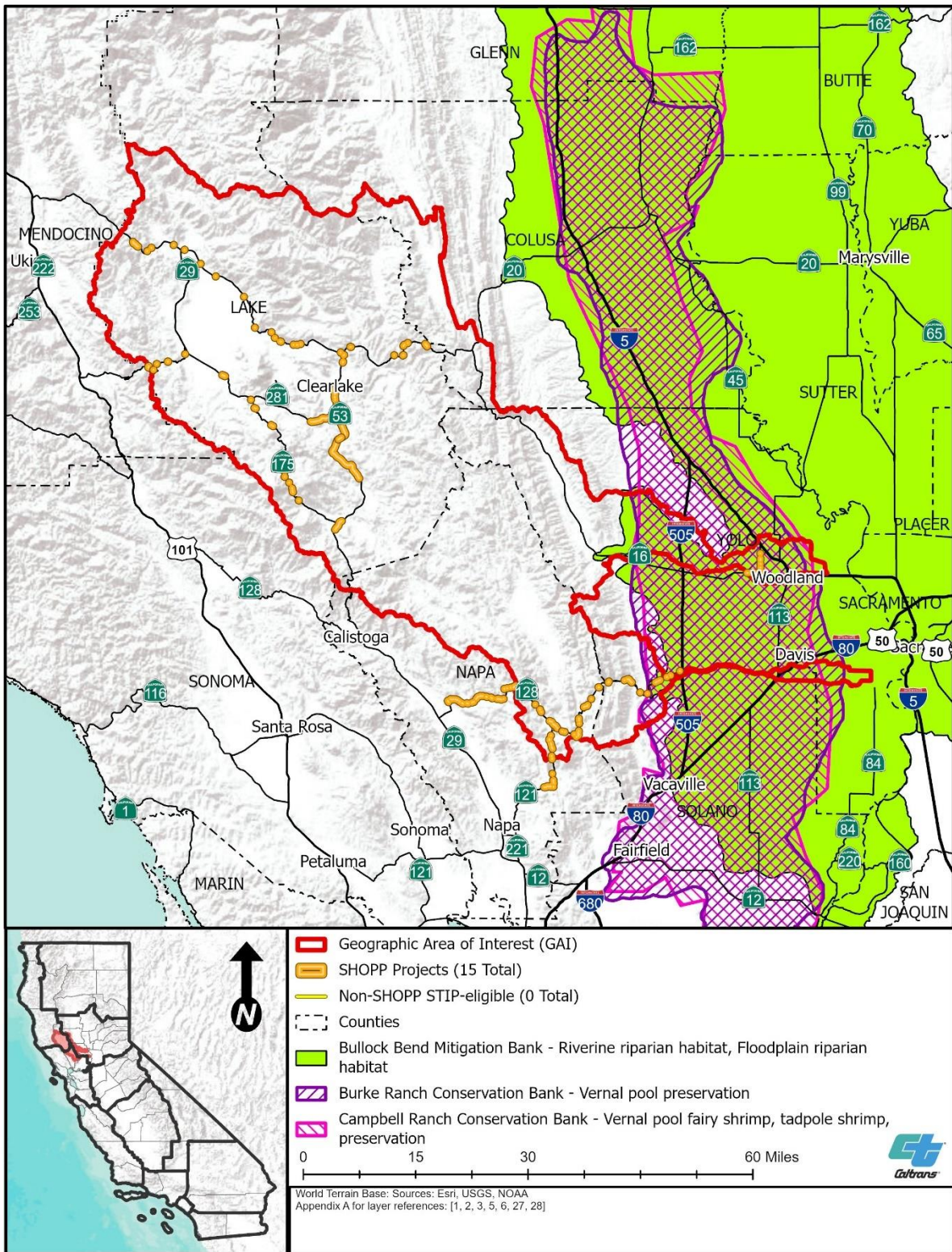




Figure G-8. Aquatic Resources and Vernal Pool Bank Service Areas (Map 2)

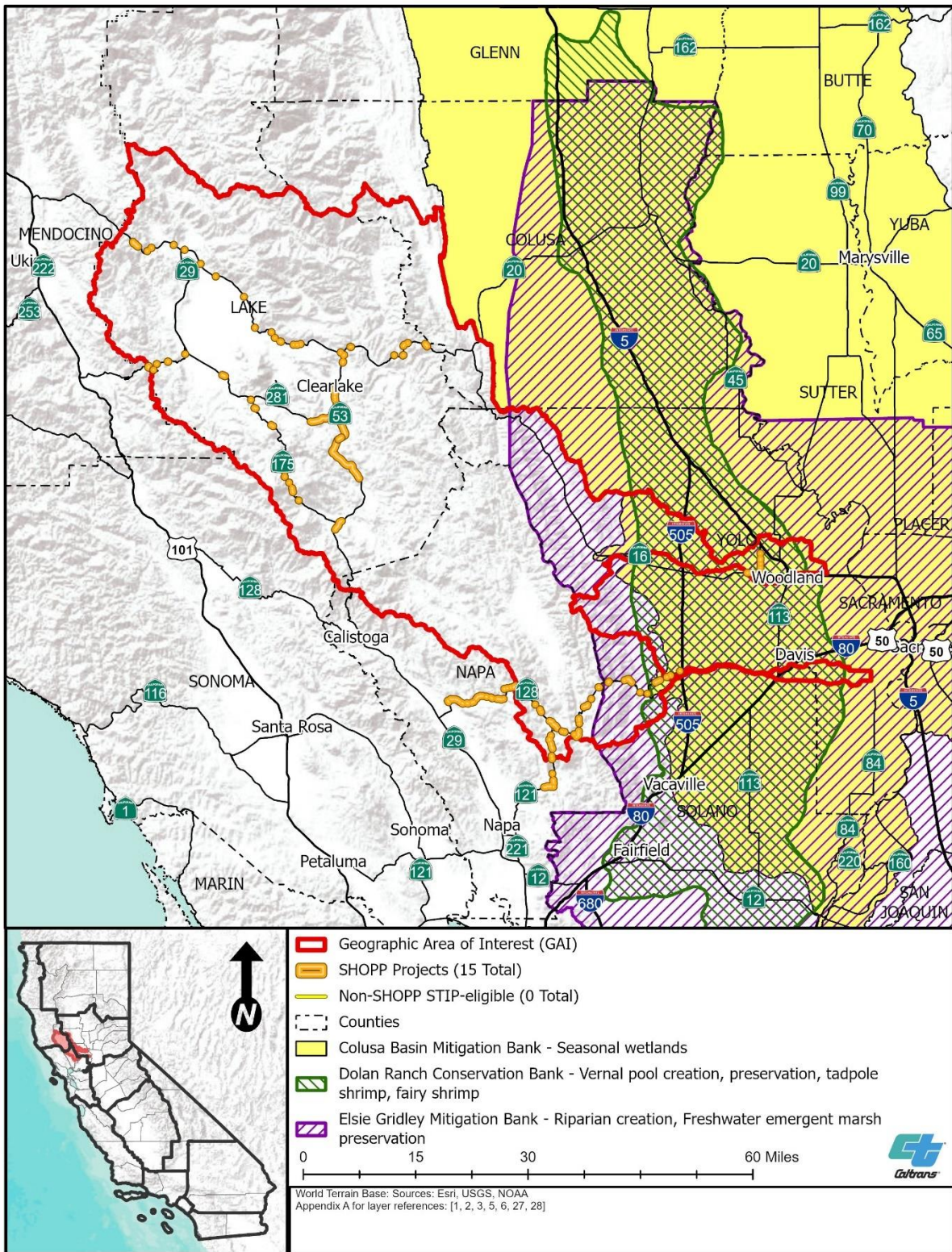


Figure G-9. Aquatic Resources and Vernal Pool Bank Service Areas (Map 3)

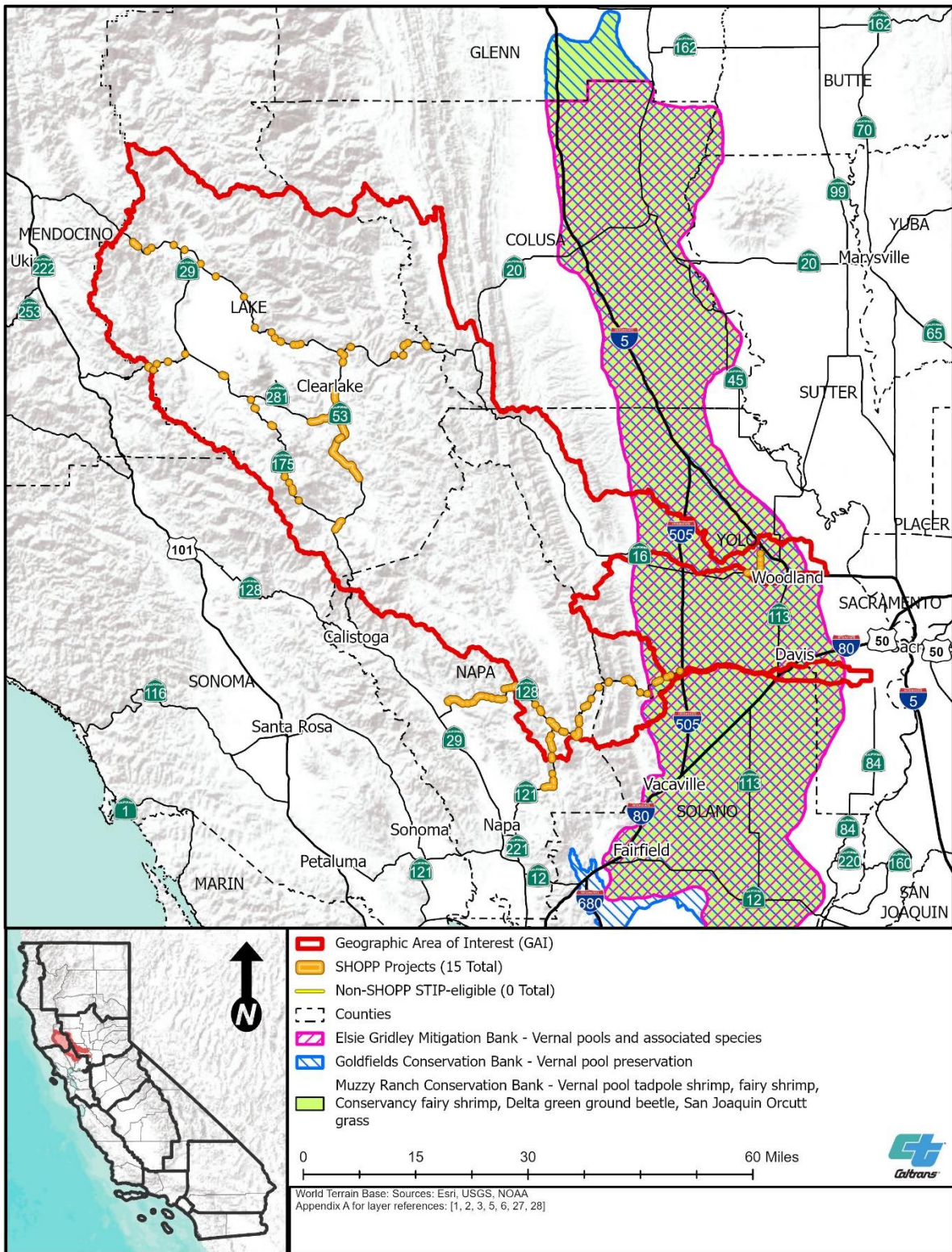


Figure G-10. Aquatic Resources and Vernal Pool Bank Service Areas (Map 4)

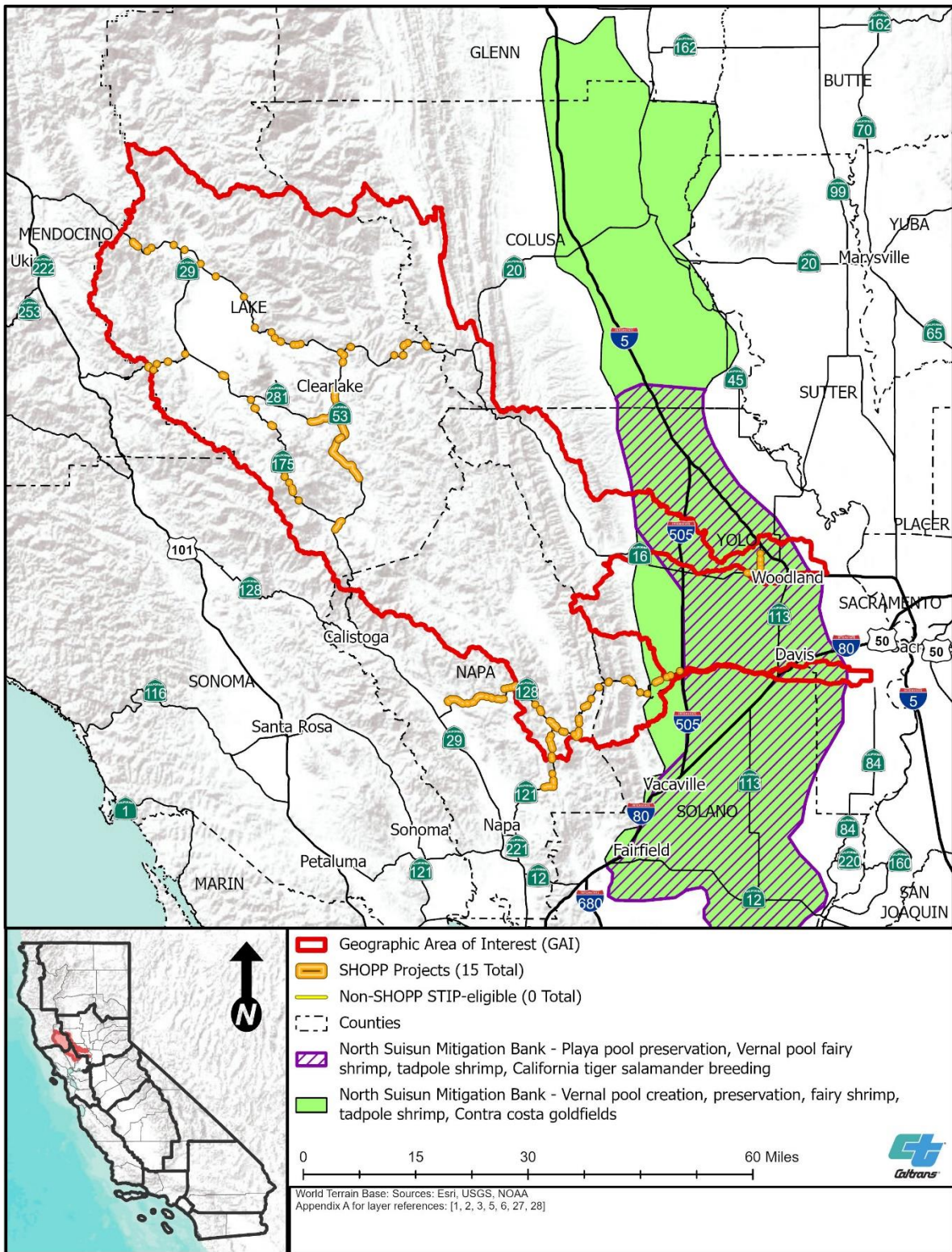


Figure G-11. Aquatic Resources and Vernal Pool Bank Service Areas (Map 5)

